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ACCOUNTING AND TAXATION

**The Academic Achievement in Fundamentals of Accountancy Business
and Management - I of Accountancy, Business, and Management Grade
11 Students of Lemery Senior High School**

Macaria Manguerra

Abstract

INTRODUCTION

The purpose of this study is to find out the factors affecting the academic achievement of Grade 11 students of Accountancy, Business, and management. It is one of the academic strands in Lemery Senior High School. Fundamentals of Accountancy, Business, and Management-1 (FABM-1) is an introductory course in accounting, business, and management that aims to develop their appreciation of accounting as a language of business and an understanding of accounting concepts and principles. It seems the students are taking for granted the subject's importance. They are even unaware of the subject's importance if they intend to take the course in a higher academic institution. Whether they will choose a board or non-board program in College, they will no longer take Introductory Accounting. Upon completion of FABM-1 and 2, one proceeds directly to Intermediate Accounting subjects in College.

METHODS

The researcher used the descriptive research method. The study was undertaken during the second semester of SY 2017-2018 to 162 samples. The methodology used was quantitative and the researcher utilized a researcher-made survey questionnaire validated by an expert. An interview guide was also used for supplemental details and clarification to some items of the survey. The survey questionnaires were then distributed to the respondents. After the retrieval of the questionnaires, the researcher tabulated, analyzed and interpreted the data, using frequency, percentage, and ranking as statistical methods of analysis.

RESULTS

Many students have common problems such as 1) lack reference books, 2) difficulties in analyzing problems and exercises, 3) lack of effective study habits, 4) difficulty of expressing oneself orally, 5) fondness for television viewing and social networking, 6) lack of financial resources, 7) lack of parents' supervision and moral support, 8) unsystematic study schedule, and 9) incomprehensible teaching technique of teachers. Because of these problems, the students have difficulties catching up with the lessons. As a result, high grades can only be maintained by a few students.

DISCUSSIONS

The results exhibit the need for serious attention not only from the students but also from the teachers. Students must be motivated in studying their lessons in FABM-1 and 2 for two semesters. The teachers must also integrate extensive and multidisciplinary learning resources including ICT, promote learners' critical literacy and numeracy skills, improve teaching strategies and prepare instructional materials like modules/books aligned with the curriculum.

KEYWORDS: Fundamentals of Accountancy, Business, and Management- I, Accountancy, Business and Management, teaching strategies, Accounting, Introductory Accounting

SUBMISSION ID: R04A-BATANP-1027/ R04A-BATANP-1139

Across The Board: A Competency and Readiness Assessment of Senior High School Students in Rosario District

Cherryl Ramos Nedruda & Anthony B. Adriano, Department of Education - Cavite RACE

Abstract

INTRODUCTION

The purpose of the study is to assess the competency and readiness of senior high schools' students.

METHODS

Descriptive Qualitative research with a self-made scale instrument was applied.

RESULTS

Students in Rosario District have a high-level competency and readiness score with a mean of 9.23 and 9.41 respectively.

DISCUSSIONS

Profile of students and teachers and their levels of competency were recorded and measured.

KEYWORDS: across the board

SUBMISSION ID: R04A-CAVITC-0065

Comparison of Paper-Based and Technology-Based Accounting as Perceived by the Accountant in Batangas City

Glydel Kyle A. Falqueza, Richelle Ann Gem R. Macatangay, Rhea Joyce Mañibo, & Rhea Mae Ramirez, University of Batangas

Abstract

INTRODUCTION

During the early years, merchants utilized manual accounting that did not involve the use of technology or software. Through the years, technological advancements created a chance for the accounting sector to improve their systems into something more efficient and effective. Despite this development, the accounting sector is slow in adopting technological changes. With regards to such developments, the researchers conducted this study to analyze the components of the paper-based and technology-based accounting, eventually leading to better work performance for accountants.

METHODS

The research used the descriptive method. A survey investigation was conducted in gathering relevant information. The subjects were accountants and they were chosen through simple random sampling. The data were treated statistically and computed in rank and frequency, weighted mean, and composite mean. The study also underwent the T-test validation to identify whether the views of the respondents between the two-accounting system would vary.

RESULTS

The accountants who participated as respondents perceived that there are tools/systems used in the paper-based and technology-based accounting. The ledger is the widely used tool in paper-based accounting whereas Microsoft Excel is for technology-based accounting. The respondents also answered that they seldom use the tools or systems from the two types of accounting. Accountants also stated their perception in utilizing paper-based and technology-based accounting. As a result, respondents perceived that paper-based and technology-based accounting do have their pros and cons, leading to no significant difference beyond the perceptions. To this end, the researchers decided to propose several guidelines for the better utilization of both paper-based accounting and technology-based accounting.

DISCUSSIONS

The results implied that there is no significant difference between the perception of the accountants in the paper-based and technology-based accounting, contrasting the results of several related studies implying of a significant difference between the two-accounting system. The integration of the maximum security and organization in the business is needed to fully attain the potentials and limits of both accounting systems. The need to properly balance the exposure of accountants in both accounting systems is needed for further investigation of this study.

KEYWORDS: Paper-based Accounting, Technology-based Accounting, Accountants

SUBMISSION ID: R04A-BATANC-0480

Financial Assistance through Loan: A Case of Selected Teaching and Non-Teaching Personnel of DepEd Calamba City

Ronald Trigueros, Department of Education, Division of Calamba

Abstract

INTRODUCTION

in the researcher's 4 years of service as a government employee of DepEd Calamba City, he observed some teachers and even non-teaching personnel incurring loans from different Private Lending Institutions or in the Provident Fund. In some cases, they have 4-5 loans from PLI's which resulted in net pay ranging to Php. 2,000-4,000 per month. The researcher decided to conduct this study to learn about this situation and identify the reasons or purposes for loan applications. This research aims at finding solutions to minimizing loans and in helping DepEd Employees on the proper management of their income.

METHODS

The researcher used the survey and interview method to gather data from his respondents. With the use of the survey form, he was able to gather the data faster and the interview helped me verify all the information in the survey form. His respondents were teaching and non-teaching personnel from the biggest secondary schools in DepEd Calamba City.

RESULTS

Loans are good if people have enough salary to its payment as it becomes the only solution to solve financial problems. An example is when a person or his / her family member is hospitalized, and one doesn't have enough savings to pay for one's hospital bills and the fastest way to have cash is to apply for a loan on PLI's or Provident Fund. Some of the employees have experienced this situation and they have no choice but to file a loan. Some teachers use their loans to pursue further education for promotion while others use their loan to buy gadgets such as laptops for school use: in computing grades, preparing lesson plans and teaching materials.

DISCUSSIONS

Every employee in government or private company has loans from financing institutions. A private lending institution or provident fund helps DepEd Employees support their needs but there must be a regulation to control or limit the loan of every employee. This will help in the proper management of their salary and guide every employee on their prioritization of each expense incurred in a month. Health Care Benefits are very important to an employee especially when they don't have any savings in case of hospitalization or medical purposes. One must consider the package health care providers are offering and the benefits one can get from it. The best result for this is that a company's employee will not be afraid of being hospitalized or going to a hospital for a regular check-up. It will also provide employees peace of mind on unexpected expenses.

KEYWORDS: Health Care, Financial Assistance, Income, Loan

SUBMISSION ID: R04A-CALAMB-0438

Internal Control of the Restaurant Business in the Province of Cavite

Dolores Aguilar, PICPA

Abstract

INTRODUCTION

Internal control is vital in protecting the resources of any business enterprise regardless of its size, be it a small or large corporation. It plays an important role in preventing and detecting fraud and protecting physical and intangible assets. The purposes of internal controls are to protect assets, ensure that records are accurate, promote operational efficiency, achieve organizational mission and goals, and ensure compliance with policies, rules, regulations, and laws. Internal controls are designed to provide reasonable assurance regarding the achievement of an organization's objectives in terms of effectiveness and efficiency of operations, reliability of financial reporting, and compliance with applicable laws and regulations.

METHODS

The researcher used a descriptive survey research method and utilized primary data through a self-administered survey questionnaire and secondary data from a government agency. The researcher used a questionnaire as an instrument to gather the needed data using the COSO model. The researcher sent a written request for permission to conduct the research together with the questionnaire addressed to the owners, officers, and managers of the selected restaurants. Data were analyzed using statistical tools such as frequency and percentage distribution, weighted mean, t-test, and f value.

RESULTS

The internal control implementations were very effective by forms of business organization, present capitalization, a number of employees in internal control and number of years in operation in terms of the control environment, information and communication and monitoring. The internal control implementations were very effective when grouped by job position level, years of work experience in internal control, highest educational attainment and an average number of related training/seminars. in terms of the control environment, information and communication and monitoring, it is also very effective in terms of control activities on items' years of work experience in internal control and the average number of related training/seminars. Furthermore, it was effective on items' job position level, highest educational attainment in terms of both control activities and risk assessment. It was also effective in terms of risk assessment on items' years of work experience in internal control.

DISCUSSIONS

The result signifies that restaurant businesses in the province of Cavite follow the rules, policies, and standards imposed by the firm following the COSO model.

KEYWORDS: Polytechnic University of the Philippines, Doctor of Business Administration, financial reporting, compliance, standards, audit trail

SUBMISSION ID: NCR1-MANILA-0003

Perception of Selected Grade 12 Accountancy, Business and Management (ABM) Students of Trece Martires City Senior High School Towards Accounting Profession

Ma. Aurora Alonzo, Trece Martires City Senior High School

Abstract

INTRODUCTION

Senior high school influences a student's career choice in college. Each student has his /her perception in every course. This perception changes over time due to new knowledge gained and development brought by technology. Many studies were conducted stating that gender influenced the perception of students regarding the Accounting profession. This study focused on the different perception of senior high school students under the Academic track - Accountancy Business and Management (ABM) towards the profession and the course. It gave the idea that the profession suited all genders provided that students were enough knowledge and information on what they will gain if they decided to study Accounting.

METHODS

A qualitative descriptive research design was used to identify the different perceptions of students towards the Accounting profession. Using the Stratified Sampling Technique, the participant's perspective was examined through survey and interview questionnaires using structured and semi-structured interview questions. Ten students were randomly chosen from the three sections enrolled in Trece Martires City Senior High School so that a total of 30 participants were used for this study. Survey questionnaires were given to selected Grade 12 Accountancy, Business and Management students and the participants were asked to put a check mark on the indicators listed as always, sometimes, rarely and never.

RESULTS

The majority of the participants in the survey perceived that the Accounting profession was prestigious, well-respected and that accountants were highly recognized and important in an organization. This dispelled a prior perception that accountants were boring people. It also showed that there is an inclination towards the profession despite the belief that it was hard and challenging due to accompanying obligations and responsibilities involved with the changing regulations on business laws. Most of the participants believed that the Accounting profession was an in-demand and high-paying job, suggesting that students chose a career due to its practicality and the benefits and the financial security it offers. It also assisted students in understanding clearly and realizing that it suited everyone who wanted to pursue the profession without any gender discrepancy.

DISCUSSIONS

Generally, this study indicated that students have a positive perception of the Accounting profession. This research confirms that motivational factors were intrinsic and extrinsic. Income and benefits, prestige and personal fulfillment, career advancement and opportunities are reasons that influence students in pursuing Accounting in college. Student's expectations and practicality were major factors in their decision making.

KEYWORDS: positive perception, the accounting profession, gender discrepancy practicality, career advancement

SUBMISSION ID: R04A-CAVITP-0152

**Project Bookkeeping, A Project to Keep Enhancing Accounting
Competencies of Accountancy, Business and Management Students of
Conde Labac Integrated School**

Rochelle Macatbag & Eliza Avena, Department of Education

Abstract

INTRODUCTION

Accounting is the systematic and comprehensive recording of financial transactions of a business. Bookkeeping is the recording of financial transactions, and is part of the process of accounting in business, ensuring that all transactions are correct. Transactions include purchases, sales, receipts, and payments by an individual or an organization or corporation. While bookkeepers and accountants share common goals, they support one's business in the different stages of the financial cycle. The knowledge and expertise that come with earning a certification will prepare an individual or an organization in handling accounting, bookkeeping and tax issues small business owners' face. This study aims to assess the level of competence of Accountancy, Business and Management Students of Conde Labac Integrated School in the following areas: a) systematically recording transactions, b.) sorting and analyzing transactions, and c.) preparing financial statements.

METHODS

The descriptive method of research was utilized. A Pre-Assessment Exam was conducted to gather data. Statistical analysis such as mean and mean comparisons was also utilized.

RESULTS

The result implies the need for enhancement of accounting competencies in the Accountancy, Business and Management Students of Conde Labac Integrated School. The following results were discovered: the respondents fall under the average at systematically recording transactions, while sorting and analyzing transactions and preparing financial statements falls under the average level.

DISCUSSIONS

The result demonstrates the need for enhancement of these competencies beneficial to the students in taking examinations for a TESDA Certification in Bookkeeping. The NC3 qualification consists of competencies that a student must achieve to enable him /her to journalize transactions, sort and analyze transactions and prepare financial statements.

KEYWORDS: Accounting, Bookkeeping, Competency

SUBMISSION ID: R04A-BATANC-0008

Scope of the Implementation of the Material Recovery Facility in the Municipality of Teresa, Rizal

Kathleen Largo, Supreme Student Government

Abstract

INTRODUCTION

One of the biggest problems that society is facing concerns about waste and its proper management. It is important to be aware of the possible things that might happen if this problem remains unaddressed. This research aims to suggest means of improving the implementation of the Material Recovery Facility and its significance to society. Furthermore, the research will also suggest beneficial ways to make other MRF's more functional.

METHODS

The study made use of the descriptive research method to describe and evaluate the Scope of the Implementation of the Material Recovery Facility in the Municipality of Teresa, Rizal. The researchers prepared a questionnaire to gather the data needed for the study. After constructing the questionnaire, the researchers utilized purposive sampling to interview thirty (30) selected respondents including MENRO staffs, Barangay officials, MRF coordinators as well as residents which included the MRF Livelihood program beneficiaries. The study was conducted at Abuyod National High School, Sitio Abuyod Brgy. Dalig Teresa, Rizal. A graphical presentation thru chart was utilized to show the results.

RESULTS

The results showed that the implementation of the Material Recovery Facility is effective in the Municipality of Teresa with regards to Ecological Solid Waste Management. There are effective ways practiced in the municipality in terms of waste management, livelihood, cleanliness, recycling, and agriculture.

DISCUSSIONS

Due to financial constraints and lack of support from other members of society, it is necessary to conduct action researches that will encourage the participation of individuals in the light of environmental care. This implies that this research is a big step in the promulgation of our vocation to become stewards of God's creation.

KEYWORDS: material recovery facility

SUBMISSION ID: R04A-ANTIPO-0012

**Self-Assessment: The Relationship of Teachers' Competency to
Students' Learning Competency**

Benjamin F. Nedruda & Glydel R. Guhit, Student of Bagbag National High
School

(Adviser: Benjamin Nedruda)

Abstract

INTRODUCTION

This study is conducted to determine the relationship of the teacher's level of competency to a student's level of competency.

METHODS

The descriptive correlation was used through an adapted scale instrument.

RESULTS

Using the T-test, the study revealed that there is no correlation between teacher s' competency to student -learned competency.

DISCUSSIONS

The research concluded the very high teacher competency has no relationship to student-learned competency.

KEYWORDS: Self-Assess

SUBMISSION ID: R04A-CAVITC-0066

The Relationship Between the Grade Point Average and Job Performance of Accountants

Lealene Mae Delos Reyes

Abstract

INTRODUCTION

One of the most essential parts of driving someone's life and career to success is becoming a literate and educated individual. Grade Point Average is a requirement in applying for a job but, not typically saying it is a qualification and a basis in evaluating the job performance rating. The main purpose of this study is to determine if Grade Point Average has a significant relationship with the job performance of the accountants.

METHODS

The research study used correlational and descriptive research designs to attain the purpose of the study. The researchers used the convenience sampling method based on the convenience and availability of the respondents. The questionnaire was used as an instrument, using a Likert Scale type of inquiry through the use of Google Forms. Thirty (30) accountants served as respondents for this study. The gathered information was analyzed and interpreted using the statistical tool Pearson Product Moment Correlation and these data were presented in graphical and tabular presentations.

RESULTS

The results of the study showed that the majority of the accountants are good in terms of their Grade Point Average in college resulting in a high weighted mean. In testing the relationship of the two variables, it has resulted in a weak positive correlation having a Pearson r of 0.37767. This led to an interpretation that the Grade Point Average was statistically significant in relation to the job performance of accountants therefore, the null hypothesis of the study was rejected.

DISCUSSIONS

In accordance with the results, the Grade Point Average has a low impact on the performance of the accountants since in other companies, experience counts much. However, students should be aware of the relevance of Grade point average to their future career.

KEYWORDS: Grade Point Average, Accountants, Job Performance, Low Impact, Qualification, Weak positive correlation

SUBMISSION ID: R04A-BATANP-0721

ANATOMY AND PHYSIOLOGY

Histopathological Changes in Tissues and Rate of Mortality of Golden Apple Snails (*Pomacea Canaliculata*) Exposed to Tuba-Tuba (*Jatropha Curcas*) Bark Crude Extracts

Justin Gabriel R. Enriquez, Student & Miguel P. Gomez Jr., Teacher
(Adviser: Miguel Jr. Gomez)

Abstract

INTRODUCTION

Golden apple snails (GAS) are voracious freshwater mollusks that feed on freshwater flora, especially rice shoots. According to the UN Food and Agriculture Organization (2016), 1- 40% of Philippine rice fields were damaged by GAS, causing huge production loss. Other control methods include predators and synthetic pesticides, which promotes partial mortality but presents severe problems like ecosystem disruption and food poisoning. Tuba-tuba boasts potential molluscicidal properties and is locally available. The Organic Agriculture Act of 2010 promotes organic farming and that the use of organic fertilizers and pesticides are relevant at present. The primary aim of the study was to determine the histopathological changes in tissues, and the mortality rate of GAS when exposed to Tuba-tuba bark crude extracts.

METHODS

Randomized Complete Block Design (RCBD) was used to gather relevant quantitative data for the study. The processes chronologically used in this study are the Preparation of GAS, Crude Extraction, Maceration, Steam Distillation, GAS Acclimatization, Crude Extract Induction, Tissue Sections Preparation, Staining, and Histopathological Observations. GAS samples were collected by scooping them out from the freshwater reservoir and were moved to a 20-liter tank. After several procedures, they were incubated with different concentrations (25%, 50%, 75%, 100%) of Tuba-tuba bark crude extracts (Rawi et al., 2011).

RESULTS

Exposure of GAS to Tuba-tuba bark crude extracts for 24 hours caused moderate to severe destructive effects in the body tissues, evident in both LC 50 and LC 90, and were seen in the histopathological findings. There is necrosis of the gills, degeneration of foot muscle fibers, closing of opercula, erosion of the lining epithelium of the digestive tract and increased hemolymphatic gaps. For 24 hours, the mortality rates for Treatments 1-5 are 0%, 47%, 80%, 100% and 100%, respectively.

DISCUSSIONS

The study showed that Tuba-tuba bark crude extracts necrotized the snails' foot, digestive tract, and gills and increased their hemolymphatic gaps at different concentration levels. According to El-Din (2011), at all stages, snail mortality increased due to the increasing plant extract concentration. Studies are needed to determine the exact substance or mechanism for snail mortality. Field studies are also needed to confirm the viability of the plant extract. This study would then help fill the knowledge gaps regarding the medicinal and chemical properties of Tuba-tuba bark crude extracts.

KEYWORDS: Rate of mortality, histopathological changes, steam distillation, concentration, *Pomacea canaliculata*

SUBMISSION ID: R04A-STAROS-0009

**Living with the Dead: A Phenomenological Study of the Lived
Experiences of Resident Pathologists in their First Time Doing Medical
Autopsy**

Lee Edward Leoncio, Trece Martires City Senior High School

Abstract

INTRODUCTION

in our present time when diseases are so rampant and we are still finding immediate cures for these illnesses, pathologists are very important. By doing a medical autopsy, they seek to find the causes of someone's death; the degree of ailment he/she once undergone, and other diseases that are not diagnosed during the time that the patient was still alive. Recognizing that the pathologists' role is imperative in the field of medicine, the researchers ought to know the lived experiences of resident pathologists in their first time conducting an autopsy.

METHODS

This study is a qualitative method using a phenomenological design aimed at describing the lived experiences of resident pathologists in their first time doing a medical autopsy; particularly on the difficulties, they encounter. The advantages of being in their field were discussed in a semi-structured in-depth interview on two resident pathologists at De La Salle University Medical Center. The framework of analysis used was Braun and Clarke's (2006) thematic analysis.

RESULTS

Pressure while doing autopsy; fear of false diagnosis and huge time consumption were the themes that the researchers found out on the difficulties they encounter. In his journal, Giard (2010) said that "Diagnostic errors comprise a substantial and costly fraction of all medical errors. A wrong diagnosis by a clinical pathologist could lead to a delayed or inappropriate treatment and may result in legal action from the patient who suffered damages." For the advantages, the schedule, less interaction with patients and being knowledgeable in all diseases are identified as the common themes. Pathology is the general study of diseases and its procedure, like a specific diagnosis. They look for the clues of the diseases through the examination of organs, tissues, body fluids, cells, and molecules. They are called the "Doctor's doctor" for they don't directly interact with their patients (NYU Langone Health, n.d.).

DISCUSSIONS

For resident pathologists, they handle a lot of pressure every time they perform an autopsy, notably the first time they do it. Yet it is rewarding when they diagnosed the disease well and became successful in knowing the main cause of the patient's death.

KEYWORDS: Autopsy, resident pathologists, resident pathologists' difficulties, resident pathologists' experiences

SUBMISSION ID: R04A-CAVTP-0664

ARCHITECTURE

Evolution of Creating: A Phenomenological Study on the Lived Experiences of Architects with 3D Printing

Gary Sadol, Student

Abstract

INTRODUCTION

3D printers turn digital computer models into solid, physical objects by building them in many thin layers. It is also now being considered as the third industrial revolution because of the ways it changed traditional manufacturing. One of the fields that utilized the advantages the technology offers is the field of architecture where it is used in printing architectural models and even printing structures. While there are studies from the Philippines exploring the usability of 3D printers, there seem to be a shortage of studies explaining the lived experiences with the technology in architects coming from the locality of Cavite.

METHODS

This study used a qualitative research design, specifically a phenomenological study method. To describe the lived experiences of architects with 3D printing, the researchers used transcendental phenomenology. To choose the architects that will participate in the study, purposive and convenience sampling was utilized. To gather the data, the researchers conducted a semi-structured in-depth interview with the participants. Lastly, thematic analysis was used to analyze the data.

RESULTS

The researchers found that the common issues encountered by architects with 3D printing can be classified as those that concern before one can use the machine, and the issues while using the machine. As answered by the architects, one must first know using a 3D printer, but mastery is needed to fully utilize the machine. While issues like the 3D printers cannot resume its printing due to a sudden loss of power or the nozzle of the printer uncontrollably melts the filament after a long period time are included in the technical aspects. On the other hand, the researchers also found out the changes that 3D printers bring to the architects' way of creating 3D objects: (1) 3D printers can be used in printing architectural models; (2) 3D printed architectural models are durable, complex and faster to create compared to those models created by hand; lastly, (3) architects can use 3D printed models in visualizing a project.

DISCUSSIONS

As such, the study found out that 3D printing is undeniably an evolution of creating. The researchers concluded that despite the issues faced by the architects in using a 3D printer, it's still a very useful technology that architects can utilize in creating 3D models to help with their projects.

KEYWORDS: 3D printing, 3D printing in architecture, Issues with 3D printing, Advantages of 3D printing

SUBMISSION ID: R04A-CAVITP-0773

Developing Biophilic Furniture Design in a Classroom Setting

Ashley Mata, Student
(Adviser: Zaldy Jazareno)

Abstract

INTRODUCTION

Several studies were already conducted relevant to the maximization of the learning outcome of the students as a result of a conducive classroom learning environment, a classroom whose design of furniture is biophilically-inspired. In this study, the researchers attempted to offer new furniture with biophilic designs. This research is funneled by the best-related literature that served as the foundation for the formulation of the proposed biophilic furniture designs categorized as Natural Analogs and Nature of the Space.

METHODS

Descriptive evaluative and comparative are the methods used in this study. The respondents of this study were the 47 Grade 11 and Grade 12 students who were randomly selected from Arts and Design Track and Technical and Vocational Livelihood Track – Horticulture and their advisers. The instrument consisted of three parts. The first part contained questions about the prior knowledge of the respondents on biophilic designs and assessment on student's encountered problem in terms of the current furniture in the classroom; the second part presented the furniture designs incorporated with biophilia assessed through respondents' rate; the on the third part, it included questions validating the conditions of an "attention restoration theory" to consider a furniture as biophilic.

RESULTS

Findings express that all respondents have no idea of the word "biophilia". Majority of the respondents experienced problems related to the current furniture design in the classroom and encountered discomfort that led them to attest that it affected their academic performance. The researcher presented the three biophilic furniture designs and the original design of armchairs and table, and they were rated by the respondents, with the original design being least favored—an indication of an unhealthy learning environment. On the other hand, the most favored furniture design was Natural Analogs in tables and Nature in the Space in armchairs, making it the best-suited for furniture designs.

DISCUSSIONS

The result demonstrates the need for immediate remediation in the furniture design to address the problems at stake and also to incorporate it with biophilic furniture design that has a positive review from its respondents. Though this study was not aiming to solve any health issues, the improvement of any health condition in a built environment is guessed and presumed by the researchers to suggest for an additional study for implementing it to prove the assumptions.

KEYWORDS: Biophilia

SUMBISSION ID: R005-SORSOP-0029

ART

The Art of Optical Illusion: A 21st Century Tool for Stress Management

Mark Christian Janer, Department of Education

Abstract

INTRODUCTION

Visual Artist researchers regularly develop and create excellent, perceptions and appreciations. in this study, the researchers determined the varying extent of appreciations and perceptions on the art of optical illusion. in this study, they found out the reasons for the varying extent of appreciations and perceptions of optical illusions that can benefit the needs of the students to manage their stress.

METHODS

A descriptive method design was used. It is the most appropriate method to answer the specific problems in this study. The researchers used a questionnaire to answer the questions provided. in the 137 respondents combined from the strands of STEM and ABM, their responses determined their extent of appreciation for the art of optical illusion and its types.

RESULTS

Many respondents who participated in the research perceived optical illusion as a medium to relieve stress, with varying responses depending from the 1) profile of the respondents and 2) the extent of perception of optical illusion. in some instances, having an ambivert type of personality has a high effect on the perception of an individual. The results of our study show that optical illusions can manage or relieve stress.

DISCUSSIONS

The human brain plays an important part in our perception of objects. Many students encounter stress in everything, especially when they don't know how to appreciate little things. This study shows that appreciations would be our weapon to combat stress.

KEYWORDS: optical illusion, stress management

SUBMISSION ID: R001-URDANE-0012

**Unpublished Folk Dances of Cuyo Island, Palawan: Documentation,
Analysis, and Performance**

Janice Decorion, Bulihan National High School, Department of Education -
Cavite

Abstract

INTRODUCTION

Dance has several yet distinct meanings. It is considered an art of expressing the inner impulse of humans using his/her body. This also portrays the community life, traditions, and culture of a certain society, therefore, dance is a reflection of the history of the people. Dancing has become an integral part of Filipino life, traceable from its roots and beginnings from periods of pre-colonization to the modern years.

METHODS

The study is a qualitative-ethnographic type of research and used a descriptive research design. Particularly, it aims to determine the folk dances of the Cuyonon, of Cuyo Island in Palawan. This method enabled the researcher to understand the purpose and characteristics of each dance. The study had also determined how the inhabitants value and preserve their dances.

RESULTS

Among the several unpublished dances in Cuyo, two have been documented. Pastoris de Cuyo came from the Spanish-Mexican term "Pastores" meaning shepherds. The dance is performed at the Christmas season to honor the Holy child in the manger or "Belen". Virginia is a square dance adapted from the American's "Virginia Reel" of Scottish- Irish descent

DISCUSSIONS

The study shows how the Cuyonons value and preserve their folk dances. It is recommended that the newly-researched dances be presented to the Philippine Folk Dance Society for accreditation and publication. Through this, the preservation and dissemination of the dance tradition will somehow be attained.

KEYWORDS: unpublished, folk dance, documentation, performance, analysis

SUBMISSION ID: R04A-CAVITP-1288

Utilization of Achuete Seeds and Fruit Peelings as Natural Dye for Cotton Fabrics

Carl Ramirez, Darry Diaz, & Johnraven Aquino

Abstract

INTRODUCTION

Natural dyes are mostly preferred compared to synthetic dyes because they are safer to use. These dyes do not have any dangerous mordant like Copper, Chromium, and tin. Natural dyes bring unparalleled beauty and harmony, making them more valuable to consumers. Natural coloring offer contrast, shades, and rays of hues that are impossible to achieve with artificial coloring. It is under these premises that the researchers conducted a study on the use of natural dyes from achuete seeds and fruit peelings.

METHODS

Achuete seeds, peelings of orange and saba banana were collected. Four hundred fifty grams of each material was obtained and placed in containers labeled A1, A2, A3, B1, B2, B3, C1, C2, and C3. Materials in containers labeled A1, B1, and C1 were soaked in 120 ml water. Those labeled A2, B2, and C2 were soaked in 120 ml alcohol and those labeled A3, B3, and C3 were soaked in 120 ml acetone for setup. Soaking was done for 3 hours. The mixture was sieved to separate the solid debris from the liquid dye. Three pieces of 10 cm white cotton cloth were soaked per container. Then, there were dried indoor. Each dyed cloth was rated based on the brightness of color, appearance, and permanency of color.

RESULTS

Results reveal that dyes extracts using acetone has produced the brightest color while those extracted in water was least bright. in terms of appearance, cotton cloth soak in acetone has produced more color than the other solvents. Also, longer permanency of color was suited for cotton cloths soaked in acetone.

DISCUSSIONS

If this study is accepted, it will help determine the effect of water, acetone, and alcohol on the intensity of color. It will also bring back the old tie-dyeing technique. It will also benefit the poor; instead of using expensive machines to dye cloth, this can help them dye their fabric in their taste or style.

KEYWORDS: Natural dye, Tie-dyeing

SUBMISSION ID: R04A-CAVTP-1658

Versatility of Used Paper in Making Twine Products

Sherielyn Consignado, Teacher

Abstract

INTRODUCTION

Twine products made from used paper is a form of crafting used to create different useful products. Twine products can be large or small, humble or ambitious, and incredibly varied. It is also easy to learn. It involves cutting and gluing. of course, the twining of the used cut papers and twine products cost cheaper. With the use of scratch paper or used paper, it will turn into twine products like pouch bag, flower vase, plate, tissue holder and picture frame. Dedicated crafters can create useful products that require a very fine eye and a lot of patience. This idea brought into the researcher's mind to create twine products made of used paper to lessen garbage, giving opportunities for the business industry for coping with unemployment for a great number of people in the Philippines for this will provide the know-how to start a small business, giving sustainability to one's family's needs. Caring for the environment by recycling office papers at work addresses the first part of the paper sustainability equation.

METHODS

The study utilized experimental types of research to determine the acceptability of utilizing used paper for making twine products like flower vase, picture frame, plate, tissue holder and pouch bag in terms of its appearance, originality, usefulness, durability, and cost.

RESULTS

The study utilized used papers as raw materials for twine products: vase, picture frame, plate, tissue holder and pouch bag. The versatility of the projects was evaluated using the Equal Enumeration method composed of 120 respondents, with the breakdown of 30 students, 30 teachers, 30 consumers and 30 entrepreneurs within the municipality regardless of their barangay. They were asked to respond through a survey during the literacy mapping. The quasi-experimental design was the method of research employed in gathering the data needed in the study with the questionnaire as the main tool. The data obtained using the said instrument was treated using the appropriate statistical tool.

DISCUSSIONS

With the result from the different kinds of papers, the following were selected: old newspaper, magazines, old test papers, telephone directory and rainbow pad in making twine products. The respondents "strongly agree" that the sensory qualities of the flower vase, plate, picture frame, tissue holder, pouch bag out of used paper twine product in terms of appearance, originality, durability, and cost are "highly acceptable".

KEYWORDS: versatility

SUBMISSION ID: R04A-LAGUNA-0262

BIOLOGICAL SCIENCES

**"In-vitro" Determination of the Parasitocidal Property of Calabash
(Crescentia cujete) Fruit Meat Extract in Exterminating Dog Fleas
(Ctenocephalides)**

Drexler Abanilla & Jamela Sale

Abstract

INTRODUCTION

The researchers studied the parasitocidal property of calabash fruit meat extract in inhibiting dog fleas. The researchers used calabash fruit and tested its parasitocidal property to dog fleas. The researchers found out that the highest number of inhibited dog fleas was in sample 6 with 100 grams of pure calabash fruit meat extract. Based on the results, the shortest time was sample 6 (100 grams) that has the fastest effectivity. The researchers utilized the experimental method of research to determine the extent to which variables are related to each in a definite sample.

METHODS

The plants used by the researchers in making the product were fresh. After collecting the fruit, the researchers rinsed the plant in running water. The picked fresh Calabash fruit was cut into halves to collect a sufficient amount of fruit meat for testing. The meat was then boiled and collected the extract of it by straining to separate the extract from the fruit meat and was put in a clear empty plastic bottle. The study was conducted in Dacanlao Gregorio Agoncillo National High School's laboratory.

RESULTS

The first three samples have the same result. Only one flea was inhibited and four fleas were left after applying the extract. Samples 4 and 5, meanwhile, have inhibited two fleas. The highest number of inhibited dog fleas is in sample 6, with 100 grams of pure calabash fruit meat extract. The product took effect after 5 minutes and 3 seconds of waiting. Sample 2 and 3 are merely the same, with the time of 4:59 and 4:54. It took 3 minutes and 4 seconds before the fourth sample took effect. The fifth sample was effective after 2 minutes and 32 seconds of waiting. Finally, with the shortest time of duration among the 6 samples, sample 6 (100 grams) had the fastest effectivity.

DISCUSSIONS

There is a relationship between the amounts of each sample set-up to its effectiveness in relation to time in inhibiting dog fleas. The study indicated that the greater amount of calabash fruit meat extract, the more effective it is in inhibiting dog fleas in a short of time.

KEYWORDS: Calabash, in-vitro determination, Dog flea, test tub

SUBMISSION ID: R04A-BATANP-1460

"Carica Eco-Paper bag" Utilization of Papaya Leaves and Trunks as an Alternative Materials for Production of Paper Bags

Verna Ambat, Department of Education

Abstract

INTRODUCTION

This study was conducted to determine whether the Papaya (*Carica papaya*) leaves and trunks could be used as raw materials for papermaking and the possibility of utilizing it as an alternative raw material for commercial paper bags. Specifically, the study aimed to (a) determine the acceptability of producing paper bag out of papaya leaves and trunks; (b) determine the possibility of producing paper from papaya leaves and trunks as substitute for commercial paper bag; and (c) determine the best possible treatment in terms of texture, color/ appearance, strength and acceptability.

METHODS

The papermaking process was conducted in Silang West Elementary School from April to September 2016. There are three treatments used in the project. Each treatment produced three sheets of paper. The materials considered necessary were gathered and prepared. Papaya leaves and trunks were cut, soaked in water, boiled, crushed/pounded and made into a pulp. Scratched/used papers were cut, soaked in water, mashed and made into the pulp as well. The pulps of the papaya and used paper were measured then mixed thoroughly. The mixture was poured on a flat surface with an absorbent cloth. Another piece of absorbent cloth was used to press and pick up excess water. Then, the sheet was dried under the sun. Finally, a paper bag was made.

RESULTS

Comparison between the handmade paper bag and the commercial one was done to determine the strength, durability, and usefulness of the product. Results revealed that commercial paper bags and handmade paper bags were both useful and functional but the latter was found to be more practical, economical and environmentally friendly. Making paper bags out of used paper and papaya leaves and trunks were possible. "Carica Eco-Paper bag" is very useful for it did not only solve the problem of waste disposal but it can also minimize the massive cutting down of trees for papermaking.

DISCUSSIONS

A panel of twenty judges was selected from the teachers and parents for a sensory evaluation test. The physical characteristics of the paper made into paper bag produced from papaya leaves and trunk were rated. Results revealed that it can serve as an alternative to a tree's cellulose fibers in papermaking, making it a possible source material for making a paper bag.

Based on the results of the investigation, the researcher concluded that this study is very important and relevant. It has accomplished the purpose of making a natural, useful product that is comparable to commercial ones.

KEYWORDS: Papaya leaves, papermaking, paper bag, sensory evaluation, cellulose fibers

SUBMISSION ID: R04A-CAVITP-0788

“Finding Probability”: A Tool to Develop Mastery in Solving Mendelian Genetics Dihybrid Cross

Bernardo III Portillo, Teacher I

Abstract

INTRODUCTION

This study explored the use of strategic intervention material in Science 8 for the fourth quarter of the school year 2017-2018. The application of the material is important in achieving the needed competencies the students failed to achieve in typical classroom instruction. 20 of 68 Science 8 students were identified as least mastered in the topic of Mendelian Genetics Dihybrid cross during the formative assessment. Furthermore, these students experienced difficulties in Solving Mendelian Dihybrid Cross using Punnett squares. Interpretation of genotypic and phenotypic ratios was also considered hurdles in learning and understanding basic genetics. With the theme, "No child should be left behind," these 20 students were subjected as respondents.

METHODS

The study utilized the evaluative data collection method. A pre-test was conducted through worksheets. A given strategic intervention material was conducted to the Science 8 respondents in March 2018. Test results were evaluated and analyzed. When results were generated, an intervention program was introduced, after which a post-test was given to the identified learners. The researcher employed purposive sampling since only 20 students needing immediate attention were chosen. The scoring procedure was divided into four mastery levels based on the percentage indicated: 91%-100 - Highly Mastered, 81%-90% - Mastered, 71%-80% - Less Mastered, and 70%-below - Not Mastered.

RESULTS

From the 28.75% obtained with "Not Mastered" as rating during the pre-test, it implied that there is an increase of 44.5 % after the intervention was made. The mastery level of the participants classified as less mastered had a percentage of 73.25%.

DISCUSSIONS

The result of the study implies that the majority of the respondents manifested an increase of scores after the intervention was introduced. The positive result of the respondents suggested that the application of SIM appealed and was appreciated by both types of learners.

KEYWORDS: Mendelian Genetics, Strategic Intervention Material, Finding probability, Science 8

SUBMISSION ID: R013-SURSUR-0208

**"Fuel of the Future": Production of Ethanol from Mabolo by using
*Saccharomyces cerevisiae***

Verna Ambat, Department of Education

Abstract

INTRODUCTION

Increase in the need for petroleum products results in a remarkable rise in prices. Therefore, countries are required to discover alternative cheaper sources for the fulfillment of worldwide demand. The main objective of this study is to develop easier techniques by using cheaper sources for production so that the common people can also produce it by themselves. For this purpose, velvet apples or "mabolo" were taken as a substrate for ethanol production, adding the microorganism *Saccharomyces cerevisiae*.

METHODS

The study underwent various procedures such as fruit mash production, fermentation, distillation process, and physical property analysis which include boiling point and specific gravity. Twenty respondents were chosen randomly as samples for performing the intrinsic property analysis to evaluate and analyze the produced alcohol from mabolo fruit in terms of its flammability, solubility, and volatility. It was rated as very good, good, satisfactory, fair and poor through the Likert Scale test. After coming up with the results, it was tabulated and a mean, percentage and frequency counts were used to describe the result statistically.

RESULTS

The Gas Chromatography analysis done by the Department of Energy showed that the fermented extract produced 99.37% v/v Ethanol and 0.07% v/v Methanol. Intrinsic properties such as solubility, flammability and volatility were also determined through sensory evaluation test. The results indicated that the ethanol production rate through fermentation of "mabolo" fruit pulp yields was optimal at pH 5.5, with the temperature at 78°C, and specific gravity at 0.7.

DISCUSSIONS

Based on the results of the investigation, the researcher concluded that this study is very important and relevant. It has accomplished the purpose of making a natural, useful product that will likely ease the burden of the energy crisis. It is clean and good for the environment because it releases no toxic gases and not harmful to human health.

KEYWORDS: Gas Chromatography, fruit mash production, fermentation, distillation process, physical property intrinsic property

SUBMISSION ID: R04A-CAVITC-0052

"Insecticidal Activity of Essential Oil Extracts from Oregano (*Oreganum vulgare*), Eucalyptus (*Eucalyptus globulus*), and Basil (*Ocimum basilicum*) Against Rice Black Bug (*Scotinophara coarctata*) Hemipte

Charles Ian D. Buhay, Kyle Daniel L. De los Reyes, & Ruzel Luigi Alano,
Balayan National High School
(Adviser: Shiela Marie Bahia)

Abstract

INTRODUCTION

Rice infestation has always been an area of concern for rice farmers since various pests are consistently attacking their field, costing them a lot of money. Chemical pesticides have been their first resort at the expense of affecting the quality of their harvest and harming the natural predators of their target pest. Thus, current researches are gearing toward the production of natural pesticides that are environment-friendly and will not affect the natural balance of a rice field ecosystem. As such, this study aims to determine the insecticidal activity of Oregano, Eucalyptus, and Basil Essential oils against a common rice pest, *Scotinophara coarctata* (Rice Black Bug)

METHODS

Oregano, Eucalyptus, and Basil leaves were gathered, washed and prepared for essential oil extraction. Wet steam distillation was done to obtain the essential oils from the leaves of plant samples. Insecticidal Assay was performed in a laboratory set-up by exposing ten (10) insects to filter papers soaked with a constant amount of essential oils (5ml) placed inside a container's lid. The time of death upon exposure to EO of all the insects (min) was recorded in each of the set-ups.

RESULTS

Based on the data gathered, Eucalyptus had the highest percent yield (%v/m) of 5%. From the results of the insecticidal assay, Eucalyptus EO is the most effective for it showed the fastest and most toxic effect on *S. coarctata* as reflected by the shortest recorded average time of death upon exposure to EO of the Rice Black Bug (9.37 min). Moreover, based on the ANOVA, a p-value of 0.018465 is obtained thus the alternative hypothesis is accepted and that there is a significant difference in the insecticidal activity of the different essential oils.

DISCUSSIONS

Also, the researcher obtained significant values for the different time of death upon exposure to EO of rice black bug for each set-up. This implied that the Oregano, Eucalyptus and Basil essential oils can really be a potential source of effective natural insecticide since exposure to them leads to the death of rice black bugs. Eucalyptus EO is the most effective for it showed the fastest and most toxic effect on *S. coarctata* as reflected by the shortest recorded average time of death of the Rice Black Bug. All the tests were conducted in vitro. Further studies on the synergetic effects of the three essential oils can also be a future topic of interest. Lastly, the researchers suggested trying the product in an open field or in an actual rice field.

KEYWORDS: essential oil, rice black bug, pesticide

SUBMISSION ID: R04A-BATANP-0034

"Ramboard" Utilization of Rambutan Peelings as an Alternative Material for Production of Boards

Verna Ambat, Department of Education

Abstract

INTRODUCTION

This study was conducted to determine whether the Rambutan (*Nephelium lappaceum*) peelings could be used as raw materials for making a corkboard replacement. Corkboard is widely used in offices and school for different purposes. In offices, they are used to post or tack announcements. In some establishments, they are used to advertise products. Teachers also use the corkboard to display pupils' works and other relevant information and announcements for the learners. Due to its high cost, the researchers wished to find an alternative material to replace the corkboard.

METHODS

"Ramboard" is made from the cork-like peelings of rambutan produced by the researchers into a quality board. Three main steps in Ramboard preparation were: the boiling process for removing tannic acid and sap, increasing its elasticity and permitting it to be flattened; the forming process, adding a starch solution as a binder; and the drying process, exposing the board to sunlight. Rambutan peelings were gathered, washed and boiled until they softened. The samples were drained and ground to absorb the binding capacity of the starch solution. The starch solutions for each set-up were cooked and added to the ground rambutan peelings and mixed thoroughly, then placed into the molders and exposed under the heat of the sun to dry.

RESULTS

Three set-ups were made to find out which would be the best product. Respondents were selected for the Acceptability test and the results showed that set-up C with a mixture of 200 g. of rambutan peelings, 20 g of sawdust and 150 g. starch showed acceptability in all observable characteristics such as appearance, texture, cellular construction, and penetrability.

DISCUSSIONS

Based on the results of the investigation, the researcher concluded that the study was very important and relevant. It accomplished the purpose of making good use of waste materials into something useful and it also fostered the conservation of nature. It is very earth friendly. Doing the investigatory project developed the skills and creativity of science pupils and, at the same time, reduced the problem on waste disposal.

KEYWORDS: Corkboard, Penetrability, waste disposal, conservation

SUBMISSION ID: R04A-CAVITP-0787

A Comparative Analysis of Commercial Pain Reliever and Alternative Pain Reliever from Mint Leaves and Philippine Coconut Oil

April Chebeth Talabis, Kurt Russel Hernandez, & Lefain Stefy Marih Cruzat,
University of Batangas

Abstract

INTRODUCTION

The human body, once exposed to pain, becomes dependent on oral medications for relieving painful sensations; the higher the severity of pain, the higher the dosage it requires. However, such drug medications are taken orally, affecting the whole system giving either side or adverse effects. With this, herbal medicines and topical painkillers became apropos. This led the researchers to come up with an alternative pain reliever which may be beneficial to many. Combining two essential natural ingredients, the study presents an alternative pain reliever that will appease citizens from their palpable discomfort. This study also aims to promote both treatment and agricultural herbs in the country.

METHODS

The quasi-experimental design was applied to the study. Using purposive sampling, the researchers chose 30 (thirty) respondents, particularly in Batangas City. Parts of the methodological processes were planning, experimenting, product making and distributing questionnaires.

RESULTS

The study evidently showed different results, making it more favorable than the commercial one. in terms of effectiveness, the alternative pain reliever has the potential of giving satisfaction to the user. Moreover, the odor produced by the Alternative Pain Reliever does not leave a bad effect on the household. Furthermore, the alternative pain reliever is much cheaper than its commercial counterparts. The substitute is also eco-friendly. in line with this, the null hypothesis was rejected and the data showed that there is a significant difference between the alternative pain reliever and the commercial pain reliever.

DISCUSSIONS

The study manifested that there is a significant difference between the Alternative pain reliever and the Commercial one. It presented results that proved how it can be beneficial not only to the residents of Batangas City but also to the body of knowledge in the medical industry and society. Integrating people's health needs to all sectors, particularly in the health and agriculture sector, may meet the ultimate goal which is better health for all. Furthermore, the researchers are open for future development and improvement of the product to meet the gaps needed to be solved in the community.

KEYWORDS: Pain reliever, alternative, mint leaves and Philippine Coconut Oil

SUBMISSION ID: R04A-BATANC-0192

Acquisition, Transmission, and Multiplication of Rice Grassy Stunt Virus (RGSV) in Brown Plant Hopper Evaluated by RT-LAMP

Ivyann Romijn H. Vergara, San Pablo City Science High School
(Adviser: Franz Kevin Manalo)

Abstract

INTRODUCTION

For two million families, rice farming is the source for over half of its household income, making rice as one of the most extensively grown crops in the country. Unfortunately, several factors threaten the future of rice production, the leading cause of which is rice diseases. It is important to know the extent of damage brought by these diseases and to be keen on identifying the shifting disease problems associated with technological changes. This study focuses on early information on crop health and disease detection as these can facilitate the control of diseases. Through proper management strategies such as vector control through pesticide applications, fungicide applications, and disease-specific chemical applications, these can improve productivity.

METHODS

A protocol was followed in various processes such as preparation of plant material, acquisition, and inoculation (access periods are 0, 4, 24, 48, and 72 hrs) of the virus via the vector and RNA extraction on both plant and insect material. Reverse-transcriptase Loop-mediated Isothermal Amplification (RT-LAMP) was used for the diagnosis and confirmation of the RGSV. Prior to amplification, the quality and quantity of the extracted RNA were checked using gel electrophoresis and Reverse Transcriptase Polymerase Chain Reaction (RT-PCR).

RESULTS

Results show that 36.67 % of insects acquired RGSV and the brown plant hopper can obtain the virus in as early as 4 hours. Moreover, there is a direct relationship between the acquisition period and the concentration of the virus as well as the amplification time. For insect-plant transmission, 7.14% of the infected insects were able to transfer the virus to the plants. However, disease symptoms such as stunted growth and active tillering which gives it a "grassy" appearance first appeared on the 24 hours acquisition period. With this, it suggests that the successful transmission of the virus can be achieved in a day.

DISCUSSIONS

Further tests will be performed to evaluate the speed rate by which the insect can acquire the virus between 0 hours to 4 hours. This rate is alarming as the early disease detection relies primarily on scouting or visual inspection of disease symptoms in the field which is too late in the way that yield loss has already been incurred. Recently, RT-LAMP has been adapted, with a lateral-flow assay that is low-cost, simple, and rapid, having portable detection devices which offer potentials for on-site diagnosis by non-specialists.

KEYWORDS: rice disease, virus, rice, rice grassy stunt virus, brown plant hopper, RT-LAMP

SUBMISSION ID: R04A-SANPAB-0049

Allelopathic Effects of *Festuca arundinacea* Schreb. on the Germination of Selected Crops and Weed

Rian Leigh Buhay & Jonathan Cymon Angue

Abstract

INTRODUCTION

One of the problems of a farmer encounters in their farming is the presence of weeds. Almost all the nutrients and water are absorbed by the weeds. Because of this, the crops do not have the nutrients and the water they need. This research study investigated the allelopathic effects of tall fescue (*Festuca arundinacea* Scherb.) extract.

METHODS

The crude extract of *F. arundinacea* was collected. Three plants, pechay, mustasa and parag-is, with each set-up put with different concentrations of extracted Tall Fescue. They were observed for 20 days. The height of the plant was collected during observation.

RESULTS

The length of the stems was measured in millimeters (mm). For the pechay, mustasa, and parag-is, 10 of them were randomly selected and their heights were measured. In the pechay, the mean height of the seedlings without crude extract of the tall fescue was 53.0 mm, while the average height of seedlings on the soil with 50% crude extract of the tall fescue was 52.9 mm. The pechay tested with 100% concentrated crude extract of tall fescue, meanwhile, was 52.8 mm. In mustasa, the mean height of the seedlings without crude extract of tall fescue was 63.2 mm. When it is tested with 50% crude extract from the tall fescue, the average height of the seedlings was 63.0 mm. On the other hand, the mustasa tested in 100% concentrated crude extract of the tall fescue was 63.2 mm. In parag-is, the average height of seedlings without the crude extract of the tall fescue is 88.8 mm, but on 50% and 100% crude extract of tall fescue, both have no growth.

DISCUSSIONS

If this study is being accepted, it will be a big help for the farmers in growing their crops with no concerns about the weeds. It can also lessen their expenses in exterminating the weeds. The study shows that the allelopathic effects of the tall fescue leaf extract can exterminate the weeds without affecting the selected crops.

KEYWORDS: fescue extract weed extermination

SUBMISSION ID: R04A-CAVTP-1681

**Allelopathic Effects of Hagonoy (*Chromolaena Odorata L.*) Leaf Extract
and Leachate On Seed Germination and Early Growth of Selected Crops
and Weeds**

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Abstract

INTRODUCTION

Hagonoy or gonoi (*Chromolaena odorata*) is a perennial sprawling weed that grows very rapidly and is highly competitive. Under the very dense canopy of a *C. odorata* thicket, light is scarce and other fast-growing species cannot survive. Slow-growing, shade-tolerant species are regularly bent to the ground by the continuous pressure of the growth of new *C. odorata* twigs on the upper layer of the thicket. It has a very efficient root system for capturing nutrients of which allelopathic effects may also be involved. This allelopathic effect is responsible for the observed inhibitory effect on the growth of adjacent plants contributing to its rapid colonization of the infested area. This allelopathic effect may be useful as a biological weed suppression or as a source of a new selective weed control agent. Thus, the researchers venture to undertake this study to assess the inhibitory and herbicidal potential of hagonoy (*Chromolaena odorata* Linn.) leaf extract and leachate.

METHODS

Varying amounts of the *Chromolaena odorata* Linn leaf extract were tested for allelopathic effects in three (3) crops namely; mung bean (*Vigna radiata*), rice (*Oryza sativa*) and sesame (*Sesamum indicum*) and two (2) types of weeds: trilobed morning glory (*Ipomoea triloba*) and balatong aso (*Cassia occidentalis* Linn) while leaf leachate was tested for herbicidal potential in only two (2) types of weed: trilobed morning glory (*Ipomoea triloba*) and pansit- pansitan (*Pepperomia pellucida*).

RESULTS

Results reveal that there is no significant difference in the mean growth of mung bean but a significant difference in the mean growth of rice, sesame seeds, trilobed morning glory, and balatong aso was noted. Significant differences in the mean length of roots of *Ipomoea triloba* was noted, confirming the presence of growth inhibitors and indicating the potential use of *C. odorata* as a botanically-based herbicide.

DISCUSSIONS

Although no significant effect was established in terms of germination of crops and weeds and the growth of crops, the results of the study confirmed the presence of inhibitory activity on *Chromolaena odorata*. The inhibitor is present in the leaf and it is water-extractable. The extracted substance exhibit a growth regulatory property. As the amount of extract increases, the degree of inhibition also increases.

KEYWORDS: Allelopathic Effects, Hagonoy, *Chromolaena Odorata L.* Germination Early Growth

SUBMISSION ID: R04A-CAVITP-1353

Anaerobic Digestion of Cow Dung as an Alternative Biogas for Cooking in Barangay Dumantay, Batangas City

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Abstract

INTRODUCTION

The challenges in energy supply have been prevailing in the global community. This situation has become a problem for many countries across the world, and the Philippines is no exemption. Energy is very essential in meeting the basic needs of the people, but the rising price of the commercial fuel, mostly used by the Filipinos, remains unresolved. Given such an alarming dilemma, the researchers became aware of the difficulty for a simple family to afford the commercial fuel available in the market, especially now that prices of commodities tend to balloon each year. In this study, the researchers intended to create an elective wellspring of fuel that will solidly enhance the life of the occupants and help mitigate this growing problem.

METHODS

Using a quasi-experimental strategy for investigation, the researchers exploited the focus group by purposive sampling. They utilized polls where 20 residents living in Barangay Dumantay, Batangas City served as participants. A portion of the methodology that they used in the investigation were planning, experimentation and the making of the alternative fuel.

RESULTS

The anaerobic digestion of cow manure as the main ingredient for biogas production offers different properties: the cow manure's odor does not affect the biogas production and it can be repeated as long as there is cow manure. Furthermore, the residents agreed that cow manure is an effective source of fuel for cooking, and it does not leave a bad effect on the household. In addition, they strongly agree that the alternative source of fuel is more affordable than the commercial one. The null hypothesis is rejected that the anaerobic digestion of cow manure is not as effective as an alternative source of fuel for cooking. The main ingredient of the alternative source of fuel can be easily found in the surroundings, making it very feasible for a common family.

DISCUSSIONS

The results showed that the biogas production from the anaerobic digestion of cow manure is an effective alternative source of fuel for cooking. It can be beneficial not only for the residents but for the environment as well. It may be considered as a useful component in different aspects of the community's. Moreover, the Department of Agriculture may consider cow manure as a means of improving the lives of the residents as well as the cow owners. However, future researchers may work with a better product with ample and better materials and equipment.

KEYWORDS: Anaerobic Digestion, Cow Dung, Alternative Biogas, Batangas City

SUBMISSION ID: R04A-BATANC-0190

***Ananas comosus* (Pineapple) Peel Ethanolic Extract as Potential Treatment Against *Ascaridia galli* in Native Chicken**

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Abstract

INTRODUCTION

Nematodes are one of the major causes of the decreasing number of native chickens in the world. The most damaging type of nematodes commonly found in birds is the large roundworm or *Ascaridia galli*. It occurs worldwide, infecting not only chicken but also turkey and other domestic and wild birds (Jacob, 2015). This study was conducted to know if the pineapple peels' ethanolic extract has the potential to treat *Ascaridia galli* in native chicken.

METHODS

Twenty-five (25) native chickens gathered from Naic, Ternate, and Magallanes, Cavite, were acclimatized for seven days at the Department of Science and Technology (DOST), Taguig City. They were subdivided into five (5) groups with five (5) chickens per group (negative control, positive control, and treatment sample with doses of 250mg/kg/BW, 500mg/kg/BW, and 1000mg/kg/BW). Three kilograms of pineapple peels from 30 pineapples were extracted using 95% of ethyl alcohol. The extract treatment was given to the chickens based on their groups once a week for four weeks. The collected feces before and after the experimentation were counted using the McMaster egg counting technique.

RESULTS

The negative control at the baseline showed no parasites but at the endline, one native chicken has parasites. The positive control at the start of the experiment showed that four native chickens have parasites and zero parasites at the end. in the treatment sample with a dose of 250 mg/kg/BW at the baseline, there were two native chickens with parasites and four native chickens with parasites at the endline. in the treatment sample with a dose of 500 mg/kg/BW, it showed three native chickens infected before and only two native chickens have parasites after. in its post-test, however, one native chicken had an increasing amount of EPG (Eggs Per Gram). The treatment sample with a dose of 1000 mg/kg/BW had three native chickens with parasites at first. The two of them with over a thousand EPG drastically decreased after the treatment. Among the treatment groups with different doses, 1000 mg/kg/BW shows the highest potential for there is a drastic change of EPG before and after.

DISCUSSIONS

To support the outcome given by the treatment sample with a dose of 1000 mg/kg/BW, a similar study also conducted doses at different values and the best outcome was approximately at 1000 mg/kg/BW, making it the best amount among all the doses given (Cormanis, 2016). According to Wongrak (2015), the defect may involve the counting of eggs during the fecal examination.

KEYWORDS: anthelmintic, alternative, *Ananas comosus*, ethanolic extract, *Ascaridia galli*, roundworms

SUBMISSION ID: R04A-CAVITP-0335

**Anesthetic Potential of Desert Rose (*Adenium obesum*) Stems Extract
on Swiss Mice (*Mus musculus*)**

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Abstract

INTRODUCTION

Anesthesia is defined as a temporary loss of sensation induced for medical purposes. Pain, as a response to strong stimuli received by the body receptors during medical procedures, is basically the main sensation being addressed by anesthetics. This research wants to determine if pain, as an unwanted feeling that affects daily functions, could be addressed with plants with anesthetic potentials. Desert rose or Kalachuchi has a number of accounts proving its medicinal ability. Thus, this research is initiated to provide an alternative source for anesthetics.

METHODS

The research was scientific-experimental. It followed a complete randomized design having four experimental set-ups with different concentrations. Each set-up underwent three trials of treatment. The subjects of the study were stem extracts of the desert rose and Swiss mice as the test organism. Active components of the extract were determined. The subjects were acclimatized and fed with the usual diet. The mice were injected with the extract of different concentrations and the data on the onset and length of the effect of the anesthetic were collected. In order to determine the ability and the significant difference, appropriate statistical tools were used.

RESULTS

The ten percent concentration showed the shortest onset of effect and longest length of effect with 0 minutes and 1.95 minutes respectively. It was followed by seven percent and lastly five percent. The onset of effect of the desert rose stem extracts on Swiss mice obtained a p-value of 0.057 which is greater than the 0.05 level of significance. Thus, the null hypothesis is accepted with a verbal interpretation of not significant. For the length of the effect of the desert rose extracts on Swiss mice, it obtained a p-value of 0.000 lesser than the level of significance of 0.05. Thus, the null hypothesis is rejected with a verbal interpretation of significant.

DISCUSSIONS

The study focuses on the anesthetic potential of the desert rose stems extract on Swiss mice. It can be gleaned that the ten percent concentration is the most effective across all concentrations for having the shortest onset and longest length of effect. However, the extract of the stem didn't show a significant difference in terms of the onset of effect, implying that the percentage of the concentrations did not affect the time of onset of effect. Although, it did show a significant difference in terms of length of effect compared to the negative control. Therefore, the extract of the stem has anesthetic potential.

KEYWORDS: Pain, Anesthesia, Anesthetics, Onset of Effect, Length of Effect, Desert rose

SUBMISSION ID: R04A-RIZALP-0052

Anti Hyperuricemic Effects of *Vitex negundo* Linn. Methanolic Leaf Extract in a Mackerel Induced Albino Mice

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Abstract

INTRODUCTION

Most uric acid is dissolved in the blood, filtered through the kidneys, and expelled in the urine. The high level of uric acid in the blood can induce hyperuricemia. Uric acid is produced when the body breaks down foods that contain organic compounds called purines. These purines are caused by foods such as liver, mackerel, seafood's, red meat, beer, liquor, and sugar-sweetened with high fructose corn syrup. High level of uric acid can cause gout, arthritis or the swelling of joints.

METHODS

The mice were acclimatized for two weeks. After the acclimatization, the mice were given mackerel for one week and treated based on their group (negative control, positive control, continuous with allopurinol, and continuous with lagundi extract) for one week. Uric acid levels were determined and tested using the GCU meter. Data were analyzed using the analysis of variance to see whether there were any significant differences among the treatment sub-groups. Significant differences ($p < 0.05$) between the control sub-group and treatment sub-groups in male mice were analyzed using T-test and One Way ANOVA.

RESULTS

These results showed that the mice with a continuous allopurinol treatment have the highest decrease in uric acid with 30.540% decrease. Then, continuous treatment with extracts given at 200 mg/kg of Lagundi extract followed with 22.973% decrease. All treatment sub-groups were significantly different from the negative control. The uric acid level reduction in discontinuous control sub-group (7.18) was lower than the continuous control sub-group (7.64), indicating that avoiding high purine food is important in controlling the uric acid level in the blood.

DISCUSSIONS

Lagundi leaves have the ability to decrease uric acid but they have lower efficacy compare to allopurinol. This is possible because allopurinol is a synthetic drug widely used for hyperuricemia, while *Vitex negundo* Linn. is well-known as a synthetic and traditional medicine used for the treatment of coughs, asthma symptoms, and other respiratory problems. Also, lagundi leaves and roots have expectorant and diuretic properties and are used for relieving pain. The results showed that lagundi leaves can be used as an alternative drug for uric acid because of its bioactive compounds. However, the isolation of bioactive compounds is important in determining the chemical analysis and more information should be provided to increase the value of lagundi leaves in society.

KEYWORDS: Anti Hyperuricemic Effects of *Vitex negundo* (Lagundi)

SUBMISSION ID: R04A-CAVITP-0307

**Anti-fungal Activity of *Sesbania grandiflora* (Katuray) Leaves Extract
Against *Candida guilliermondii***

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Abstract

INTRODUCTION

Sesbania grandiflora, commonly known as Katuray, is native to Australia and different countries in Asia like the Philippines. The plants' leaves and bark showed anti-bacterial and anti-fungal properties. The phytochemicals found in Katuray are Alkaloids, Flavonoids, Glycosides, Saponins, Tannins, Anthraquinone, Steroid, Phlobatannins, Terpenoids, Carbohydrate, and Protein. *Candida guilliermondii* is a fungus that is a part of the human microbiota which can be found on the skin. It accounts for 1-3% of the candidemia cases. The main objective of this study is to test the antifungal activity of the different concentrations (100%,75%,50%,25%) of *Sesbania grandiflora* leaves extract against the fungus *Candida guilliermondii*.

METHODS

The Katuray leaves were air dried for 5 days. Then they underwent multi vaporization process in order to produce an extract. The Disk Diffusion Assay was used to test the antifungal activity of Katuray leaves extract against *Candida guilliermondii*. There is only 1 trial with 3 replicates done in the experimentation. After 7 days, the zone of inhibition was measured in millimeters (mm) using a caliper. One Way ANOVA is the statistical test used to analyze the data gathered.

RESULTS

After 1 week of incubation, the 50% concentration did not inhibit the fungus. The 75% concentration showed inhibition with a diameter of 8 mm on replicate 1 yet did not show inhibition on the other two replicates. The 25% concentration did not show inhibition on the first two replicates yet on replicate 3, the zone of inhibition was similar to the first replicate of the 75% concentration. The 100% concentration showed a trace of inhibition compared to the other concentrations. The gathered data was analyzed using the One -Way ANOVA statistical test. The One -Way ANOVA showed a p-value of 0.595719. The null hypothesis is accepted.

DISCUSSIONS

The 25% and 75% concentration showed the same zone of inhibition of 8 mm on the fungus. The 50% concentration did not inhibit the fungus *Candida guilliermondii*. The 100% concentration only showed traces of inhibition. Katuray leaves contain phenolic compounds and flavonoids which showed antifungal, antioxidant and antibacterial properties. The null hypothesis is accepted. The study's results will benefit those suffering from Candidiasis. This can serve as a basis of information for other studies related to *Candida guilliermondii*. To improve the study, it is recommended that future researchers try using other solvents for the extract and try other organisms as the subject.

KEYWORDS: *Sesbania grandiflora*, *Candida guilliermondii*, Candidemia, Disk Diffusion Assay, Anti-fungal, Phytochemicals,

SUBMISSION ID: R04A-CAVITP-0989

Anti-fungal Efficacy of *Carica papaya* (Papaya) Leaves Crude Ethanolic Extract Against *Magnaporthe oryzae*, the Causal Pathogen of Rice Blast

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Abstract

INTRODUCTION

Half of the world's human population relies on rice as a staple food. Asia, yielding more than 650 million tons of rice, accounts for 90% of the total rice produced. Biotic and abiotic stresses, however, instigate huge losses globally. Rice blast, caused by the fungus *Magnaporthe oryzae*, is responsible for roughly 30% of yield loss worldwide. The use of chemical fungicides has been widely utilized; however, these chemicals adversely affect human and environmental health. Thus, there is a need for an effective yet safe treatment using organic extracts as a promising alternative management control against rice blast.

METHODS

Carica papaya leaves extract (CPLE) was evaluated against *Magnaporthe oryzae* on both in vitro and in vivo assays. Spore germination and mycelial growth tests were conducted to assess the in vitro antifungal activity in concentrations of 1.5625, 3.125, 6.25, 12.5, 25, 50, and 100 $\mu\text{g/mL}$ of CPLE. in vivo, eradication activities of the varying concentrations of CPLE were evaluated against *M. oryzae* on 14-day old rice plants by determining the percentage diseased-leaf area (%DLA).

RESULTS

Significant antifungal activity was observed starting from 1.5625 $\mu\text{g/mL}$ with percentage germination mean of 47.65%. It was also assessed that CPLE was most active at 100 $\mu\text{g/mL}$ and least at 0 $\mu\text{g/mL}$, with percentage germination mean of 6.15% and 68%, respectively. However, despite its inhibitory effects in spore germination, suppression in mycelia growth was not observed in any of the CPLE concentrations tested. Then again, in vivo assay results showed the potent fungicidal activity of CPLE as it inhibited the growth and development of rice blast. Compared to negative control with 59.04% DLA, the significant drop rate of infection was observed starting at 1.5625 $\mu\text{g/mL}$ with 37.3% DLA. Minimum infection was 1.65% at 100 $\mu\text{g/mL}$ and the maximum was 59.04% at 0 $\mu\text{g/mL}$. It was determined that the suppressive effect of CPLE increased in parallel with its concentration.

DISCUSSIONS

Pathogenicity of most fungi starts from the germination of its spores. in line with the study conducted and to other relevant studies, CPLE could obstruct the process by which *M. oryzae* starts its pathogenicity in host plants, which was then confirmed further in the in vivo assay. The specific mode of action of CPLE against *M. oryzae*, however, was not fully understood. To fully intuit this, relevant studies using other high-end tests must be conducted.

KEYWORDS: Rice blast disease, *Magnaporthe oryzae*, fungicidal activity, *Carica papaya*

SUBMISSION ID: R04A-SANPAB-0051

Anti-neoplastic Property of *Eleusine indica* (Paragis) Ethanolic Extract against Human Lung Carcinoma Cells (A549) through MTT Assay

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National Science High School

Abstract

INTRODUCTION

Lung cancer claims 1.59 million lives around the world annually (World Health Organization, 2013). In the Philippines, it is the top cause of cancer-related deaths among men and the third cause of mortality among women (Bueza, 2016). Due to this problem, herbs, plants, and botanicals are being utilized to provide cures for this disease (Mesothelioma.net, 2017). Goosegrass or wire grass (*Eleusine indica*) is a local medicinal plant that exhibits antioxidant, antimicrobial, and anticancer properties (Ibrahim, 2015). According to studies, the methanol extract contained flavonoids, tannins, alkaloids, and other chemical compounds which contributed to the medicinal value of the plant (Zhao Ji, 2013).

METHODS

The Paragis plant was gathered, air-dried, soaked in ethanol and was extracted through rotary evaporation and freeze-drying method. The chemicals and cell lines were gathered and activated in a modified medium. The ethanolic extract was tested against human lung carcinoma cells (A549) through MTT Assay. Linear regression and One-way ANOVA were used to interpret the results gathered from the MTT Assay.

RESULTS

Results on the anti-neoplasticity of *E. indica* ethanolic extract showed that it does not have a cytotoxic effect against cell line A549 due to the high IC₅₀ values (greater than 100 µg/mL) of the extract. The three trials were based on the standard protocol of IC₅₀ analysis (Jokhadze et al, 2007); therefore, the null hypothesis is accepted. Based on the results of the statistical analysis using One-way ANOVA, there is a significant difference between the mean percent inhibitions of the extract, as evidenced by a p-value of 0.00048 ($p < 0.05$), rejecting the null hypothesis. However, since a posthoc test was not employed, it is impossible to tell which concentration is different from the other.

DISCUSSIONS

The results showed that Paragis demonstrated the absence of inactivity against cell line A549 since the resulting IC₅₀ values from the MTT assay were greater than 30 µg/mL. Compared to the results of the study conducted by Zubairi et al. (2009) wherein the ethanolic extract of *E. indica* was tested against human breast cancer cells and the results showed low IC₅₀ values, the three trials conducted by the researchers using *E. indica* on human lung cancer cells showed that the plant is not cytotoxic to cell line A549. This suggests that the said plant has cytotoxic property against breast cancer cells but not against lung cancer cells.

KEYWORDS: *E. indica*, anti-neoplasticity, cytotoxicity, MTT Assay, IC₅₀ value

SUBMISSION ID: R04A-CAVITP-0294

Antiparasitic Activity of Male fern (*Dryopteris filix-mas*) and Tawa - tawa (*Euphorbia hirta*) Against Roundworms(*Ascaris lumbricoides*)

Molina, Zhane, Knicole Bongat, & Christine Joie, Pico, Sarah Normeleen
(Adviser: Jellina Rosga)

Abstract

INTRODUCTION

Parasitic infection is a major problem in tropical regions including the Philippines. One example of a parasite that grows in animals like pigs is the *Ascaris lumbricoides*. Herbal medicines are commonly used to treat different infections. With this, the researchers sought to create an antiparasitic agent using the leaf extracts of *Dryopteris filix-mas* and *Euphorbia hirta*.

METHODS

Leaves of tawa-tawa and male fern plants were sun-dried and pulverized for one week. To obtain the extracts, ethanolic extractions were done using rotary evaporator. 145 grams of *Dryopteris filix-mas* was percolated in 580 mL ethyl acetate while 145 grams of *Euphorbia hirta* underwent the same process in 435 mL ethyl acetate. The effectiveness of the plant extracts was tested by determining the death time of the roundworms soaked in 100% and 50% of varying concentrations of ethanolic extracts from dried *D. filix-mas* and *E. hirta* leaves. Each setup was observed every three minutes to determine if the roundworms were still alive. Three trials were done in each setup with the varying concentrations of the ethanolic extracts from dried *D. filix-mas* and *E. hirta* leaves.

RESULTS

After conducting the test, results showed that the 100% ethanolic extract from dried *D. filix-mas* leaves was the most effective. The 50% ethanolic extract was able to kill the *A. lumbricoides* but it took a long time before it was killed. For the dried *E. hirta* leaves, the 100% of its ethanolic extract is the most effective. The 50% ethanolic extract also consumed a long time for the *A. lumbricoides* to be killed. This showed that the 100% ethanolic extract from both plants are the most effective of the two concentrations.

DISCUSSIONS

Overall, this research study was able to prove the antiparasitic activity of these plants by determining the effectiveness of the ethanolic extract for each concentration. The most effective concentration is the 100% ethanolic extracts from *D. filix-mas* and *E. hirta* leaves. In ancient Greek civilization, this plant has been always recommended by different physicians in treating intestinal worms.

KEYWORDS: *Ascaris lumbricoides*, *Dryopteris filix-mas*, *Euphorbia hirta*., Ethanolic Extractions, Antiparasitic

SUBMISSION ID: R04A-CAVITC-0030

**Anti-proliferative Property of *Talinum triangulare* (Talilong) Plant
Extract on Human Lung (A549) Carcinoma**

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National Science High School

Abstract

INTRODUCTION

Cancer is a class of diseases characterized by abnormal cell growth that affects healthy cells. It is among the leading causes of morbidity and mortality worldwide and remains a national health priority in the Philippines, occupying the third spot in the leading causes of death in the country after cardiovascular diseases (Philippine Health Statistics, 2009). *Talinum triangulare* is a small succulent plant that grows wild in many tropical countries. A study conducted by Wang et al. (2014) showed that *T. triangulare* exhibited antitumor properties on liver cancer cells. This research study aimed to test and compare the anti-proliferative property of different concentrations (0.78125 $\mu\text{g/mL}$; 1.5626 $\mu\text{g/mL}$; 3.125 $\mu\text{g/mL}$; 6.25 $\mu\text{g/mL}$; 12.5 $\mu\text{g/mL}$; 25 $\mu\text{g/mL}$; 50 $\mu\text{g/mL}$; 100 $\mu\text{g/mL}$) of *T. triangulare* plant extract on cancer cell line A549 (human lung carcinoma) by subjecting it to the MTT Assay; and comparing its half maximal inhibitory concentration (IC₅₀) values to the IC₅₀ values of the positive control (Doxorubicin) and the negative control (DMSO).

METHODS

Extraction was done by air-drying *T. triangulare* leaves, then soaking them in ethanol. This was followed by filtration, then rotary evaporation. This was followed by the MTT Assay. This cytotoxicity assay involved Seeding, Treatment, and Termination. Finally, all materials and equipment were disposed of accordingly. One-way ANOVA was done to statistically analyze the data obtained.

RESULTS

Data collected from the absorbance readings done after the MTT Assay showed the IC₅₀ values of the plant extract and the positive and negative control. For all trials, no linear interpolation was observed from the negative control while low IC₅₀ values were observed from the positive control. The IC₅₀ values obtained from different concentrations of the *T. triangulare* plant extract were greater than 100 $\mu\text{g/mL}$.

DISCUSSIONS

Results show that the plant extract obtained from *T. triangulare* was not effective in inhibiting the growth of A549 cells. The One-way ANOVA showed that there is no statistically significant difference among the different concentrations of the *T. triangulare* plant extract as well as between the experimental set-up and the control groups. This means that the null hypothesis is not rejected and the concentration used in each set-up does not have an effect on the proliferation of A549 cells.

KEYWORDS: Anti-proliferative property, *Talinum triangulare*, A549 carcinoma, MTT Assay, IC₅₀ value

SUBMISSION ID: R04A-CAVITP-0183

Assessment of *Annona muricata* (Guyabano) Leaves Extract as an Organic Mosquito Larvicide

Pauline Elirose Pabiton & Ralph Adrian Pamienta

Abstract

INTRODUCTION

The research project aims to increase the mortality percentage of the mosquito larvae. Similar to most viral illnesses, mosquito-related diseases do not have specific cures but they could be prevented by killing the source of the disease itself. In the Philippines, there is a need for alternative ways to control the threat of mosquitoes.

METHODS

The study made use of *Annona muricata* (Guyabano) extracts. Based on its phytochemical analysis, its phytoconstituents are almost the same with the variables tested in many previous studies regarding larvicides. The crude extracts were applied in concentrations of 125, 250, 500, 1000 ppm. Each set-up contained 20 *Aedes aegypti* larvae in a plastic cup with the appropriate solution concentrations. Three replicates were used in each set-up. Larval mortality was recorded every 24 hours after the application of the extract. One-Way ANOVA was used in finding the significant differences in each concentration in suppressing the *Aedes aegypti* mosquito.

RESULTS

This study aimed to reduce the population of *Aedes aegypti* through larvicide and, at the same time, create a simple product that will cater to the process. The crude extract of Guyabano has been tested against *Aedes aegypti* first and second instars larvae. The larvicidal activity of Guyabano was observed at concentrations ranging from 125, 250, 500 and 1000 parts per million (ppm) against the *Aedes aegypti* larvae. The result of this research showed that all the mosquitoes in each concentration were all dead after 48 hours.

DISCUSSIONS

The *Annona muricata* (Guyabano) showed promising larvicidal activity against the *Aedes aegypti* mosquito larvae. It can be further developed as a potential product against the *Aedes aegypti* larvae. According to the phytochemical analysis of Guyabano, it contains carbohydrates, proteins, phenols, tannins, flavonoids, saponins, and glycosides. These essential phytochemical compounds are found in plants with larvicidal activities. Through this study, with the leaves larvicidal extract against *Aedes aegypti*, the community will discover various ways of benefitting from making an environmentally safe and cheap larvicide. Through the ability of Guyabano larvicidal extracts in preventing the *Aedes aegypti* larvae from developing into the adult stage, it will help reduce the number of dengue fever cases in the Philippines as the prevalence of this disease continues to trouble the country through time.

KEYWORDS: mosquito-borne diseases, species, mortality, phytoconstituents, mosquito

SUBMISSION ID: R04A-CAVITP-0451

Assessment of Insect Diversity in a Pineapple (*Ananas Comosus*, Merrill, 1917) Plantation At Purok 5, Taisan, Basud, Camarines Norte

Ray Duovani Regondola, Camarines Norte National HS

Abstract

INTRODUCTION

Pineapples are one of the most important fruit crops in Camarines Norte. The growth and development of the said cash crop, however, are currently hampered by infestations of various insect pests. Farmers are having a difficult time killing these pests due to inaccurate identification. Many researchers have stated that such situations could affect pest and beneficial insect diversity, leading to severe pineapple losses in the long run. Hence, this led to the assessment of insect diversity in a Formosa pineapple plantation at Purok 5, Taisan, Basud, Camarines Norte. This research specifically focused on the identification and classification of insect families, determining their overall dominance and diversity, and classifying whether they are beneficial insects or insect pests in the study site.

METHODS. Two types of insect traps were used in the study: the pitfall traps for ground-dwelling insects and the Malaise traps for flying insects. 56 pitfall and 13 Malaise traps were randomly placed in the 3,445 square meters of the plantation.

RESULTS

Results showed that in the collection of 312 insects, there is a total of 13 insect families and six insect orders on the study site. The most dominant (66%) is family Formicidae (Ants). In addition, there were 215 (69%) beneficial insects collected, while there were 97 (21%) insect pests.

DISCUSSIONS

Beneficial insects are more dominant than insect pests within the area. There is a slightly high diversity (Simpson's Diversity Index (0.52) > Simpson's Dominance Index (0.48)) of insects, which would mean that there are fewer pest problems to be dealt with by the owners in the plantation. Owners should improvise their integrated pest management (IPM) strategies to control the populations of the identified insect pest families in the area. At the same time, farmers, along with the Department of Agriculture (DA) researchers, should create farming strategies that would minimize harm to the beneficial insect family populations, using them to increase the yield of pineapples within Camarines Norte.

KEYWORDS: Pineapple, Insects, Beneficial, Pests, Dominance, and Diversity

SUBMISSION ID: R005-CAMNOR-0018

Assessment of Microbial Load of Street Foods and Vending Practice and Food Safety Knowledge of Street Food Vendors in the 6th District of Cavite

Jeneth Salvador, Department of Education - Cavite

Abstract

INTRODUCTION

Street foods are ready-to-eat foods and beverages sold on the streets. Studies revealed that although street foods are appetizing, they pose health risks because they are prepared below food safety standards. Contamination with pathogenic organisms may occur during preparation and serving to customers. This study aims to assess the microbial load of street foods and determine the hygienic practices as well as the food safety knowledge of street food vendors in the 6th district of Cavite.

METHODS

A total of 100 street food vendors from four municipalities in the 6th district of Cavite was observed and interviewed. The participants were asked to answer the modified questionnaire about their knowledge on vending, hygienic practices and food safety. Samples of street foods were collected and cultured on Plate Count Agar (PCA) and Eosin Methylene Blue Agar (EMBA) to determine the microbial load.

RESULTS

The total microbial count was greater than the maximum limit (10^7 cfu/g) with 3.67×10^{12} cfu/g as the highest (kwek-kwek) and 4.750×10^6 cfu/g as the lowest (rice meal). Growth on EMBA was negative from with presumptive *E. coli*. but positive with presumptive *Enterobacter*. The hygienic practices, as well as food preparation and vending practices of the vendors, had the same general mean which was 3.21 and described as moderately practiced. The level of food safety knowledge has a mean of 3.38, described as average, and vendors were moderately concerned (3.46) with food safety. Age is significantly related to food safety knowledge and attitude. Hygiene practices, food preparation, and vending practices were not significantly correlated with food safety knowledge. Meanwhile, the attitude was highly and significantly correlated with food safety knowledge. However, there was no significant relationship between food safety knowledge and hygiene and sanitation practices.

DISCUSSIONS

High microbial count and presence of presumptive *Enterobacter* denote that these street foods are in poor microbiological quality and they pose a potential health hazard to consumers. This may be due to the combination of improper handling of foods and poor personal hygiene. As the vendor gets older, their level of awareness of food safety becomes higher. Food safety knowledge of vendors does not necessarily affect their hygienic and vending practices. Vendors had the same level of practice on hygiene and vending regardless of their level of knowledge on food safety.

KEYWORDS: food safety knowledge, microbial load, hygienic practices

SUBMISSION ID: R04A-CAVITP-0220

Assessment of Natural Beds and Potential Areas of *Saccostrea cucullata* in three Different Municipalities - Mercedes, Jiabong and Catbalogan

Ma. Audrey Joyce Rios, Teacher, Department of Education

Abstract

INTRODUCTION

The study assessed the natural beds and identified the potential areas for the *Saccostrea cucullata* in the three municipalities of Samar- Motiong, Jiabong, and Catbalogan. The study is conducted to help the collectors identify the potential areas of the small rock oysters in the intertidal zone. In turn, rock mounds can be constructed for the improvement of the culturing of the small rock oysters or "sisi" to provide the collectors of small rock oysters with a sustainable livelihood.

METHODS

This study was conducted in order to assess the natural beds and potential areas for small rock oyster *Saccostrea cucullata* production. The assessment of the study site was conducted in the intertidal zone through an ocular survey or by walking along the entire shoreline, describing the biophysical features and recording habitat types. The essential habitat types in the shoreline were recorded which consisted of soft or hard rock, sand, and clay in mangrove areas which can be classified as soft to very soft clay, and silt or mud as found along mangroves and other tidal areas (FAO, 2011). The study was done quantitatively in generating and presenting data through observation and the collection of data on the biological and ecological aspects of the study. This will expand employment on both among marine culture fishermen and oyster gatherers.

RESULTS

Among the three study sites, the potential area of *Saccostrea cucullata* is in Study Site 2 (Jiabong, Samar). Jiabong has the best settlement area for it has mangrove species along its intertidal zone. In comparing the living and dead small rock oysters, the total number of dead species in Motiong and Jiabong is greater than the living one. It is because the 32 species are overexploited by the collectors in sustaining their livelihood. On the other hand, Mercedes has more living species than the dead because the community settlers live a few kilometers away from the "panitian".

DISCUSSIONS

Based on the findings of the study, the presence of Seaweed *Boodlea* sp., and small rock oyster *Saccostrea cucullata* in the three sites is an indication that they can adapt to the three substrates. In the comparison of the living and dead small rock oysters, the total number of dead species in Motiong and Jiabong is greater than the living one. It is because the species are exploited by the collectors in sustaining their livelihood. On the other hand, Mercedes has more living species than the dead because the community settlers live a few kilometers away from the "panitian".

KEYWORDS: assessment, natural beds, potential areas, *Saccostrea cucullata*

SUBMISSION ID: R04A-BATANC-0422

Awareness and Attitudes of High School Students on Climate Change

Leilanie Tamayo, Punta Integrated School

Abstract

INTRODUCTION

This research is significant to educators since it will yield a baseline data on the awareness and attitude of high school students on climate change. These data will be a basis for different inputs for the potential enhancement of the curriculum in science, increasing the level of awareness and attitude of the students through internet and information dissemination from the school authorities.

METHODS

The method is quantitative research and is of a descriptive type. According to Adanza, Bermundo, and Rasonabe (2009), it is designed to gather information about the present conditions, status or trend, and to deal with what is prevailing. This research involved High School students from the Division of Calamba City, Cluster 1 public secondary school. The minimum sample size of 2,398 was taken based on the Cochran's formula to estimate the proportion of a dichotomous-response. Non-parametric Somers' delta (or Somers'd, for short), is a non- parametric measure of the strength and direction of association that exists between an ordinal dependent variable and an ordinal independent variable.

RESULTS

in general, the students showed a dismal level of climate change awareness which might have resulted in the poor level of attitude/ behavior towards climate change. Satisfactory level of technical knowledge in climate change significantly predicted the improvement in attitude and behavior - thus, the null hypothesis, "there is no significant association between the students' level of climate change awareness and attitude towards climate change" was rejected. Thus, it is crucial that students should achieve satisfactory knowledge level on climate change in order to improve his/her attitude and behavior towards climate change.

DISCUSSIONS

The students showed a dismal level of climate change awareness which might have resulted in the poor level of attitude/behavior towards climate change. Environmental education, proactive campaigns, and relevant programs should be organized and the strict implementation of the local ordinances should be given priority to promoting awareness and practice in the students on understanding the causes and effects of climate change.

KEYWORDS: awareness, climate change, attitude

SUBMISSION ID: R04A-CALAMB-0182

**Bacterial Analysis in Marine Recreational Coastal of Balayan Baywalk:
Input for a Proposed Human Health Education and Awareness Plan**

Eron Pangilinan, Melanie Alegre, & Rachel Bacit

Abstract

INTRODUCTION

Marine recreational waters are top destinations most likely preferred during the summer season. It provides relaxation and comfort in easing the warmth of the surroundings. However, it has been reported that recreational water poses risks due to water contamination. The study aimed to identify the microbial pathogens in the Marine Recreational Coast at Balayan Baywalk, tracing possible sources of microbial contamination, and determining potential health risk among tourists and locals living near the coast as input for a proposed Health Education and Awareness Plan.

METHODS

This study is qualitative-experimental in design. Qualitative, as the researchers solicited data through an interview in a focused group discussion and experimental, as the researchers assessed the water samples with the aid of a water laboratory testing center. The researchers collected the water sample in the upstream, middle stream and downstream level while the MCWB piloted the laboratory procedures employing gram stain technique and bacteria culture and sensitivity technique. The researchers also did a focused group discussion between two groups of participants: a.) people living near the coast to solicit data on the possible sources of microbial, and b.) experts to identify health risk brought by identified microbes.

RESULTS

The findings of the MCWB laboratory department using gram stain technique revealed no bacteria in all layers of water on the coast. While, using the bacteria culture and sensitivity technique, findings showed the presence of Fecal coliform (*E. coli*), *Shigella*, *Salmonella*, and *Enterobacter* from the samples. The researchers identified the sources of water contaminations such as houses near the coastal without a proper garbage disposal and bowel venue, and tourist wastes and domestic wastewater from the Balayan proper. The researchers consulted the experts about the potential health risk brought by identified bacterial pathogens. The diseases that may be acquired are dysentery, acute gastroenteritis, high fever and abdominal cramps, mucoid diarrhea, typhoid fever and salmonellosis, bacteremia, septic arthritis, and ophthalmic infections.

DISCUSSIONS

The findings of this study suggested the need for rapid response from the Local Government Unit of Balayan, as well as from the tourists and locals. It is but proper for our authorities to prevent tourists and locals from being infected with diseases brought by contaminated marine recreational water and resources.

KEYWORDS: Analysis, Bacteria, Bacteria Sensitivity Technique, Balayan, Baywalk, Coastal, Gram Stain,

SUBMISSION ID: R04A-BATANP-1019

Bacteriostatic Effect of Piper Betle (Ikmo) and *Terminalia Catappa* (Talisay) Against *Pectobacterium Carotovorum*

Carl Jester Lague, Shaina Mae Carganilla, & Kristine Serrana

Abstract

INTRODUCTION

Pectobacterium carotovorum is a gram-negative pathogen that causes bacterial soft rot in plants. The use of chemicals in controlling these bacteria has been tried, but only with limited success. Biological control is also used but is not considered an alternative for only a few researches have been conducted. Prevention of the spread of this disease is the most efficient way of defeating the said pathogen. Piper betle and *Terminalia catappa* plants are used in this study as they contain phytochemicals that support the antibacterial activity, making them potential agents against *Pectobacterium carotovorum*.

METHODS

Leaves of *P. betle* and *T. catappa* were gathered and prepared for extraction. The plant materials were extracted in soxhlet apparatus and then they were concentrated using rotary evaporator, with different concentrations at 25%, 50%, and 75%. A carrot infected with *Pectobacterium carotovorum* was prepared and sliced into 1 cm cubes. The cubes are coated with the extracts of *P. betle* and *T. catappa*, in addition to positive and negative controls. It was left for another 24 hours at room temperature and then it was observed for the extract's bacteriostatic effect thereafter.

RESULTS

The results of the testing procedure indicate the proliferation of *Pectobacterium carotovorum* in the carrot disk in the presence of the plant extract and the positive and negative control. Results of the carrot disk method revealed that among *P. betle* plant extracts, the 25% ethanolic extract is the most effective in inhibiting the growth of *Pectobacterium carotovorum*, followed by 50% and 75% of *P. betle* ethanolic extract. Among the *T. catappa* extracts, it is found out that 50% ethanolic extract is the most effective. It is followed by 75% and 25% ethanolic extract. This showed that different concentrations of the plant extracts have different degrees of efficacy against *Pectobacterium carotovorum*. It is also noticeable that the effectivity of 25% *P. betle* extract is comparable to the positive control, cefotaxime.

DISCUSSIONS

The researchers concluded that the extracts of *P. betle* and *T. catappa* can be used as an antibacterial agent against *Pectobacterium carotovorum* because of its bacteriostatic effect. The researchers suggested that the optimal growth environment for the bacteria should be adapted in culturing and testing procedures to get more precise results. It is also proposed that other methods be used in testing the bacteriostatic effect of the extracts.

KEYWORDS: Piper betle, *Terminalia catappa*, *Pectobacterium carotovorum*, Bacteriostatic Effect, Cefotaxime

SUBMISSION ID: R04A-CAVITP-1412

Bamboo Shoots (*Bambusa merrilliana*) Infusion and Cassava (*Manihot esculenta*) Extract as Rodenticide

Marvelino A. Velarde Jr., Pedro Guevara Memorial National High School

Abstract

INTRODUCTION

One of the main problems of today life is pests. in many countries, including the Philippines, pests have a huge population and have been a problem of the people in a particular place. Rats and mice compete with humans for food. This loss to rodents causes economic loss everywhere. Rodents are also hosts for human diseases. According to the US Center for Disease Control and Prevention (CDC, 2017), rats and mice spread over 35 diseases worldwide. in connection with this, the researcher thought of conducting a study on how chemicals in plants can help in reducing the number of mice and rats in the community. It has been known that bamboo shoots and cassava root crops contain cyanide, especially cyanogenic glycosides. This substance can be tapped as a source of rodenticide.

METHODS

The experimental method of research was applied in the collection of data needed in the study. The data gathered were treated using appropriate statistical tools such as frequency and average, Analysis of variance (ANOVA) and comparisons of means using the Tukey method. Three formulations were prepared from the mixture of bamboo shoots infusion and cassava extract such as 25:75, 75:25 and 50:50 and three dosages were used such as 0.25 mL, 0.50 mL, and 0.75 mL. The prepared mixture of rodenticide was administered in fifty grams of rice and placed in three different containers with five mice each. They were subjected to three trials. The level of effectiveness was determined in terms of the mortality rate of mice according to elapsed time: after six hours, twelve hours and eighteen hours.

RESULTS

The result showed that the most effective dosage in terms of mice fatality is 0.75 mL as it has an average mortality of 1.67 for the 25:75 formulation, 2.33 for the 75:25 formulation, and 3.67 for the 50:50 formulation with a percentage of 33.4%, 46.6% and 73.4% respectively. For the formulation, the most effective in terms of mice fatality was the 50:50 formulation since it has the highest average mortality among the three formulations. The average mortality was 1.67 (33.3%), 2.67 (53.3%) and 3.67 (73.3%).

DISCUSSIONS

The researcher recommends that household members and farmers use 100% of the formulation of bamboo shoots and cassava extract as a natural rodenticide. Additionally, farmers should plant or propagate bamboo and cassava plants to have a steady supply of organic rodenticide which will not only reduce the use of commercial rodenticides but also provide an additional source of income from farmers.

KEYWORDS: Bamboo shoots, Cassava, Cyanogenic Glycosides, Rodents, Rodenticides

SUBMISSION ID: R04A-LAGUNA-0086

Bilimbi Fruit (*Averrhoa bilimbi*) as Toothpaste

Ralfrenz Verano, Trece Martires City Senior High School

Abstract

INTRODUCTION

Poor oral hygiene can lead to tooth decays and gum diseases. According to the Department of Health, oral disease is one of the serious public health problems in the Philippines. About 78% of Filipinos have gum diseases and around 92.4 % have tooth decay. These problems can be prevented by having proper oral hygiene which includes a regular dental care routine with the use of toothbrush and various type of toothpaste especially the natural and organic ones. This study is concerned with producing a toothpaste out of Bilimbi extract and evaluate its physical characteristics such as odor, viscosity, and color.

METHODS

The bilimbi fruits were cleansed with tap water and cut into halves. Then, 50g of bilimbi were blended with 100ml of water. The water extraction method was used to obtain the extract. After blending, filtration was conducted using a white cloth then stored in the freezer at 0°C. For the toothpaste base, ¼ cup of baking soda, 3 tbsp. of Stevia Powder and a cup of virgin coconut oil were mixed together. Different amounts of bilimbi extract, 2.5ml, 5ml, and 7.5ml, were added then stored in three different containers. The general acceptability of the produced toothpaste in terms of its physical properties such as viscosity, odor, and the color was evaluated by 30 respondents.

RESULTS

Results of the comparisons of the general acceptability ratings of the respondents in terms of its viscosity, odor, and color show that the best treatment among the three treatments - treatment 1 with 2.5ml of extract, treatment 2 with 5ml of extract and treatment 3 with 7.5ml of extract - is treatment 2. The result of the analysis of variance showed a significant difference among the means of the three treatments. Also, the ANOVA result shows a significant difference among the treatments because every general acceptability of the physical properties value did not exceed the 0.05 level of significance. Therefore, varying amounts of Bilimbi extract has a significant effect on the produced toothpaste.

DISCUSSIONS

Based on the findings of the study, toothpaste can be produced from a natural toothpaste base using the Bilimbi fruit extract. This study is beneficial for it made a very affordable toothpaste out of natural ingredients for maintaining and improving oral health.

KEYWORDS: Bilimbi Fruit, alternative toothpaste

SUBMISSION ID: R04A-CAVTP-0502

Blood Cholesterol Lowering Potential of Paragis (*Elusine indica*)

John Jerick B. Bello, Mark Salvador I. Casajeros, Neil Deryck D. Angeles, &
Philippe Miguel Velasco, Bucal National High School

Abstract

INTRODUCTION

Today's generation is characterized by people who are always on the go. Most of them prefer the intake of foods from fast food restaurants. More often than not, these are packed with high cholesterol. Ingestion of these kinds of food coupled with lack of exercise leads to high cholesterol levels in the body. Once detected, doctors usually prescribe medicines which are synthetic in nature and are very expensive. For this reason, the researchers conducted an investigation of a plant extract that could potentially lower the cholesterol levels in the body.

METHODS

The crude extract of paragis (*Elusine indica*) was obtained from the plant's leaves. Four set-ups consisting of 3 samples of hyperlipidemic Sprague Dawley Rats each were prepared. Samples in Set-up A were not given any supplement while samples in Set-up B were given 2.5 mL of simvastatin once a day. On the other hand, samples in Set up C were given 2.5 mL of extract once a day while samples in Set-up D were given 2.5 mL of extract twice a day. The cholesterol levels of each sample in all set-ups were measured before and after the 5-day experimentation.

RESULTS

Results reveal that the mean cholesterol level of the sample Sprague Dawley rats before experimentation are 184.62 mg/dl, 154.81 mg/dl, 179.10 mg/dl, and 160.38 mg/dl, corresponding to those assigned in Treatments 0 to 3 respectively. On the other hand, their cholesterol levels after exposing them to control and to different treatments are revealed as 178.85 mg/dl, 104.23 mg/dl, 155.57 mg/dl, and 102.31 mg/dl.

DISCUSSIONS

Based on the results of the study, a difference of 5.79 mg/dl cholesterol value was observed for rats under the controlled set-up. A difference of 50.58 mg/dl cholesterol value was observed for rat samples in Treatment 1. A difference of 23.53 mg/dl cholesterol value was observed for rat samples in Treatment 2. A difference of 58.07 mg/dl cholesterol value was observed for rat samples in Treatment 3. This means that rat samples exposed to *Elusine indica* leaf extract as a supplement twice a day has lowered their cholesterol level compared to the samples exposed to the same extract once a day. Also, the double dosage of *Elusine indica* leaf extract is more effective in lowering the cholesterol levels of the samples in comparison to the commercial simvastatin.

KEYWORDS: Paragis Sprague Dawley rats

SUBMISSION ID: R04A-CAVITP-1633

BPEC Organic Solution as a Growing Medium of Pechay (*Brassica rapa*)

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(Adviser: Kristine Gamboa)

Abstract

INTRODUCTION

Nowadays, humanity faces many environmental problems such as climate change, floods, and different kinds of calamities due to the increasing number of waste not only in our country but all over the world. In connection with these, the researchers conducted a study on reducing waste and making it valuable and useful. They came up with an organic solution such as growing pechay (*Brassica rapa*) since there are lots of natural waste such as banana peel, eggshells, and coconut water. According to Alberta Urban Garden (2016), banana peel is a valuable nutrient source for a garden as it contains more than just potassium. There are even different methods and ways of making banana peels as fertilizer. On the other hand, Jay Nelz (2017) stated that eggshells can be directly applied to the plant for healthier growth. Roldan R. M. of Centro Escolar University-Manila, Philippines (1995) also revealed that coconut water could be used as an alternative fertilizer based on different observations.

METHODS

The experimental research design was used to determine the effect of the product on the height, weight, sprouting period and soil pH levels. The researchers used the banana peel, eggshell and coconut water (BPEC) as the materials to treat/fertilize pechay plants. Field trials were carried out in an artificial plot (1000 x 300 x 500 cm) in Barangay Ilayang Sungi Liliw, Laguna. One way ANOVA T-test was used to analyze and interpret the efficacy of the BPEC organic solution to the growing medium of pechay (*Brassica rapa*).

RESULTS

The following results of data were gathered through research and various experiments. The graph shows that BPEC organic solution as a growing medium of pechay (*Brassica rapa*) has a significant difference on the effect on height, weight, sprouting period and soil pH compared in commercialized fertilizer. Statistical analysis shows a significant difference in commercialized fertilizer. This was tested by the probability value of 0.0018 which is lower than 0.05.

DISCUSSIONS

The study revealed that the organic solution had a great effect on the height, weight, sprouting period and soil pH. Thus, the product entitled BPEC Organic Solution as a Growing Medium for Pechay (*Brassica rapa*) was proven effective and can be an alternative to commercial fertilizer.

KEYWORDS: alternative, medium and organic

SUBMISSION ID: R04A-LAGUNA-0208

Butterflies and Moths (*Lepidoptera*) Diversity in Laiya, San Juan, Batangas

Jeric De Castro Umali, Department of Education, Laiya National High School
(Adviser: Catalina Punzalan)

Abstract

INTRODUCTION

Butterflies and moths are both herbivorous insects with dusty colored wings consisting of different patterns and designs. However, they will soon be vulnerable to extinction due to misuse and overuse of pesticides. The habitat where they are found has been destroyed by irresponsible actions of humans along with environmental phenomena which resulted in its massive destruction. In this study, the researcher determines the diversity of butterflies and moths in Laiya, San Juan, Batangas. Also, the researcher will identify the family of every specimen collected in the vicinity and how these species help improve our wildlife and enrich the whole environment.

METHODS

The investigation was based on the observation and classification of the specimens that will then be used in the presentation and the analysis of data. The researchers used a random sampling technique in the seven stations in Laiya, San Juan, Batangas. It includes the Laiya National High School, Sitio Malaya 2nd, Masunurin, and Napayong in Barangay Laiya Ibabao and Sitio Hulo Uno, Hulo Dos, and Macuitib in Barangay Aplaya. The researchers were able to collect different species and understand the families of butterflies and moths in the assigned study stations.

RESULTS

After collecting the specimens of Lepidopterans, the finished output will be placed in a designated frame or box for display in the ongoing natural history museum in Laiya National High School. A butterfly and moth conservation area or a butterfly garden is also proposed by the researchers to create an environment that will attract butterflies and moths. Planting flowers and plants is highly recommended to create better surrounding for the butterflies and moths. It aims to support the declining population of Lepidopterans and serve as a home where they are free to lay their eggs. The host plants feed the larval stage and the adult must find the nectar source plants.

DISCUSSIONS

Laiya, San Juan, Batangas is high in butterfly and moth diversity. A total number of 184 specimens combining butterflies and moths have been tabulated. It was found out that the population of moths is higher compared to butterflies. Several families of butterflies and moths comprise its ecosystem. The place has a capacity for sustaining a healthy environment because of the abundance of Lepidopterans. It signifies that it is well-conserved and it consists of flowering plants where the lepidopterans feed on. In addition, they serve as the prey for other animals which maintain the ecological balance.

KEYWORDS: butterfly, moth, diversity, Laiya

SUBMISSION ID: R04A-BATANP-1325

Cardaba Banana (*Musa acuminata* × *balbisiana*) Peel as a Soap

Clarence Sandoval, Trece Martires City Senior High School

Abstract

INTRODUCTION

Soap is vital in keeping people's skin clean, especially in these modern times. The researchers used banana peel as the main ingredient in the production of soap because of the benefits and nutrients it can contribute to improving the skin's appearance. This study primarily aimed to produce soap out of cardaba banana peel. It also aimed to determine the effect of different concentrations of cardaba banana peel in the produced soap in terms of its texture, color, and odor.

METHODS

The researchers used the quantitative research design specifically the experimental research design. Three identical treatments of soap out of cardaba banana peel with a manipulated concentration of cardaba banana peel - 3.5 grams, 7.15 grams, and 10.7 grams – were used. After three weeks, the soaps were cured and ready for evaluation. The 30 citizens from Southville, Barangay Inocencio, Trece Martires City, Cavite served as the respondents in evaluating the soap in terms of its sensory properties such as texture, color, and odor.

RESULTS

Based on the results of the study, soap can be produced from the cardaba banana peel. in terms of its sensory properties, all of the three treatments have a significant difference from one another as the significant value of 0.001 for both texture and color of the produced soaps out of cardaba banana peel and the significant value of 0.010 for the odor of the produced soaps out of cardaba banana peel has been discovered. Therefore, the null hypothesis was rejected as different concentrations of the ground cardaba banana peels have a significant difference in the produced soap from cardaba banana peel.

DISCUSSIONS

The results show that different concentrations of the produced soap from the cardaba banana peel have a significant effect in terms of its sensory properties. Therefore, the results will be of great help to households and farmers for it will be a new source of livelihood. It could also help our environment decrease garbage volume brought by the increasing population. The produced product will give a whole new face to the disposable cardaba banana peel.

KEYWORDS: cardaba banana peel, alternative soap

SUBMISSION ID: R04A-CAVTP-0564

Cardaba Banana (*Musa acuminata x balbasiana*) Peel 3-in-1 Coffee

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Abstract

INTRODUCTION

Coffee is the most popular beverage in the world. According to the latest coffee statistics from the International Coffee Organization, about 1.4 billion cups of coffee are consumed daily worldwide. However, coffee contains caffeine that can cause insomnia, increase in heart and breathing rate, and other side effects. Consuming large amounts of coffee might also cause headache, anxiety, agitation, and irregular heartbeats. Coffee beans also form Acrylamide, a potentially carcinogenic substance, when coffee is roasted at high temperatures. With these in mind, this study primarily aims to produce Cardaba banana peel 3-in-1 coffee and to evaluate the physical properties of the product in terms of its aroma, color, and taste.

METHODS

The Cardaba banana peels were cleansed with water, cut into cubes and roasted for 20 minutes at 150 degrees Fahrenheit until it is ready for grinding. After it was grounded, 20g, 30g, and 40g of grounded cubes were mixed with 1L of water until it started to boil. Then they were filtered with a clean white cloth. After the filtration process, 5g of stevia powder and 15g of creamer were added to each of the treatments and stored in a thermos. Subsequently, the general acceptability of the produced coffee in terms of its physical properties, aroma, color, and taste, were evaluated by 30 respondents.

RESULTS

Based on the results of the general acceptability of the respondents in terms of the three properties such as aroma, color and taste, the best treatment is treatment 2, which contains 30g of Cardaba Banana Peel Coffee, followed by treatment 3 and treatment 1, which contains 40g and 20g of grounded banana peel coffee respectively. The ANOVA results of the general acceptability of the physical properties show that all of the three treatments have a significant difference from one another because of the significant value of 0.001 for every general acceptability of the physical properties did not exceed the 0.05 level of significance. Therefore, the null hypothesis was rejected since the varying amounts of the grounded Cardaba banana peels have a significant effect on the produced coffee.

DISCUSSIONS

Based on the results of the study, coffee could be produced from the Cardaba banana peels. This study is significant as it produced a non-caffeine drink which can also serve as mood boosters for the body and it is made from natural ingredients such as the discarded parts of fruit, specifically the banana peel, making it healthy and affordable for everyone at the same time.

KEYWORDS: Cardaba banana peel, alternative 3-in-1 coffee

SUBMISSION ID: R04A-CAVITP-0125

Carmona retusa* (Wild Tea) Leaves as an Efficient Larvicide for *Aedes Aegypti

Jannah Sarvida & Ma. Adela Arenas, Cavite National Science High School

Abstract

INTRODUCTION

Dengue mosquitoes, specifically females, have caused the most serious outbreaks of dengue in the Philippines. This crucial fact prompted the search for plant extracts with promising larvicidal activity against 3rd and 4th instars *Aedes aegypti* larvae. Besides, it will be helpful to utilize native flora for identifying useful compounds that might prove effective against *Aedes aegypti* larvae and it is always better to opt for plant-based solutions for reducing the cases. The study made use of two leaf extracts: *Plectranthus amboinicus* (Cuban oregano) and *Carmona retusa* (wild tea).

METHODS

The leaf crude extracts were applied in concentrations of 15,000, 30,000, 45,000, and 60,000 ppm on set-ups containing 20 *Aedes aegypti* larvae for each plastic cup. There were three replicates for the wild tea extract and five replicates for the Cuban oregano extract. The mortality of the larvae was recorded within 24 and 48 hours after the extracts' application. The lethal concentrations (LC) at 50% and 90% larval mortalities were identified using linear regression probit analysis. After determining the LC50 and LC90 values of the leaf extracts, the wild tea extract was chosen to be formulated in pellet form.

RESULTS

The tests revealed that the wild tea extract has a stronger larvicidal activity than the Cuban oregano. The LC50 and LC90 of the wild tea extract were estimated at 23,675 and 54,954 ppm respectively. The LC50 and LC90 of Cuban oregano extract were estimated at 35,312 and 65,250 ppm respectively. This means that the wild tea leaves contain more active or potent bioactive compounds than the Cuban oregano, making the extract require fewer amounts in concentration to induce 50% and 90% mortality in the larval population. Hence, only the wild tea leaves were formulated into pellets. The pelletized wild tea leaves extract was tested for its larvicidal activity on similar set-ups in concentrations of 20,000, 40,000, 60,000, 80,000, 100,000, 300,000, and 600,000 ppm. The wild tea leaves pellets, at its appropriate doses, showed 100% mortality even at its lowest concentration against *Aedes aegypti* larvae after the 48 hour-exposure.

DISCUSSIONS

Through this study, the community will discover ways of benefitting from making an environmentally safe and cheap wild tea larvicidal pellets since it showed 100% larval mortality rate. The ability of pellets in preventing the *Aedes aegypti* larvae from developing into adult stage will help reduce the number of dengue fever cases as its prevalence continue to arise each year.

KEYWORDS: larvicidal, mortality rate, pellets, wild tea

SUBMISSION ID: R04A-CAVITP-0325

Catalytic Scheme of Cellulase-Producing Actinomycete Isolates on Paper Degradation

Crystal Joyce Ameida, Micaella Javier, & Yohanna Bugarin

Abstract

INTRODUCTION

Land pollution is a common problem caused by improper solid waste management in Metro Manila. Seventeen percent of this is from the paper due to minimal recycling practices. Recycling paper is not advisable according to Science Focus because it introduces metals to water supplies. Most papers is also often disposed of through biomass burning since they are hard to degrade. Researchers hypothesized whether cellulase-producing Actinomycetes can decompose paper by measuring the decomposition rate.

METHODS

Actinomycete isolates were tested for the production of cellulase. Yeast Malt Broth and Minimal Media containing 0.5 grams of cellulose were steamed. Yeast malt agar was used to revive the isolates. Isolates were inoculated into the minimal media. Positive growth of spores was screened. Isolates from the first screening with positive growth were inoculated into the YMB media. The broth was screened for growth of isolates and the positives were used for paper decomposition. Three replicates were used, using both of the isolates that grew in YMB and its counterpart in minimal media. The set-ups were observed for 50 days. The decomposition rate was measured using a percentage. Two-way ANOVA was used to analyze data. Disposal of the set-ups was done accordingly afterward.

RESULTS

VYMA 6 YMB had the greatest decomposition rate of 25.67% making it the most effective. There was a significant interaction between the isolate used and the media used, where the F-interaction (3.39569) was greater than the F-critical value (3.23887). There was a significant difference between the pairs VYMA6 YMB and PBA2 YMB, VBA22 MM and PBA2 MM, VYMA6 YMB and PBA2 MM, VYMA6 YMB and PBA47 YMB, PBA47 MM and VBA22 MM, VYMA6 YMB and PBA47 MM, VBA22 YMB and VBA22 MM, VBA22 YMB and VYMA6 YMB, VBA22 MM and VYMA6 MM, and VYMA6 YMB and VYMA6 MM.

DISCUSSIONS

This study showed that cellulase-producing isolates can decompose paper and the decomposition of the isolate was affected by the media used, whether minimal media or yeast malt broth. The ability of the isolates to produce cellulose enzymes such as endoglucanase and exoglucanase can break the strong hydrogen bonds of cellulose in the paper. From the results gathered, it will take two years, seven months, and twenty-five days for fifteen milliliters of the media with cellulose-producing Actinomycete isolates to decompose the paper completely. This is less than the average decomposition which takes five to twenty years according to the 6-year analysis conducted by Baldwin et al. (1998).

KEYWORDS: Actinomycetes, Paper Decomposition, Cellulase, Yeast Malt Broth, Minimal Media

SUBMISSION ID: R04A-CAVITP-0292

Characteristics of Four Selected Mangrove Species in Low Saline Environment in Batangas

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(Adviser: Randie Atienza)

Abstract

INTRODUCTION

Low saline environments like Taal Lake and Pansipit River serve as a home for different endemic species including freshwater sea snake, freshwater sardines, Maliputo and to 80 more species. According to Luistro (2007), however, those environments were deteriorating fast and some of the native fishes were decreasing in number. In connection, mangroves could serve a critical role for spawning, nursery, coastline protection, and serve as a natural wastewater filter as it absorbs pollutants. Hence, the researchers conducted a study to determine the attributes of four mangrove species: Bakawang Lalaki, Putotang Lalaki, Kalapinay and Saging-saging in a low saline environment which can be a basis for future plant **INTRODUCTION** in Taal Lake and Pansipit River.

METHODS

In this study, the four Mangroves species were planted into two experimental setups and one controlled setup where mangroves naturally thrive. Moreover, laboratory testing was done to determine the pH and salinity level of the three environments which served as a parameter for the attributes of the selected environments. Characteristics of the root system, the number of leaves sprouted and the length of the stem were the attributes observed in the four selected mangrove species. The pH levels, salinity level, type of substrate were the parameters of the low saline environment needed to be tested while the number of sprouted leaves, stem length, and characteristics of roots were the attributes of mangroves observed for four weeks.

RESULTS

Based on the experiment, Cuta River has 1.91ppt salinity, 8.80 pH level, and muddy soil; Taal Lake contains a salinity of 0.81ppt, 9.14 pH level and Taal Loam soil; while Pansipit River has 0.75ppt salinity, 8.65 pH level and has Taal sandy loam soil. Different growth rates were observed: Kalapinay has the fastest growing rate while Saging-saging has the lowest growth rate among all setups. There is a significant difference in the attributes of each mangrove species before and after being planted in the selected environment which indicates growth after four weeks of observation. Meanwhile, there is no significant difference in the controlled and experimental setup which indicates that mangroves are capable to thrive in a low saline environment.

DISCUSSIONS

The findings of the study suggest that mangroves can grow in a low saline environment which is a good indication of a possible **INTRODUCTION** in Taal Lake. On the other hand, a longer period of time must be given to fully observe its survival.

KEYWORDS: Mangrove, Bakawan, Low Saline Environment, Batangas, Taal Lake, Pansipit River

SUBMISSION ID: R04A-BATANP-0926

Chronotherapeutic Effects of Cyanocobalamin in Vitamin B12-Deficient Hamster (*Cricetinae*)

Riklord Balmes

Abstract

INTRODUCTION

Biological clocks help us maintain and control our physiological activities. These change on a daily, seasonal, yearly, or another regular cycle. A scientist cannot determine the right time to take medicines. Many medical experimentations and researches were applied, but there is no strong evidence and results to clarify this investigation. Finding the right time to take medicines in humans can help find the biological rhythm of the body, thereby increasing the survival rate of human beings.

METHODS

To conduct the study, five Hamsters (*Cricetinae*) with the same mass and age were gathered and were treated by Omeprazole to lower their Vitamin B12. Four of them compose the experimental group while the other one is the control. Using the process of Chronotherapy, hamsters from the experimental group were treated by Cyanocobalamin, a medicine that helps stabilize the Vitamin B12 level. Each of them was treated at different times and the data were collected through quantitative and qualitative analyses based on the changes in the appearance and mass of the hamsters.

RESULTS

After treating the experimental group with Omeprazole, the hamsters became anemic. This manifested in the thinning of hair and weight loss as a result of vitamin B12 deficiency. The control group, however, continued to be healthy. During the treatment of the experimental group, development rate among the hamsters differed. The medicine given to the hamster in the morning showed faster development than the rest of the hamsters in the experimental group. The group being treated during midnight showed very slow development.

DISCUSSIONS

A group of Vitamin B12-deficient hamsters was kept and treated on different time schedules. After comparing results, it was concluded that medications should be geared in sync with the biological rhythms of animals. In the case of hamsters, the medication should be given early in the morning when the hamsters are resting.

KEYWORDS: Chronotherapy, Biological Clock, Cyanocobalamin, Omeprazole

SUBMISSION ID: R04A-BATANC-0286

Comparative Analysis Between the Effectiveness of Galunggong (*Alepes melanoptera*) Guts and Gills with Sugar as Alternative Feeds to 45-days Chicken

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Misty Abegail M. Inovio, & Julian Gabrielo B. Sales, Carmona National High
School

(Adviser: Roxanne Maglaya)

Abstract

INTRODUCTION

One of the serious problems humans face today is improper garbage disposal. It is a responsibility for humans to manage proper waste disposal. One of the wastes we usually encounter is biodegradable which emits a foul odor. Fish guts and gills are often believed as inedible so people just throw them away, eventually contributing to more food waste. Studies showed that fish guts and gills contain proteins that can help in helping the body grow faster and making them beneficial for chickens. Therefore, the researchers studied the advantages of galunggong guts and gills as alternative chicken feeds.

METHODS

Three groups were used in the study with four chickens in each group. Chickens fed with galunggong guts and gills feeds served as the experimental set-ups. On the other hand, chickens fed with commercial feeds served as the control set-up. The width and weight of the chickens were recorded every two weeks. The statistical treatment used was the ANOVA Two-Way Factor.

RESULTS

The Analysis of Variance (ANOVA) Two-Way Factor with replication showed that there was no significant difference in the chickens fed with galunggong guts, galunggong gills, and commercial chicken feeds in terms of their width and weight.

DISCUSSIONS

The study proved that both galunggong guts and galunggong gills can be effective alternative chicken feeds.

KEYWORDS: Galunggong Guts Chicken Feeds, Galunggong Gills Chicken Feed

SUBMISSION ID: R04A-CAVITP-0612

Comparative Analysis of Oregano (*Origanum vulgare*) and Guava (*Psidium guajava* L.) Leaves Extract as Bio Fungicide Against *Fusarium oxysporum* sp. *lycopersici* in Tomato.

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(Adviser: Renelyn Banasihan)

Abstract

INTRODUCTION

Fusarium wilt on tomatoes is caused by *Fusarium oxysporum* sp. *lycopersici*. The purpose of this study was to find alternative botanical extracts such as Oregano (*Origanum vulgare*) and guava (*Psidium guajava* L.) leaves as fungicide against the said fungi.

METHODS

The materials were gathered from different places, namely San Pablo City and Nagcarlan, Laguna. The infected tomatoes with the probability of having the disease were washed repeatedly using ethyl alcohol and distilled water. Afterward, sterilized paper towels were used for the process of drying until no signs of liquid are visible. Pieces of the sliced tomatoes were placed in a Petri plate containing PDA (Potato Dextrose Agar) and were left for the fungi to grow. The gathered leaves were pounded in mortar and pestle and were put in a rotary evaporator. Then, pounded leaves were put in sterilized bottles with solvent. Afterward, the bottles were set into a water shaker for 3 days with a temperature of 27-28 degrees. The matured fungi with the crude ethanolic extracts were observed for days to know which set-up showed inhibited growth of *Fusarium oxysporum* sp. *lycopersici*.

RESULTS

The researchers observed the results for two days, on the 3rd and 5th day of the experiment to test the inhibition. The results showed that oregano, guava, and the chemical Dithane M45 fungicide were able to inhibit the growth of fungi during the 3rd day while oregano was the only set-up that had inhibited the growth of fungi on the 5th day.

DISCUSSIONS

On Day 5, only the set-up of oregano had inhibited the growth, thereby making it the most effective out of all the treatment given in this study.

KEYWORDS: Tomato, guava, oregano, tomato, fusarium wilt

SUBMISSION ID: R04A-SANPAB-0031

Comparative Analysis of the Red Eye Pigment in *Drosophila Melanogaster* (Fruit Fly) Using Chromatography and Photospectrometer

Angelica Martin, Tagaytay City Integrated School

Abstract

INTRODUCTION

Drosophila melanogaster is a species of fly in the family of Drosophilidae. The species is commonly known as the fruit fly. The scientific name *Drosophila* means "lover of dew", implying that this species requires a moist environment. It was among the first organisms used for genetic analysis and one of the most widely used. It has a short, simple reproduction cycle. In the eyes of *Drosophila*, there are two biochemical pathways which are responsible for producing the pigments for its eye color: the ommochrome pathway and the pteridine pathway. This research aims to assess the pigments that determine eye color in fruit flies through the use of paper chromatography and photo spectrometer.

METHODS

The recipe used in the culture is a mixture of 100g banana oatmeal, 3 mL mangosteen juice and 1 mL white wine vinegar. A sponge was left inside so that there's a place for the fly to burrow and pupate. The mixture was left open. When the fruit fly enters the container, it was covered with a stocking. It was left for two (2) weeks so that there will be a huge amount of sample that may be used for the experiment.

Chromatography

The fruit flies were etherized, captured and then placed in the petri dish using forceps. They were viewed under the stereomicroscope and beheaded using a razor. Then they were crushed in a chromatography paper and placed in a 100 mL beaker with two types of solvent.

Photospectrometer

Using micropipettes, 1 uL of methanol and the 1:1 ratio of ammonia and isopropyl mixture was transferred on six tubes and in two cuvettes which will serve as "starter". The starter was placed in the photo spectrometer machine. The target wavelength is from 300-600nm with 25nm interval.

RESULTS

The eye colors examined are all red colors, thus they contain the pteridine biochemical pathway which is responsible for the red eye color. Using the two solvents, the researcher determined the amount of the known chemical using photo spectrometer.

DISCUSSIONS

Pteridine is a product of purine metabolism. The eye pigment was separated using the paper chromatography method. There are two solvents used; methanol and 1:1 ratio of ammonia and isopropyl alcohol. Based on the data gathered the eye pigments of the *Drosophila*, they were more separated and more pronounced in methanol rather than in a 1:1 ratio of ammonia and isopropyl. Thus, using methanol to separate the eye pigments and determine the amount of chemical substance and spectrum absorbed proves to be more visible.

KEYWORDS: *Drosophila*, Chromatography, Photospectrometer, Eye pigment

SUBMISSION ID: R04A-CAVITP-1621

Comparative Analysis on the Anti-Angiogenic Activity Between Hugis-Manok and Pandan on the Chorioallantoic Membrane of the 10th Day Old Duck Embryo

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(Adviser: Maria Lina C. Sanding)

Abstract

INTRODUCTION

The Philippine duck industry is dominated by balut or, partially hatched duck embryos, the production of which accounts for more than 75 percent of the total duck industry. Angiogenesis has become an important issue in fighting against the progress of cancer because it was thought that anti-angiogenic drugs prevent the growth of cancer cells by blocking the development of new blood vessels. There is a big challenge, therefore, to investigate plant extracts that have the potential to inhibit angiogenesis. These ideas motivated the researchers to conduct a study on the anti-angiogenic property of Pandan (*Pandanus Odoratissimus* L.) and Hugis Manok (*Eclipta Prostate* L.) leaves extract.

METHODS

The two raw materials were collected within Imus and Bacoor City and left aside for 72 hours for air drying. The Pandan (*Pandanus Odoratissimus* L.) and Hugis Manok (*Eclipta prostate* L.) were soaked and extracted for 48 hours. 42 (forty-two) eggs were cleaned. With the use of flashlight, the researchers looked for the Chorioallantoic membrane (CAM Assay) of the egg and injected the extracted materials using tuberculin syringe with different concentrations - 100% pure extracts, 75% leaves extract added with 25% distilled water, 50% leaves extracts added with 50% distilled water and 25% leaves extract added with 75% distilled water - to determine which concentration has the great potential in inhibiting the growth of blood vessels. Then eggs were incubated for 72 hours. After 72 hours the eggs were opened, blood vessels were counted and analyzed.

RESULTS

After three (3) days of incubation, the results revealed that Pandan (*Pandanus Odoratissimus* L.) leaves extracts gave the lower mean number of blood vessels with 42.6. This means that Pandan (*Pandanus Odoratissimus* L.) has a higher potential in lowering the blood vessels count.

DISCUSSIONS

Based on the findings and results from the analysis of the study, it was revealed that Pandan (*Pandanus Odoratissimus* L.) leaves extract contains the phytochemical components tannins, steroids, cardiac glycosides, saponins, flavonoids, alkaloids, and carbohydrates compared to Hugis Manok (*Eclipta prostate* L.). These phytochemicals are reported to have an anti-angiogenic effect, preventing the faster production of new blood vessels.

KEYWORDS: Comparative analysis of the anti-angiogenic activity

SUBMISSION ID: R04A-IMUSC1-0023

Comparison between Chemical-based and Organic Mosquito Repellants

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(Adviser: Mellany Joy Panganiban)

Abstract

INTRODUCTION

in the Philippines, the prices of chemically prepared insect repellents are quite expensive. These repellants are also viewed as harmful to human health. in this study, the researchers intended to find a safe, organic and affordable alternative mosquito repellant.

METHODS

Experimental research was used. Mosquito specimens were personally bred by the researchers. To compare the effects of chemical and organic repellants, two set-ups were prepared. One mosquito specimen was treated with a deet-based chemical mosquito repellant while the other was treated with an organic-based repellant which the researchers personally prepared. Physical properties of the repellants such as odor and availability were noted at the initial stage of the experiment. The mosquitoes' response time was observed and recorded in a journal during the experiment.

RESULTS

Results show that mosquitoes responded more quickly to chemical-based mosquito repellants. However, the organic mosquito repellant has a lengthier effectivity. Also, chemical-based mosquito repellants have a pungent odor when compared to organic based. Organic mosquito repellants have the potential to repel or eradicate mosquitoes.

DISCUSSIONS

Results demonstrate that organic repellants are more cost-efficient as commonly available plant extracts may be used. Organic repellants may be an option for a safer and healthier home and environment.

KEYWORDS: chemical, organic, mosquito repellant

SUBMISSION ID: R04A-BATANC-0451

Comparison of the Biodegradation of Polyethylene Terephthalate (PET) Plastic Strips between Actinomycetes from Garbage Soil and Mangrove Sediment

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Abstract

INTRODUCTION

The Philippines is currently ranked as the world's third biggest contributor to plastic pollution (GreenPeace Philippines, 2017). This increasing rate of plastic pollution is alarmingly affecting not only the environment but also lives. Despite government efforts, the problem still fails to dissipate and the rate of biodegradation cannot catch up to the increasing numbers of plastics. With the potential of utilizing microorganisms in the degradation of plastic waste still left unexplored in the Philippines, this study tested the effectiveness of terrestrial and marine actinomycetes isolated from garbage soil and mangrove sediment, respectively, in degrading polyethylene terephthalate (PET) plastic strips.

METHODS

This study included the collection of soil samples, preparation of Starch Casein Agar (SCA), isolation of actinomycetes, gram staining, and treatment of PET strips using nutrient broth and actinomycetes for ten days. There were three trials and three replicates. The data was gathered by measuring the weight before and after the treatment of plastic and solving for the weight loss percentage. The experimentation was conducted at the Biology Laboratory of Adamson University in Ermita, Manila under the supervision of Ms. Aza Freya Lan Tubato.

RESULTS

The paired sample t-test shows that the final weights of the PET bottle strips are significantly different from its initial weights regardless of the actinomycetes source, as evidenced by a p-value less than 0.05. However, the comparison of the initial and final weight of the PET bottle strips as grouped by actinomycetes source shows that the terrestrial actinomycetes are more effective. The terrestrial actinomycetes had an average of 48% weight loss percentage after ten days of treatment, while the marine actinomycetes only had an average of 15% weight loss percentage for the same period.

DISCUSSIONS

The results showed a significant difference in weight loss, meaning the utilization of microorganisms in degradation is effective. This would be of great help so the environment can slowly recuperate to its original state. Unfortunately, it would be difficult to cultivate and locate the same bacteria. With this, it is suggested that there would be further research involving different bacteria or a different location to get the sample from, as well as using a different type of plastic for degrading.

KEYWORDS: terrestrial actinomycetes, marine actinomycetes, actinomycetes, isolation, gram staining, plastic pollution, polyethylene terephthalate, biodegradation

SUBMISSION ID: R04A-CAVITP-0166

Comparison of the Biological Degradation of Polyethylene terephthalate (PET), Polyvinylchloride (PVC), and Polystyrene (PS) Plastic Strips using Isolated Soil Actinomycetes

Irhon Jomari Floresca, Ivan Limford Anglo, & Zammiah Elaine Espinar

Abstract

INTRODUCTION

in people's daily life, plastic is commonly and widely used. It has been reported that there are around 100 million plastics produced every day, which, in the long run, will result in forms of pollution to the earth. For example, it is estimated that 1.15 to 2.41 million tons of plastic wastes are entering the ocean each year, leading to water pollution. Hence, this study was conducted as a response to mitigate the forms of pollution caused by plastic use and production. Three types of plastic were compared for their biological degradation. Terephthalate (PET) is the world's packaging choice for many foods and beverages because it is hygienic, strong, lightweight, shatterproof, and retains freshness. PS, used in construction application, is a good insulator for it quickly accrues electrical charge. Polyvinylchloride (PVC) piping systems help prevent leakage and their exceptionally smooth surfaces reduce the cost of pumping fluids.

METHODS

All experiments were conducted in the laboratory of the Biology Department of Adamson University. Samples from soil garbage were collected following their recommended procedure. The soil samples were suspended in sterile distilled water and processed with starch casein agar. Emerging actinomycetes were determined through a biochemical test and gram staining. Plastic strip samples (PET, PVC, PS) were pre-treated before actual weight loss measurements. After significant growth of actinomycetes was detected, plastic strips were allowed to be decomposed in the culture media for 14 days. Weight loss of plastic strips was computed after.

RESULTS

All samples of plastic strips evaluated in the study decreased in weight. Results suggest microbial degradation. The PET plastic strip has the highest percentage of weight loss, which was at 36.40%. On the other hand, the PVC plastic strip led to only 8.60 % weight loss while the PS resulted in a 3.77% weight loss.

DISCUSSIONS

Comparison of the biological degradation of PET, PVC, PS plastic strips using isolated soil actinomycetes is the focal point of this study. As shown in the table, the PET plastic was affected by the actinomycetes while other plastics like PS was not as affected. in comparison to other research studies, this research study only had a short time for experimentation. Other studies took a long time but the results were amazingly good because the plastic was completely degraded. It took 3 months till it was completely degraded.

KEYWORDS: polyethylene terephthalate (PET), polyvinylchloride (PVC), and polystyrene (PS)

SUBMISSION ID: R04A-CAVITP-1684

Dalandan Peel as an Alternative Shoe Polish

Alberto M. Luzande, Teacher

Abstract

INTRODUCTION

One of the most common issues today is dealing with harmful chemicals used for manufacturing products. This project intends to help common people discover alternative products that will minimize the use of harmful substances. Synthetic shoe polish has a strong chemical content with an irritating smell while the dalandan peel shoe polish is almost organic. It contains odorless and harmless materials that secure the safety of the users.

METHODS

in making dalandan shoe polish, one must do the following steps: 1. Boil dalandan peel to extract its essential oil. 2. Grill the extracted dalandan peel to change it to its charcoal form 3. Pound the dalandan peel charcoal to powder 4. Melt 4 tsp of paraffin wax together with ½ tsp of petroleum jelly and 25 ml of the dalandan peel essential oil, wait until all the materials melt. 5. Measure 4 tsp of dalandan peel powdered charcoal and mix them thoroughly to the mixture. 6. Place the mixture to the molder and wait for about 15-20 min to cool down and solidify. 7. Finally, apply the mixture to the shoes using a piece of cloth.

RESULTS

The result is more satisfying because it becomes soft and smooth in texture, and the appearance is almost the same as the commercial shoe polish available in the market.

DISCUSSIONS

The researcher uses 25ml dalandan peel extract, 4 tsp dalandan powdered charcoal, 4 tsp paraffin wax and ½ tsp petroleum jelly. It was allowed to settle and cool down for about 15-20 minutes, and 125 grams of the mixture must be gathered for the finished product.

KEYWORDS: dalandan peel as shoe polish

SUBMISSION ID: R04A-CAVTP-1342

Decreasing the Biotoxicity of Native Chicken's Manure by Reducing its Greenhouse Gases Emission Using Oregano (*Origanum vulgare*) and Thyme (*Thymus vulgaris*) as Feed Additive Source

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(Adviser: Loreta Salvador)

Abstract

INTRODUCTION

People often picture pollutants as factories and industrial wastes when talking about the causes of global warming. In reality, it is not the whole picture of it because different greenhouse gases such as methane, nitrous oxide, and carbon dioxide emitted in the manures of poultry animals like native chicken are also one of the big contributors of the depletion of the ozone layer. Because the demand for chickens in the country is increasing rapidly every year, it only means it will yield to more secretion of greenhouse gases in the atmosphere. On the other hand, thyme and oregano were used because they contain essential compounds called carvacrol and thymol which both exhibit antimicrobial properties and also kill methanogens - a methane-producing bacteria. The study will be beneficial to the environment for it may decrease the production of greenhouse gases. It will also be beneficial to the poultry industry as it provides an organic feed that will improve the health of chickens.

METHODS

The randomized block design was used in the preparation of the setups to determine the varying concentrations of oregano and thyme in the feed. The researcher fed the chickens and collected the different manures secreted, all of which underwent a series of tests. The general test conducted was thermolysis or thermal decomposition where the different gases present in the manure were extracted and then subjected to densification where the density of the gas collected was compared to the density of methane gas, nitrous oxide, and carbon dioxide to see the significant difference of thyme and oregano-manipulated set-ups.

RESULTS

Results show that set-up 4 - with 15% Oregano, 15% Thyme, and 70 % Commercial Feeds - has the lowest density and has the largest decrease in the density of different the greenhouse gases (5.38 methane, 9.13 carbon dioxide, 2.76 nitrous oxide). This means it exhibits the lowest volume of methane, carbon dioxide, and nitrous oxide produced among all the set-ups.

DISCUSSIONS

The study justified the potential of oregano and thyme as a feed additive source to native chicken to decrease the biotoxicity of its manure and reduce its emission of greenhouse gases. The results proved that the balanced concentration of thyme and oregano was the most effective. However, the calculations conducted were only based on the properties of different gases that is why the researcher recommends the use of a high-end device that will measure the specific amount of gases.

KEYWORDS: Native Chicken, Oregano, Thyme

SUBMISSION ID: NCR1-VALENZ-0007

**Department of Education 2c-2i-1r Pedagogical Approaches in Teaching
Science and Academic Performance of Junior High School Students in
Public Schools in Lipa City**

Rosalie Candido, Inosloban-Marawoy Integrated National High School

Abstract

INTRODUCTION

Continuous modifications and changes have been implemented by educational authorities to adapt to the varied needs of different generations of students facing different situations and challenges. However, not all outcomes were favorable, leaving room for improvement for many curriculum developers in each generation. This study was intended to shed light on the processes of Department of Education 2C -2I-1R and relate it to other teaching strategies

METHODS

The researcher utilized the descriptive type of research using a questionnaire which was validated and administered to one hundred eleven (111) Junior High School Science teachers from the public schools of Lipa City to seek accurate and adequate descriptions of the Department of Education 2C-2I-1R Pedagogical Approaches in teaching Science and their applications to the academic performance of students in the academic year 2016-2017. The data gathered were analyzed and interpreted through the most appropriate statistical procedures.

RESULTS

The study found the effectiveness of Department of Education 2C-2I-1R Pedagogical Approaches in teaching Science on Junior High School in Public Schools in Lipa and the extent of the academic performance of the students using the approaches. There was no significant difference in the assessment of the Effectiveness of Department of Education 2C-2I-1R Pedagogical Approaches in terms of Constructivist and Inquiry-Based approaches. in the assessment of Collaborative, Integrative and Reflective approaches, on the other hand, there was a statistically significant difference. There was also a significant relationship between the assessment on the Effectiveness of Department of Education 2C-2I-1R Pedagogical Approaches in Teaching Science and the Academic Performance of Junior High School Students.

DISCUSSIONS

The results demonstrated the need for educators to continue and improve the utilization of Department of Education 2C-2I-1R Pedagogical Approaches for the further development of the students in terms of Science Education and other academic subjects. With these strategies, it is hoped that teachers can improve learners understanding of the learning outcomes, heighten the learner's ability to read, write and reason, and ultimately meet the K12 curriculum standards.

KEYWORDS: 2C-2I-1R pedagogical approaches, strategies, academic performance

SUBMISSION ID: R04A-LIPAC1-0167

Dye-Sensitized Solar Cell Using Dyes Extracted From *Basella alba* (Alugbati) Fruit and *Mangifera indica* (Mango) Leaves

Althea Cordero, Cristina May Cantila, & Denise Johann Mapanao

Abstract

INTRODUCTION

Coal, petroleum and natural gas, the main sources of energy and electricity, has contributed to pollution and led to the destruction of Mother Earth. Silicon-based solar cells are the most common devices used commercially for energy harvesting. However, they have some disadvantages as they require a high cost of production and wide space. Grätzel invented a solar cell that uses dyes as sensitizers.

METHODS

The fresh *Mangifera indica* (Mango) leaves were blended into fine particles and the *Basella alba* (Alugbati) were grounded. After that, they were soaked in ethanol for one hour. The ethanolic extracts were subjected to its photosensitizing activity on solar cells. The normal microscopic slides were converted into conductive slides by putting stannous chloride in the surface of the slides. The layers of titanium dioxide (TiO₂) paste was varied into one, two, and three layers. The cathode electrode was immersed in Mango and Alugbati dye for an hour. The counter electrode was done using candle soot. The finished DSSCs were placed under the sunlight during 9 AM, 10 AM, 11 AM, and 12 NN. The results showed that the multiple layers of titanium dioxide (TiO₂) paste and different plant dyes improved the efficiency of the solar cells.

RESULTS

The voltage produced in the DSSC with three layers is much higher than the solar cells having one and two layers of TiO₂ paste. As expected, samples placed during 12 NN had the highest amount of voltage produced among the slides. Slides with *Mangifera indica* (Mango) extract produced the highest amount voltage with three layers of titanium dioxide. For both dyes, it showed an increasing amount of voltage produced except in the observation period during 11:00 AM. This was because the weather became cloudy during that time. Slides with one and two layers of titanium dioxide exhibited almost the same voltage. A drastic increase in the voltage produced was seen in the solar cells with three layers of titanium dioxide.

DISCUSSIONS

For the further improvement of the study, future researchers may consider using either the fluorine-doped tin oxide (FTO) or the coated glass and indium-doped tin oxide (ITO) coated glass since the researchers have read numerous journals which made use of these slides. Results clearly stated that the amount of sunlight is one of the factors that may affect the results. Future researchers may test the efficiency of the slides for three days.

KEYWORDS: DSSC, Alugbati, Mango, ITO

SUBMISSION ID: R04A-CAVITP-1302

Effect of Blue Green Algae (*Cyanobacteria*) on Lacatan Banana (*Musa acuminata*) Tissue Culture

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(Adviser: Renelyn Banasihan)

Abstract

INTRODUCTION

Plant tissue culture is the technique of maintaining and growing cells, tissues or organs especially on an artificial medium in suitable containers under controlled environmental conditions. Banana is the most economically important fruit crop in the Philippines and the only locally grown fruit available all year-around. However, supply does not always meet this high demand, especially in Luzon. Lakatan, sold in Luzon, sometimes comes from Mindanao. This study was conducted to use blue-green algae homogenized crude extract as an alternative source of plant growth regulator on Lakatan banana tissue culture. It helped produce large quantities of banana in just a short time. This also contributed to the removal of harmful algae on bodies of water, specifically from the Sampaloc Lake found at San Pablo City, Laguna.

METHODS

Using forceps and scalpel, the banana shoots are planted on the culture media. The treatment are MS + 3 PDR BAP (sa3) ; MS + charcoal (sa0) ; MS without charcoal ; MS + filtered homogenized crude extract of blue-green algae ; MS + unfiltered homogenized crude extract of blue-green algae. There are a total number of 15 replicates containing 2 shoots for each test tube. The data gathered was statistically analyzed using one-way ANOVA to determine if there was a significant difference between the varying treatments.

RESULTS

On the 32nd days after planting, MS + Blue-green algae yield the most number of shoots, MS without charcoal has the highest length of shoots and MS + 3 PDR BAP has the greatest number of leaves. While on the 64th days after planting, MS + Blue-green algae yield the most number of shoots, MS +Blue-green algae have the highest length of shoots and MS + Blue-green algae have the greatest number of leaves.

DISCUSSIONS

Arriving at the statistical analysis of data, the researchers came up with the result that the MS + Blue-Green Algae homogenized crude extract (Treatment 4) is the best treatment for the production of shoots; that MS + charcoal (Treatment 2) is good for lengthening of plants while MS without charcoal (Treatment 3) and MS + 3 PDR BAP (Treatment 1) are good in production of leaves.

KEYWORDS: Cyanobacteria, *Musa acuminata*, tissue culture

SUBMISSION ID: R04A-SANPAB-0037

Effect of Fungus, *Trichoderma harzianum* as Probiotic on the Growth, Cocoon Parameters, Silk Characters and Resistance of Silkworms (*Bombyx mori*) Challenged by Muscardine Disease-Causing *Metarhizium*

Dana Mae Alcosaba, Negros Occidental High School
(Adviser: Russell Gorre)

Abstract

INTRODUCTION

Sericulture is one of the promising agricultural industries in the Philippines. However, silk production in the country has dropped in the past decades due to muscardine diseases brought by *Metarhizium anisopliae* and *Bauveria bassiana*. This motivated the researcher to determine the effect of *Trichoderma harzianum* as probiotic on the larva length and weight, pupa weight, cocoon weight, shell weight, and ratio, silk weight, tensile strength and resistance of silkworms (*Bombyx mori*) challenged by the two fungi.

METHODS

Thirty 3rd instar silkworms were divided into five groups and fed with mulberry leaves treated with varying concentrations (30g, 50g, 70g/, 90g/100mL) of *T. harzianum* solution and compared with the untreated group. The different parameters were measured at the end of the 1st and the 2nd week of treatment. Another 30 *T.harzianum*-treated silkworms and 30 untreated silkworms were exposed to *M. anisopliae* or *B. bassiana*. The percent of infection was measured.

RESULTS

DMRT at $0.05\hat{I}\pm$ revealed that the varying concentrations of *T. harzianum* increased the weight length, silk weight, and tensile strength as compared to the untreated group. However, the only 90g/100mL of *T. harzianum* solution increased the pupa weight, cocoon weight, shell weight and shell ratio of the silkworms. The silkworms treated with *T. harzianum* also obtained 0% and 30% of the infection after exposure to *M. anisopliae* and *B. bassiana* as compared to 100% of the untreated group.

DISCUSSIONS

This result might be attributed to the probiotic activity of the *T. harzianum* which played a significant role in food digestion, which, in turn, influenced the growth and resistance of the silkworm and enabled the silkworm to have a better survival rate under the field condition. Probiotics are microbial food supplements beneficially affecting its host by improving the microbial balance and enhancing the rapid cellular, tissue growth, and development. Probiotics are involved in the digestive utilization of feeds and detoxification of metabolite, as well as the stimulation of the non-specific immune system. Probiotics also have the ability to suppress the growth of pathogens. *T. harzianum* produce the enzyme used for digesting food and retarding the growth of *M. anisopliae* and *B. bassiana*. This study could be a breakthrough in the field of agriculture as it offers a novel probiotic other than the *Lactobacilli* to enhance the growth of the silkworms, improve the quality of the silk produced and serve as a natural fungicide since commercial fungicides were found to cause colon, breast cancer, and leukemia.

KEYWORDS: probiotic, *Metarhizium anisopliae*, *Trichoderma harzianum*, *Bauveria bassiana*. Growth, cocoon parameters, silk characters

SUBMISSION ID: R006-BACOLO-0001

Effect of Golden Apple Snail (*Pomacea canaliculata*) Meat as Feeds on the Growth and Survival Rate of Mud Crab (*Scylla serrata*)

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Abstract

INTRODUCTION

Mud crab is considered a new species in aquaculture. Widespread interest in its culture is increasing due to the rising market value of mud crabs. At present, shrimp feeds and trash fish are currently used as feeds for mud crabs, however, their prices are continually rising. Finding low-cost feed supplies have been identified as one of the key challenges facing the rapid growth of the mud crab farming sector in Asian countries.

METHODS

To identify alternative feed in the culture of mud crab (*Scylla serrata*), five diets were tested as follows: GAS meat, trash fish, shrimp feed, GAS meat + trash fish, GAS meat + shrimp feed. This study compared the effect of the five diets on the growth and survival rate of 75 pieces of lean mud crabs fattened for 20 days. Mud crabs were stocked individually in plastic cases fitted in bamboo frames and installed in a brackish water pond.

RESULTS

Results showed that mean final weight, carapace length, and width of mud crabs fed with GAS meat did not differ significantly ($P>0.05$) among other treatments. 100% survival rates were recorded on the mud crabs fed with GAS meat, TrF and GAS meat + TrF.

DISCUSSIONS

The total weight gain (g) of mud crabs after a 20-day fattening period ranged from 84.47 g - 119.33 g. Mud crabs fed with a combination of GAS + trash fish recorded the highest weight gain while those fed with GAS meat have the lowest weight gain. However, mean weights showed no significant difference among treatments ($P\leq 0.05$). The survival rate of mud crabs was high in all feed types. However, it is worth noting that ShF and GAS meat + ShF- fed mud crabs did not attain a 100% survival rate.

KEYWORDS: mud crab, trash fish, shrimp feeds, fattening

SUBMISSION ID: R04A-CAVTP-0064

Effectiveness of Anonang Leaves (*Cordia dichotoma*) as Ripening Agent for Banana (*Musa acuminata*) Fruits

Margielyn Nicole Briñes & Roshela Bocito, Tabaco National High School

Abstract

INTRODUCTION

Calcium carbide is conventionally used as a ripening agent for banana fruits. However, it has been known and proven that it is extremely hazardous as it contains traces of arsenic and phosphorus which can cause adverse effects to human health. This study aims to introduce anonang (*Cordia dichotoma*) leaves as a natural ripening agent that can be used as an alternative to calcium carbide.

METHODS

The experimental design employing the before-and-after method with control design was adopted in this study. There were two control groups: the positive (use of calcium carbide) and the negative control group (without ripening agent). Likewise, two treatments were used for anonang leaves: the fresh and the dried anonang leaves. A total of four set-ups were prepared where each set-up was composed of six banana fingers. The stage of ripeness was determined primarily through color observation using a scale of 1-7 that is commonly used in the industry. Samples of the tree (source of leaves) used in the study were submitted to the National Museum of the Philippines to confirm its identity. Likewise, phytochemical and FTIR analysis was conducted to determine the constituents of the leaves responsible for ripening. To determine if a significant difference existed in the duration of ripening time of banana fruits in different treatments, Analysis of Variance was used.

RESULTS

The result of the phytochemical analysis revealed that the most abundant chemical constituent is sterol. There are traces of flavonoids, alkaloids, saponins, glycosides, and tannins already. The FTIR results of this study corroborate with the functional group of the phytochemical constituents of the plant as well as the presence of ethylene. The set-up containing the bananas with dried anonang leaves was as effective as the set-up containing the calcium carbide and was more effective than the rest of the set-up. There is a significant difference in the duration of the ripening time of the banana fruits in the different treatments.

DISCUSSIONS

Based on the results, anonang leaves can be used as a sustainable and potential ripening agent for banana fruits; for faster ripening, the dried ones can be used. Aside from ethylene, the sterol compounds present in anonang leaves are responsible for the ripening of banana. Further study on the nutritional value and the palatability of the fruits after the application of the different ripening agents is recommended. In addition to this, a study using the same leaf and for the same purpose but for a different fruit is also encouraged.

KEYWORDS: phytochemical analysis, FTIR analysis, calcium carbide, arsenic, sterol, ethylene

SUBMISSION ID: R005-TABACO-0062

Effectiveness of Bioluminescence from *Uroteuthis Spp.* in Detecting Meat Freshness

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of Education
(Adviser: Ruby Moran)

Abstract

INTRODUCTION

Meat-borne diseases are still one of the public health concerns attributed to microbial pathogens. From 2012 to 2014, acute viral infection and acute gastroenteritis were among the 10 leading causes of morbidity for all ages. In 2012, cases of gastroenteritis peaked at 1,266 in the City of Santa Rosa. The City Health Office I records reported that there had been 376 morbidity cases of infectious gastroenteritis and colitis, unspecified acute bloody diarrhea, acute gastroenteritis, acute watery diarrhea, enteritis, and dysentery in the city's 10 barangays. Fourteen recorded cases of these illnesses led to fatal incidents in the same year.

METHODS

This study used bioluminescent bacteria, *Vibrio fischeri*, obtained from ink samples from three common squid variants from Malabon and cultivated in Tryptone-Yeast Extract Glycerol Seawater Agar. Bacterial colonies from Squid Sample A exhibited the most bioluminescence and were identified as *Uroteuthis* spp. through morphological and biochemical analyses. Three batches of different meats (pork, poultry, and beef) were exposed to room temperature at different durations: 2, 4, and 8 hours. Tube Bioluminescence Extinction Technology (TuBET) was used, wherein meat samples were dispensed to a luminous bacterial suspension. The elapsed times were documented from initial contact of the meat with the suspension until the inhibition period of bioluminescence.

RESULTS

The TuBET assay summary presented an intuitive decrease in the inhibition period of bioluminescence as the spoilage of meat increased. The sensitivity of the assay proved to be consistent across all meat types. The results were subjected to a correlational analysis to determine the degree of agreement between the reliability of the assay across three meat types. An Analysis of Variance established a significant difference among means of total inhibition periods across differently aged meats. The statistical difference was measured using the Post Hoc Tukey Analysis and showed that each setup had a significant difference from each other.

DISCUSSIONS

Results of the study provided evidence that the spoilage of meat has a strong negative correlation with the inhibition periods of bioluminescence of *V. fischeri*. The reliability of the TuBET assay is further substantiated by a comparison of regression analysis of spoilage-vs-bioluminescence diagrams across the different types of meats. This proves the reliability of bioluminescence as a bio-indicator of freshness for different meat types.

KEYWORDS: bioluminescence, meat freshness, squid ink, TuBET Assay, *Uroteuthis* spp., *Vibrio fischeri*

SUBMISSION ID: R04A-STAROS-0007

Effectiveness of Du-Si Cream As An Alternative Skin Cream

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Abstract

INTRODUCTION

According to studies, skin problems such as irritations (rashes), acne and pimples are usually caused by bacteria- or germ-infection, while hyperpigmentation is due to the overproduction of melanin or overexposure to the harmful rays of the sun. In the Philippines, Duhat and Calamansi fruits grow everywhere. Thus, the researchers used the leaf extract of Duhat and juice of calamansi in creating a skin cream treatment for skin irritation that can be an effective alternative to skin creams available in the market. The study mainly focuses on creating a cheap and effective treatment for common skin problems such as skin irritation, acne, pimple, and hyperpigmentation.

METHODS

The experimental method of research was used in the study to determine if Du-Si cream can be as effective as the commercially produced cream treatment available in the market.

RESULTS

Based on the results of the effectivity tests administered to students of Calamba Bayside Integrated School, Du-Si Cream is 100 % effective in terms of its healing property but it still needs improvement in texture.

DISCUSSIONS

The results of the findings of the favorability and acceptability tests administered to students proved that Du-Si Cream is highly favorable in terms of odor and color, but it needs improvement in texture. The results also show that it is highly effective in treating skin irritation, thereby rejecting the null hypothesis. The findings also indicate that despite the unusual combination of Duhat leaves extract and calamansi juice, it did not cause any side effects to the respondents. The researchers, therefore, conclude that Du-Si cream can be helpful to financially-challenged people who are experiencing skin irritations. This cream can be an alternative to the expensive skin cream treatments in the market. However, caution must be observed especially to those who have allergies to herbal medicines.

KEYWORDS: effectiveness, du-si cream, skin cream

SUBMISSION ID: R04A-CALAMB-0029

**Effectiveness of Katakataka Leaves Extract as an Antibacterial Against
S. epidermidis and *E. coli***

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National High School

Abstract

INTRODUCTION

The use of herbs in healing wounds is a practice of people since time immemorial. Phytochemical screening of some selected plant species confirms the presence of alkaloids, triterpenes, glycosides, flavonoids, steroids, bufadienolides, lipids and organic acids, components that give a plant potential antibacterial properties. Nowadays, the use of alternative medicine is popular considering the high cost of synthetic medicine and the possible development of genetic resistance of some bacteria to synthetic antibiotic drugs. Hence, the researchers ventured to find out whether the *Bryophyllum pinnatum* bearing active phytochemical compounds would be a potential antibacterial agent against *S. epidermidis* and *E. coli*.

METHODS

The standard procedure was followed in preparing the Mueller Hinton Agar. The antimicrobial potential of *Bryophyllum pinnatum* was determined following the protocols used for the antimicrobial assay.

RESULTS

The result showed from the study that extracts from katakataka leaves have no significant effect on the sample test bacteria. However, positive control is showed a highly significant effect on both bacteria which *E. coli* and *S. epidermidis*. It had a p-value of 0.05 (DMRT).

DISCUSSIONS

The sample extract of *Bryophyllum pinnatum* produced moderate activity of inhibition with moderate reactivity against *S. epidermidis*. The sample-free disc, which served as positive control produced complete inhibitory activity with severe reactivity, while the negative control produced a negative inhibitory activity and no reactivity against the test organisms.

KEYWORDS: katakataka leaves

SUBMISSION ID: R04A-CAVTP-1700

Effectiveness of *Moringa oleifera* (Malunggay) Seeds as Coagulant

Darlence Mae A. Arandia, Kathleen Mae R. Aclan, Kyle Menard A. Aranza, &
Von Derek C. Acuzar, Batangas State University
(Adviser: Jed Tolentino)

Abstract

INTRODUCTION

Water is of major importance to all living things. Some residents still rely on unsafe and unsustainable water until now. Several studies are being conducted to provide solutions on how people can gain access to clean water, specifically in remote areas. However, most studies are costly and inaccessible. This predicament leads people in rural and isolated areas to use contaminated water. It was in this light that the researchers aim to enhance a cost-effective solution. Moreover, this study aims to determine the effectiveness of *Moringa oleifera* (Malunggay) seeds in filtrating water with different substances. As such, the researchers have provided valuable ideas on economical yet effective water treatment for the community.

METHODS

Researchers used quantitative analysis as this study involves numeric information in the form of variables. An experimental research design was also used for this study. The water samples were gathered from river water and piggery drainage water. The physicochemical properties tested were pH level, turbidity and Biochemical Oxygen Demand (BOD). Three amounts of malunggay seeds (0.1g, 0.3g, and 0.5g) were used to distinguish the number of seeds that best suit its ability as a coagulant. The results of the water testing were then analyzed and were compared to the standard physicochemical properties of domestic water.

RESULTS

Through experimentation and water testing, the researchers were able to gather enough data to conclude that Malunggay seeds can be considered as a cost-effective natural coagulant and can be used to clarify water, with 0.1g as the most effective amount of seeds. It is proven that there is no significant difference in the properties of the treated water samples and the properties of standard water for household and domestic purposes with the BOD level as an exception. Therefore, the change on the physicochemical properties of the water samples after being treated with malunggay seeds does not affect its capability of being used for household or domestic purposes.

DISCUSSIONS

The results have proven that malunggay seeds can be considered as an alternative natural coagulant that can clarify water which can be used for domestic and household purposes. Further studies may be conducted about the overall properties that make it suitable as a coagulant. This study can serve as a reference in making another research that explores the number of seeds that is best suitable for water treatment other than the amount used in this study.

KEYWORDS: coagulation, filtration, *Moringa oleifera* (Malunggay), pH level, physicochemical properties, turbidity

SUBMISSION ID: R04A-BATANC-0177

Effectivity of *Laurus nobilis* (Bay Laurel) Leaves Extract on the Growth of Two Gram-Positive Bacteria: *Staphylococcus aureus* and *Baci*

Grayshe Mae Balano

Abstract

INTRODUCTION

Gastroenteritis is an aggravation of the gastrointestinal tract including both the stomach and the small digestive tract. It is usually associated with food poisoning which may be of bacterial or chemical origin. This research study aimed to determine the efficiency of the *Laurus nobilis* (Bay Laurel) extract as a potential substitute for Vancomycin in inhibiting the bacteria *Staphylococcus aureus* and *Bacillus subtilis*.

METHODS

Plant verification was done to authenticate and verify the plant. The fresh leaves were prepared and subjected to Soxhlet extraction for the isolation of its essential oils. The different concentrations (25%, 50%, 75%, and 100%) of the isolated constituent were the following: Vancomycin (positive control), distilled water (negative control) and 95% ethanol as the controlled variable. The accomplished extract was subjected to an antibacterial test using several processes such as disc diffusion method and incubation. The zone of inhibition was measured using a metric ruler and analyzed using One-way ANOVA at .05 level of significance.

RESULTS

The 100% concentration containing the pure isolated extract exhibited the greatest zone of inhibition against *Staphylococcus aureus* and *Bacillus subtilis*.

DISCUSSIONS

The research study can serve as a basis that Bay Laurel can inhibit *Staphylococcus aureus* and in *Bacillus subtilis* which can be a great help to experts and other researchers. This research can be applied in the field of pharmacy and medicine.

KEYWORDS: *Laurus nobilis*

SUBMISSION ID: R04A-CAVTP-0323

Effects of Aqueous Leaf Extracts of Talisay, *Terminalia catappa* on the Breeding of Fighting Fish, *Betta splendens*

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Abstract

INTRODUCTION

Fish breeding is considered an excellent method for the emerging ornamental fish industry with high hopes of profit. However, the breeding of *B. splendens* is deemed difficult due to its aggressive behavior. This study aimed to determine the brood conditioning effects of *T. catappa* aqueous leaf extracts on the breeding of *B. splendens* particularly on its rate of bubble nest production, a number of eggs, and survival of fry.

METHODS

Six treatments were used in the study and the results showed that treatment six (20mL leaf extracts with the presence of *T. catappa* leaf) positively affected the rate of the bubble nest production, number of eggs, and survival of fry with decreasing effects on lower concentrations.

RESULTS

Results based on ANOVA I further revealed that the treatments had a statistically significant effect on the rate of bubble nest production ($P < 0.05$) but no effect on the temperature ($P > 0.05$). Also, the chi-square test showed no difference between the absence and presence of *T. catappa* leaf used in the treatments on the rate of bubble nest production ($P > 0.05$). Furthermore, the Pearson r correlation revealed that the number of eggs was significantly correlated with temperature ($P < 0.05$) while the number of eggs had no relation at all with bubble nest production and weight of female *B. splendens* ($P > 0.05$).

DISCUSSIONS

These results suggest that *T. catappa* is an effective conditioner in the breeding of *B. splendens*.

KEYWORDS: Aquaculture, Bubble nest production, Fry survival, Fish breeding

SUBMISSION ID: R04A-CAVITP-0289

Efficacy of Mango Leaves (*Mangifera indica*) as an Alternative Chlorophyll Ointment

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Abstract

INTRODUCTION

This study was concerned with finding an alternative healing agent to treat wounds out of natural resources such as mango tree leaves. According to Axe (2017), its benefits include helping fight cancer, improving liver detoxification, speeding up wound healing, improving digestion and weight control, and protecting skin health. Thus, creating an ointment with chlorophyll as a wound remedy can promote important purposes in medicinal fields. The study aimed to determine the effectiveness of mango leaves as an alternative chlorophyll ointment. This study aimed to be beneficial to communities, especially in the rural and heavily-urbanized areas where supplies of generic medicine are limited.

METHODS

This study used a quantitative type of research; specifically, experimental research that involved the manipulation of chlorophyll ointment by assigning different concentrations of chlorophyll such as 25%, 50% and 75% of chlorophyll content. Each identical laboratory mouse was wounded, measuring 1 inch in its right thigh, and everything was controlled. The researchers used an adapted wound evaluation sheet in every laboratory mouse to record the progression of the wound. Data gathering was done by observing and assessing the wound's size, edges, and epithelialization adapted from the Bates-Jensen Wound Assessment Tool.

RESULTS

From the assessment of wound treated by ointments with concentrations of 0%, 25%, 50%, and 75% of the chlorophyll extract. The chlorophyll ointment with the most effective concentration was the ointment with the 75% chlorophyll extract with a 2.56 weighted mean. Based on the 5-point Likert scale, the ointment with the lowest weighted mean had the most effective concentration of chlorophyll. Therefore, the researchers concluded that it is highly effective which means it consistently achieved and often exceeded the expected performance level. Based on the ANOVA test, there is a significant difference in the efficacy of different concentrations of chlorophyll ointment in terms of the wound size, edges, and epithelialization.

DISCUSSIONS

The study intended to advocate the proper use of chlorophyll ointment to maximize its use for the community and able to help rural areas in a country that lacks in supplies of remedies. The study suggested the implementation of the chlorophyll ointment in the market to promote wound remedy at a cheaper price. The study also promotes planting more mango trees for increased production of chlorophyll ointment.

KEYWORDS: efficacy, mango leaves, alternative chlorophyll ointment

SUBMISSION ID: R04A-CAVITP-0118

Erythropoietic Effect of Paragis Leaf (*Eleusine indica*) Extract on Albino Rats

Harold Punongbayan, Harold Anthony Juan Manuel M. Diones, & Jhulz Haven M. Paiton

Abstract

INTRODUCTION

in the field of medicine, many diseases are related to the Red Blood Cells, and one of them is Anemia. This disease can be treated yet it is often not being paid attention by specialists. This study aims to help people who cannot afford expensive treatments to elevate their Red Blood Cells count. By the use of the erythropoietic effect of Paragis leaf extract as a substitute, it is hypothesized that it can increase the count of Red blood cells in an affordable way.

METHODS

Paragis leaves were gathered, washed, and macerated to obtain the crude extract. Four Albino rats with the same gender are used and divided into 2 set-ups. The first set-up with two Albino rats is given the Paragis leaf extract while the other set-up is given with clean water. It was observed for 7 days. After 7 days, the blood samples were collected on each rat as part of the observation.

RESULTS

Before the experimentation, the red blood cells count is measured. Afterward, the 2 albino rats were administered with 7ml of Paragis extract and the other 2 rats were administered only with water within 1 week. After the experimentation, the albino rats were tested at the Magime Animal Diagnostic Laboratory. After 1 week, the results came: the red blood cells of the 2 albino rats administered with Paragis extract increased within 5.60 - 7.01 and 5.95 - 7.11 while the red blood cells of the 2 albino rats administered with water remained at its normal rate. This study showed that the calculated mean before the test was conducted is 5.79 while after the rats were administered with paragis grass, the calculated mean became 6.25 showing that paragis grass can increase the count of red blood cells.

DISCUSSIONS

If this study gets accepted, it will be a big help to people suffering from Anemia caused by the low amount of red blood cells. This will also provide a new technology of utilizing plant parts already considered as waste materials for the preparation of useful products.

KEYWORDS: Paragis leaf extract, increase of red blood cell

SUBMISSION ID: R04A-CAVTP-1661

**Ethnobotanical Knowledge and Practices used by Residents on
Medicinal Plants at Hacienda Looc, Nasugbu, Batangas**

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Abstract

INTRODUCTION

Ethnobotanical knowledge of medicinal plants and their uses are not only significant for the conservation of biodiversity but also for healthcare and development of new and less expensive plant-based medicines for the present and the future. Hacienda Looc is composed of four barangays that stretches over the seaside of Calayo, Papaya, Looc, and Bulihan in the coastal town of Nasugbu, Batangas. It was recognized as a remote area because people here have no urgent access to modern medicinal facilities. This study aimed to determine and reveal the various knowledge and practices used by the residents of barangays on medicinal plants.

METHODS

This study utilized the descriptive survey research design which used the questionnaire in gathering the necessary data. A purposive sampling technique was utilized to select twenty-five (25) respondents per barangay who will use the medicinal plants from Hacienda Looc.

RESULTS

A Medicinal Pamphlet is designed to further enhance and utilize the ethnobotanical knowledge and practices on medicinal plants.

DISCUSSIONS

Out of twenty-four (24) plants, two (2) of them (oregano and calamansi) have been identified as the most commonly used medicine through decoction, poultice, extraction and eaten-as-raw methods. Moreover, the present study concludes that ethnobotanical knowledge and practices on medicinal plants play a major role in the residents' lives.

KEYWORDS: ethnobotanical, decoction, poultice, extraction, eaten as raw, medicinal plants

SUBMISSION ID: R04A-BATANP-0004

Evaluation of Dumpsite Soil as Compost and Assessment of Heavy Metal Concentration in Selected Plants from Municipal Solid Wastes Dumpsite of Brgy. Lalaan, Municipality of Silang, Cavite

Marielle Trinidad, Department of Education Cavite

Abstract

INTRODUCTION

The generation of waste increases proportionally with the consumption of products and services. The density of these invaluable remains increases dramatically with the local population while its post-processing takes place at a slower pace. Waste, therefore, cannot be avoided but can be managed. A simple way to deal with this massive amount of waste is to restore value from it. One way of restoring its value is through composting. Thus, this research paper analyzed the compost suitability and quality of the soil in a closed Municipal Solid Waste dumpsite in Brgy. Lalaan, Silang, Cavite as well as the heavy metal concentration (Cd, Pb, Zn, and Cu) of the plants (*Ipomoea batatas*, *Ipomoea aquatica*, and *Capsicum frutescens*) growing in the area.

METHODS

The plants and the soil samples were collected from the three multi-depths stations and were subjected to physical (moisture and water holding capacity), chemical (pH, organic matter, electrical conductivity, total N, available P, exchangeable K) assessments, including heavy metal analysis using Atomic Absorption Spectrophotometer (AAS).

RESULTS

The soil samples collected from the three different depths of the MSW dumpsite in Brgy. Lalaan Silang, Cavite showed no significant difference in terms of their physicochemical characteristics. The soils have potential as a soil compost with favorable results in both physical parameters and chemical parameters, except for the organic matter content. In terms of heavy metal concentrations of Zn, Cu, Cd, and Pb, all the three depths were given the highest score value in terms of the clean index. The study also revealed that the concentrations of Zn, Cu, Cd, and Pb in the MSW dumpsite soil are all within the permissible limit set by WHO and FAO. Likewise, the concentrations of these heavy metals in the different parts of the plants (*Ipomoea aquatica*, *Ipomoea batatas*, and *Capsicum frutescens*) did not reach and exceed the critical levels.

DISCUSSIONS

The dumpsite soil can be graded Class A as the results are compliant with physical and chemical parameters for compost while the heavy metal concentrations in the plants are within the permissible limit set by WHO/FAO with each of the parts significantly below the toxicity level. The findings further recommend the use of dumpsite soil as compost and the consumption of *Ipomoea batatas*, *Ipomoea aquatica*, and *Capsicum frutescens* grown in the premises.

KEYWORDS: Cadmium, copper, lead, zinc, soil

SUBMISSION ID: R04A-CAVITP-0529

Evaluation of the Hydrophobicity of *Alocasia sp.* as a Potential Surface Coating for Paper Bags

Demelzy Wangkey, Janine Rosel Gabriel, & Jenzenne Valenzuela, Cavite
National Science High School

Abstract

INTRODUCTION

Plastic pollution is one of the major global problems we are facing today (Villanueva, 2018). One of the worldwide initiatives to decrease plastic pollution is the utilization of paper products as an alternative to plastic materials. *Alocasia sp.* may be considered a potential raw material in producing paper products due to its hydrophobic characteristics. Thus, this research study aims to evaluate the hydrophobicity of *Alocasia sp.* leaves as a potential surface coating for paper bags. It also aims to examine the hydrophobicity of *Alocasia sp.* leaves in accordance with *Colocasia esculenta* leaves which serve as the positive control in this study.

METHODS

The main materials, fresh *Alocasia sp.* and *C. esculenta* leaves, underwent the solvent (methylene chloride) extraction method to obtain its bio-wax content. Afterward, pieces of filter papers were set in a dip-coating technique to be fully coated with bio-wax. These were dried up before it was put, one by one, in an improvised contact angle meter device where the actual hydrophobicity test was done. The materials and equipment used in the experiment were properly disposed of according to the disposing rules and regulations of the laboratory. An independent t-test was used in comparing the gathered data and a p-value less than 0.05 was considered statistically significant.

RESULTS

in the preliminary analysis of the bio-wax content of both plants, the results show that the amount of bio-wax present per gram of leaf of *Alocasia sp.* is 0.005g and is lower than the amount of bio-wax present per gram of leaf of the *C. esculenta* which is 0.0062g. However, after three trials of hydrophobicity test, the results show that *Alocasia sp.* has a higher hydrophobic rate than *C. esculenta*. This was supported by its higher mean of contact angles which is 125.45° than the mean of *C. esculenta*'s contact angles which is only 104.20°. Moreover, the results from the independent t-test show that the angles produced by *Alocasia sp.* and *C. esculenta* were statistically significantly different from each other, as evidenced by a p-value less than 0.05 ($p=0.023$).

DISCUSSIONS

in previous studies, *C. esculenta* has been proven to be an effective source of hydrophobic coating for paper bags. By comparing the test results of hydrophobicity, it was confirmed that *Alocasia sp.* is hydrophobic and may be considered an effective source of bio-wax for hydrophobic surface coating for paper bags.

KEYWORDS: Bio-wax extraction, Hydrophobic surface coating, Paper bag application

SUBMISSION ID: R04A-CAVITP-0350

Extraction of Saxitoxin on Green Mussel (*Perna viridis*) Using Activated Carbon by Adsorption Method

Chanel R. Morales, Martie Nicole C. Salcedo, & Vea Samantha D. Arcayos

Abstract

INTRODUCTION

Paralytic shellfish poisoning, also known as PSP, is a foodborne illness that typically develops after consumption of shellfish contaminated with a specific type of neurotoxin called saxitoxin. The main purpose of the study is to extract the neurotoxin from the mussel using a safe and natural way. Activated carbon will be used to adsorb the toxins and extract it from the mussels. The poison adsorption may be limited by the administration of activated charcoal either as a single dose or in multiple doses. Adsorption is a process in which atoms and molecules move from a bulk phase (such as a solid, liquid, or gas) onto a solid or liquid surface.

METHODS

The researchers produced their own "algal bloom" which was then ingested by the mussels. The dinoflagellates were cultured within conditions. From there, the mussels have undergone a procedure of detection by the use of photo-induced electron transfer sensor. Then, the extraction of saxitoxin in the mussels was done through submerging it in water diluted with an activated carbon solution. The experimentation was done by the adsorption process.

RESULTS

After the experiment, the study showed that 89% of the toxins were trapped and adsorbed by the activated carbon's properties. As activated carbon (activated charcoal) is a crude form of graphite, the graphite structure gave it a very large surface area, which allowed the carbon to adsorb a wide range of compounds. Therefore, the results showed that the activated carbon efficiently adsorbs the toxins away from the mussels.

DISCUSSIONS

Therefore, the researchers concluded, that if this study were to be accepted, it will be a big help to eliminate saxitoxins present in the said mussel (Green Mussel) to help increase the export rate of the seafood and to help those in danger of the illness whilst consuming the shellfish. This also proved the activated carbon's adsorbing properties within toxins. The study showed that the activated carbon traps the toxins in its pores and therefore adsorbs the particles and takes it away from the mussels.

KEYWORDS: saxitoxin, extraction, activated carbon, dinoflagellates, mussels, red tide, algal bloom, activated charcoal, detoxification

SUBMISSION ID: R04A-CAVITP-1688

Factors that Affect the Comprehension of Students in Class

Rona Peji & Christian L. Luna

Abstract

INTRODUCTION

Tremendous decrease in the result of National Achievement Test of TCSNHS in all subject areas could be related to poor comprehension of the students. in line with the above reality, the researchers identified the factors that lead to the poor comprehension of students in class and how to deal with these factors. One thing that must be taken into account is the strategy of teachers in delivering the lessons. The strategies used in this study were ICT integration, constructivism, reflective approach and interactive collaborative learning. The researchers conducted this study for the purpose of enhancing and developing students' comprehension in order to improve the results of National Achievement Test of Tagaytay City Science National High School and their learning as a whole.

METHODS

The respondents were seventy (70) Junior High School teachers in Tagaytay City Science National High School. Descriptive survey approach was used. Questionnaire and interview guides were utilized in order to gather data.

RESULTS

The study revealed that 25 or 35.71 % of the respondents favored the lack of motivation from teachers and noisy students affect the comprehension of students with similar percentage. However, 20 or 28.57 % of the respondents favored crowded rooms as another factor. While 40 or 57.14 % of the respondents favor that ICT integration; 10 or 14.29 % of the respondents responded to constructivism. Lastly, 20 or 28.57 % articulated as reflective as a teachers' strategy employed to solve the problem. In addition, 30 or 42.86 % of the respondents favored remediation program and the reward system with similar percentage, 10 or 14.28 % of the respondents favored reflective approach as an intervention program that can be applied to poor comprehension. Moreover, 40 or 57.14 % of the respondents favored that the implication of this study to other schools as a tool in developing action plan or program. Hence, 20 or 28.57% of the respondents favor that this study can serve as a guide and 10 or 14.29 % of the respondents favored that this study can serve as an eye opener for other schools.

DISCUSSIONS

The researchers identified the main factors that affect the poor comprehension of the Grade 7 Learners. Most respondents stated that no motivation of teachers and noisy students affect their comprehension. in order to resolve this problem, the researchers came up to do the following innovations and strategies: Remediation Program, Apply Reward System, Apply Multiple Strategies/ Methods, Utilize Different Strategic Intervention Materials, tap stakeholders to provide additional ICT tools and lastly, Conduct continuous comprehension monitoring at home.

KEYWORDS: Comprehension, Reward System, Remediation Program, Achievement Test, Learners

SUBMISSION ID: R04A-CAVITP-1403

Fertility Behavior Among Adolescent Mothers in Tanay, Rizal: Factors and Association with Access to Birthing Services and Maternal and Infant Health Outcomes

Malayang Cheryl Marie, Population Commission, Looc Integrated School Partner

Abstract

INTRODUCTION

This study described the fertility behavior among adolescent mothers in Tanay, Rizal and its relationship with their socio- demographic characteristics and reproductive health knowledge. The study also established the relationship between the fertility behavior among adolescent mothers and their access to birthing services. It also determined the relationship between their access to birthing services and their maternal and infant health outcomes. This study described the fertility behavior among adolescent mothers in Tanay, Rizal and their relationship with their socio-demographic characteristics and reproductive health knowledge.

METHODS

This quantitative-descriptive study selected all (127) adolescent mothers from Tanay, Rizal. The data collection tool used was an interview schedule.

RESULTS

Results of the study revealed that the adolescent mothers in Tanay, Rizal showed that there was a decline as to the number of pregnancies and they were able to delay their age at first Pregnancy. Among the socio-demographic characteristics, highest educational attainment and mother's occupation were the factors that influenced their fertility behavior. in terms of reproductive health knowledge, study revealed that the total reproductive health knowledge influenced the age at first pregnancy while it does not have any significant relationship as to the number of their pregnancies. Another finding showed that antenatal care visits had a direct relationship on adolescent mother's age at first pregnancy. Only skilled birth attendant among those birthing services has had a relationship with maternal health outcomes.

DISCUSSIONS

Despite adolescent mothers' high-quality level of access to birthing services, still they have experienced adverse maternal health complications. Access to quality birthing services does not have any relationship to infant health outcomes. Adverse health complications were experienced by infants of adolescent mothers despite their compliance in terms of antenatal care visits and access to quality skilled birth attendant and health facility.

KEYWORDS: FERTILITY, BEHAVIOR, ADOLESCENT, MOTHERS, BIRTHING SERVICES, MATERNAL, INFANT HEALTH

SUBMISSION ID: R04A-CALAMB-0403

Fibroblasts Proliferation and Epithelialization in Wounds Using *Ficus Elastica* Roxb. ex. Hornem (Rubber Tree) Rootlets Extract on ICR Mice

Ashley C. Malimban & Reno Alejandro Maninit

Abstract

INTRODUCTION

Wound is defined as disruption of cellular and functional continuity of a living tissue. There are lots of commercial drugs or medicines being sold and sometimes distributed for the needs of people. However, not everyone receives these medicines and a lot of them cannot afford them because they are expensive. This is the main reason why the demand for making an alternative medicine still persists. It is believed that natural agents induce healing and regeneration of the lost tissue through a variety of mechanisms. This research study aims to test the wound healing activity of *Ficus elastica* Roxb. ex Hornem.

METHODS

The collected rootlets were air-dried, peeled and extracted by soaking it in 95% ethanol then diluted into 50%, 75%, and 100% concentration. The mice were grouped in a simple random method for acclimatization. After the mice were acclimatized, the 30 test organisms were injected with anesthetic. Before inducing the wound, the area for the wound was shaved. The 2mm wide and 10mm deep wound was induced in the dorsal part of the lumbar area by using a new blade. The treatments were applied using size 12 brushes on each mouse every 12 hours for one week. After a week, the wound part was collected to undergo histological analysis and the results were analyzed.

RESULTS

The histopathology results were categorized by the development of the wound. The results were analyzed using Kruskal Wallis H test with the alpha level 0.05. The data is divided into two: the fibroblasts proliferation and epithelialization. In the results of the fibroblasts proliferation between the concentrations, the 50% and 75% concentration both have the same average. While in epithelialization the 50% concentration showed the best result, which helped in determining how each concentration differ. The final results determined that the 50% concentration is the most effective among the three. The results also proved that there is a significant difference between the 50% concentration and the positive control which determines the possibility or the capability of the rubber tree rootlet extract as a wound medicine.

DISCUSSIONS

The null hypotheses were rejected; therefore, the results were positive. The results showed that the rubber tree rootlet extract has a capability of an alternative wound medicine. It also determined that commercially produced products can be replaced with organic products that would provide a safer result for consumers. Although the results were positive the study has flaws that affected the result.

KEYWORDS: wound, fibroblasts proliferation, epithelialization, rubber tree

SUBMISSION ID: R04A-CAVITP-0433

FICA POTS (Potential Use of Fish Scales and Cassava Starch for Biodegradable Plastic Pots Production)

Celeste Silva, Department of Education

Abstract

INTRODUCTION

Fish scales are removed before cooking and are just left-behind in the market after buying. Markets are then filled with undisposed fish scales giving these places bad odor and turning them into filthy environments. With this, the researcher explored the use of fish scales and cassava starch as raw materials in pottery which may help the markets' disposal of fish scales. The researcher aims to reduce the use of plastics through bioplastics made from fish scales and cassava starch.

METHODS

The researcher collected fish scales from the fish sellers in the market and dried them naturally under the sun. Once completely dried, the researcher dyed the fish scales and dried it again. While drying the fish scale, the researcher prepared the cassava starch by grating and drying the cassava tubers. After pouring some water, the researcher mixed the cassava paste with the dried fish scale then used a plastic pot as mold and used pressure for the scales to fit in the shape. After it followed the shape, the researcher separated the plastic pot and the fish scale pot.

RESULTS

The researcher found out that the cassava starch mixed with the dried fish scale were proven effective as alternative raw materials in pottery. Having enough time to dry the scales and with the proper amount of fish scales and cassava starch, the fish scale pot can hold soil for plants. Having the fish scale dried and exposed to heat, it released calcium making it sticky and able to follow the form of the mold. The researcher has proven that the fish scale pot was a good way to dispose of fish scales. With this study, the problems of disposing the fish scales in the market will be solved. This also lessens the use of synthetic materials.

DISCUSSIONS

The researcher found a solution and resolved two problems faced by the country. First, the large amount of fish scales improperly disposed at the markets or at home after cleaning the fish. The fish sellers may have extra income for making fish scale pots. This may be a good business for someone interested in starting one. This study can also serve as a key for other researchers to discover other things to lessen the use of synthetic materials. The people will have a way of avoiding the usage of synthetic materials which continuously cause the destruction of the environment.

KEYWORDS: Fish scale, cassava starch, FICA pots, bio-plastics

SUBMISSION ID: R04A-CAVITP-0987

Fishcaya Soap: Acceptability of Papaya-Fish Scale Soap as an Alternative to Commercial Body Soap

Alexandra Deleon Bandalas, Calamba Bayside Integrated School
(Adviser: Cincy Merly Gecolea)

Abstract

INTRODUCTION

We eat fish and throw away the scales. But now researchers have figured out a reason those fish scales might be worth saving. Fish scale contains natural collagen which is a complement nutrient and building block to skin and helps slow down aging. Collagen comprises about 30% of the entire protein of the human body weight. There is about 3 kg of collagen in an adult body. Fish scale can also be used in beauty products because of which the researcher used the fish scale and papaya to make soap. The study mainly aims to determine the acceptability of soap from papaya and fish scale in terms of its appearance, odor and effectiveness.

METHODS

Experimental method of research was used in the study to determine if papaya-fish scale soap can also be effective in comparison to the commercial soaps available in market. Questionnaire was used in evaluating the acceptability of papaya-fish-scale soap in terms of its appearance, odor and effectiveness.

RESULTS

The result of the study revealed that the product is highly acceptable to the consumers and it was also proven effective. in terms of appearance it has a general assessment of 4.07 or Moderately Agree. Also, the general assessment of 4.10 or Moderately Agree revealed that in terms of odor the papaya-fish scale soap is also acceptable. Moreover, in terms of effectiveness on skin, it shows that it is accepted having the general assessment of 4.06. There is no difference on the effect between the papaya fish scale soap and the commercial soap in terms of appearance and odor.

DISCUSSIONS

The soap that we formulated was successful because it solidified and it somewhat turned into a soap. Although it took us quite some time to mix all of the ingredients still it is a worthwhile experience. The assessments of the respondents are really helpful in making the conclusion that this soap can also be used and it is something that the researchers must be proud of. When the respondents used the product, it wasn't so hard because the time wasn't sufficient to harden the soap but when they used it was gentle to the skin and does not cause any allergic reaction and also it makes their skin lighter.

KEYWORDS: acceptability, effectiveness, fishcaya soap

SUBMISSION ID: R04A-CALAMB-0020

Freshwater Shrimps Cultivation in Laiya National High School

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(Adviser: Catalina Punzalan)

Abstract

INTRODUCTION

The freshwater shrimp is suitable in warmer climate. It lives in inland bodies of water like rivers, lakes, swamps, irrigation canals, estuaries and even in inland bodies of water. Cultivating freshwater shrimp is popular in Asia. This aquaculture farming needs a wide area such as a pond. In this study, the researchers focus on cultivating freshwater shrimps in a small tank with the use of the aerator to supply oxygen. The researchers also aim to find the most suitable food for the freshwater shrimps in cultivation.

METHODS

The researchers used experimental method to test if the freshwater shrimps can survive in a small tank and identified the most effective food in cultivating freshwater shrimps in a small space.

RESULTS

Based on the findings of the study, cultivated freshwater shrimps survive in a small tank using two aerators. The first aerator was used to give oxygen while the second aerator was used to circulate the water using the improvised water lifter. The foods that were distributed on the three different compartments were suitable, however, the results were different. In the first compartment which contains 100% corn, the freshwater shrimp's growth rate was slow. In the second compartment which contains 50% corn and 50% algae, growth rate was moderate while in the 100% algae, the result was excellent.

DISCUSSIONS

The result shows that cultivating freshwater shrimp in a small tank was possible with the use of aerators to make the water well oxygenated. While the most suitable food to the freshwater shrimps was algae.

KEYWORDS: algae, aerator, freshwater shrimp, Cultivation

SUBMISSION ID: R04A-BATANP-1326/ R04A-BATANC-0071

Freshwater Shrimps Cultivation in Laiya National High School

Steffany Gatdula, Tabangao Integrated School

Abstract

INTRODUCTION

An effective teacher integrates numerous types of learning strategies based from the learning styles of the students. It is important for the teachers to realize that students learn in different ways. Also, the inclination of the students toward the subject matter affects the students' academic performances. The researcher affirms that maximizing the available resources in school is necessary in helping the students to easily understand the concepts in science specially when students' capacities and abilities are inclined with skills rather than academics. This study aims to determine the effectiveness of garden-based strategy in teaching senior high school Life Science by identifying the students' level of performances and describing their behaviors and attitudes toward garden-based learning and develop garden-based learning activities.

METHODS

An experimental method was used. The respondents were 60 Grade 11 Shielded Metal Arc Welding (SMAW) students grouped as control and experimental using a purposive sampling technique. Data sources include, pretest and post-test scores, gain scores, class observation forms and survey questionnaires. Frequency, percentage, weighted mean and dependent T-test were the statistical tools applied to answer specific questions.

RESULTS

Findings revealed that the level of performances of students under conventional teaching were at the basic level prior to instruction and improved to proficient level after the instruction in some Life Science lessons. Integration of garden-based strategy increased the level of performances of the students from basic to proficient level in all Life Science lessons. in addition, there was no significant difference in the level of performance of the controlled and experimental groups when it comes to Introduction to Life Science lessons, bioenergetics and interaction and interdependence. Results also indicated that there was a significant difference between the performances of both groups specifically in perpetuation of life and how plants survived lessons.

DISCUSSIONS

The findings indicate that garden-based learning activities may be adopted in teaching Senior High School Life Science lesson and allowed the students to improve their science academic performances while enjoying the teaching-learning process on outdoor learning activities. It is further recommended to conduct parallel study to different tracks and strands in Senior High School and to a large number of students.

KEYWORDS: garden-based strategy, teaching-learning process, outdoor learning, Life Science, performance level

SUBMISSION ID: R04A-BATANP-1326/ R04A-BATANC-0071

Guava (*Psidium guajava*) Leaves Extract as Mitotic Inhibitor in Red Onion (*Allium cepa*) Roots

Lorrie Anne Torralba, Maria Clarisse Macapallag, & Renz Miciel Trovela

Abstract

INTRODUCTION

This study is an evaluation of the effect of guava leaves extract as mitotic inhibitor in red onion root tips. This was conducted to find out if guava leaves extract has the potential as a good alternative for antimitotic substances.

METHODS

The researchers gathered no less than 50 pieces of fully-grown guava leaves, 15 regular onion bulbs, styrofoam containers, tap water, and mesh wire. The onion bulbs were arranged by 3 pieces per container and left partially soaked in 50mL water and placed where there was sufficient sunlight for the onions to grow for 3-5 days. After that, the bulbs were removed from water. The guava leaves were extracted and treated on to the onion bulbs for another 24 hours. After the treatment is the fixation wherein the fixative will be replaced with 70% ethanol, then the roots were ready for the preparation of glass slides. The researches cleanly observed the slides through the microscope. The mitotic index was computed through the number of observed cells and dividing cells.

RESULTS

in the results for the mitotic index, Setup E or the control group had the highest mitotic index recorded (7.85%) since it was untreated with guava leaves extract unlike the other experimental setups A, B, C and D that had a lower mitotic index as the concentration of guava leaves increased. The experimental group had a range of mitotic index from 0.56% to 3.38%.

DISCUSSIONS

The result of observation shows that control setup E had a higher mitotic index compared to the experimental setups A, B, C and D. It has covered 0.19% mitotic index and was obviously higher than the other setups having only 0.01% - 0.09%. It is also notable that different concentrations affect the mitotic index of the onion roots from pure extract which had the lowest, to 25% extract which had the highest within experimental groups. Therefore, it can be generalized that the guava leaves extract really inhibits mitotic activities within the onion roots.

KEYWORDS: guava leaves, mitotic inhibitor, red onion roots

SUBMISSION ID: R04A-LAGUNA-0028

Handmade Paper Fabrication Using Dried Pineapple (*Ananas comosus*) Leaves and Old Corrugated Carton

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City National High School
(Adviser: Renelyn Banasihan)

Abstract

INTRODUCTION

Global surveys showed that about 13 million hectares of trees disappear every year. These trees were cut down and widely used by companies to produce papers that cause the occurrence of ecological imbalances which affect every person's life in return. In this study, the researchers focused on fabricating paper using the abundance of waste materials in our environment such as pineapple (*Ananas comosus*) leaves and old corrugated cartons which largely contribute in preserving forests world-wide and promote a cheap and easy way to produce a good-quality paper.

METHODS

Pulping Process is the method used in this experiment. It is used to get the pulp needed in making paper which was cooked for about two to three hours using the chemical, sodium hydroxide (NaOH). Cleansing and Disintegrating Process using Naginata were also used before the paper produced underwent the drying process. The number of papers produced and some mechanical properties (tearing index, bursting and tensile strength) were tested and statistically analyzed using Multiple Analysis of Variance (MANOVA).

RESULTS

Generally, the first setup yielded 176.96 g/m² in terms of basis weight. When it comes to physical and other properties, the second setup had 0.672 mm thick which was the thickest among all the setups. The third setup yielded the highest tensile index with 16.26 Ng/m. It showed that it had the highest strength to induce failure or rupture to a paper fabricated. On the other hand, the second setup yielded the highest tearing index with 7.98 Mn m/g. It signified that it had the highest resistance to tearing force which was also an important factor and property that a paper should have. Lastly, the first setup had the highest burst index with 2.21 kPam /g. It explained that it had the highest pressure at which a paper will burst. Basically, it depends on the tensile strength of a material used. These data were written on the table.

DISCUSSIONS

The results demonstrate that the experiment was efficient for all those who use and/or manufacture paper world-wide. It was significant to utilize pineapple leaves and old corrugated cartons as materials in fabricating paper to help preserve trees and recycle wastes. Produced paper show the need for more improvement. Suggestions include to manipulating ratios of materials to be used and including binders for better and compacted product.

KEYWORDS: *Ananas comosus*, pulping process, old corrugated cartons

SUBMISSION ID: R04A-LAGUNA-0028

Heavy Metal Concentrations in Soils and Plants Parts of *Mangifera Indica L.* Around An Economic Zone in The Municipality of Rosario, Cavite, Philippines

Leny Saldo, Department of Education Dasmarinas & Johnny Ching, De La Salle Dasmarinas

Abstract

INTRODUCTION

Contamination of heavy metal in industrial area has caused the interest in the scientific approach for their remediation. One of the approaches could be through phytoremediation which uses plant species to extract heavy metals from the contaminated soil.

METHODS

The study assessed the concentrations of selected heavy metals in soils and plant parts of *Mangifera indica L.* found around an economic zone in the Municipality of Rosario, Province of Cavite, Philippines. Soil and different plant part samples of *M. indica* were collected and subjected to atomic absorption spectrophotometry (AAS) and analyzed for lead (Pb), copper (Cu) and zinc (Zn).

RESULTS

Traces of metal were found in the soil samples of the study site, however, the concentrations were still within permissible level.

DISCUSSIONS

Generally, metal concentrations were found to be highest in matured leaves, followed by bark.

KEYWORDS: *Mangifera indica*, lead, copper, zinc

SUBMISSION ID: Biological sciences

Hepatoprotective Activity of Guinea Grass (*Panicum Maximum Jacq.*) Powdered Dried Leaves

Alyssa B. Cunanan, Alyssa Monique O. Caparas, Elaia Kim R. Delos Santos,
Mikaella Reign L. Gangoso, & Traci Lei Maulanin, Carmona NHS
(Adviser: Roxanne Maglaya)

Abstract

INTRODUCTION

The liver is a vital organ responsible for the detoxification of chemicals, metabolism of drugs in the body, and production of proteins important for blood clotting. However, many factors including inhaling toxic household materials, pathogens, and intake of alcohol and medicines can induce liver damage. Any harm in this organ causes failure to its role. Liver damage can become worse if not prevented. This research aimed to provide valuable knowledge regarding the prevention of liver diseases with the use of Guinea Grass powdered dried leaves since medicinal plants have been used for the prevention and treatment of illnesses over years of continuous research.

METHODS

The Guinea Grass powdered dried leaves were obtained from pulverizing the guinea grass. Five groups of mice were used in the study -- the control and negative control group; the positive control group which was orally administered with Silymarin (7.5mg); and the two experimental groups which received Guinea grass powdered dried leaves (3.5mg and 7.5mg respectively) daily for 7 days; this was followed by the oral administration of paracetamol (PCM) as liver toxicant for 3 days. Their blood samples and liver were collected and subjected to histopathological and biochemical analysis. Serum Glutamate Pyruvate Transaminase and Serum Glutamate Oxaloacetic Transaminase were the parameters for the biochemical analysis. SGPT and SGOT levels increase when the liver is damaged. T-test was used to determine whether there are any statistically significant differences between the variables in the study.

RESULTS

The results of biochemical analysis showed that the SGPT and SGOT levels remain even after the toxicant was given. T-test showed that Guinea Grass with 7.5 mg concentration is effective. Also, Powdered Dried Leaves Guinea Grass administration resulted in bringing about an almost normal histological structure of the liver even after exposure to Paracetamol.

DISCUSSIONS

However, several factors have interfered with the outcome of the Histopathological analysis. One of which is the structure of the livers which gained unnecessary lesions. These were possibly due to improper distribution of amounts and concentrations of formalin when the livers were dissected and stored in formalin-fixed specimen containers. Nevertheless, the researchers conclude that the Guinea Grass powdered dried leaves were capable of protecting the liver through pieces of evidence such as the histopathological analysis and the blood tests which supported the claim.

KEYWORDS: Guinea Grass, liver, hepatoprotective property, biochemical analysis, hepatoprotective analysis, paracetamol, histopathological, SGPT, SGOT

SUBMISSION ID: R04A-CAVTP-0019

**Improving the Academic Achievement in Grade 8 Science of
Lumampong National High School - Indang Annex, Indang, Cavite
through Graphic Organizer (AY 2017-2018)**

Maricar Digma, Lumampong National High School-Indang Annex

Abstract

INTRODUCTION

Students' difficulty in understanding scientific knowledge is a major challenge in attaining teaching objectives. Abstract knowledge is a vital issue which teachers need to enhance among their learners. This study determined the effectiveness of presenting lessons through graphic organizers for enhancing achievement and identified the performance of respondents. It attempted to determine the significant difference of performance facilitated by graphic organizers through pretest and post-test.

METHODS

The study was conducted in AY 2017-2018 among eight sections (8) with 368 respondents. Students utilized graphic organizers to support their understanding of science concepts. Furthermore, T-test was employed to determine the significant difference based on pretest and post-test results.

RESULTS

. The results revealed that the null hypothesis was rejected since graphic organizers have been found to be effective in enhancing student achievement. Seventy-nine percent (292) of the respondents have good academic achievement as evidenced by the mean of 81.80 and standard deviation of 3.54. Twenty-one percent (76) have obtained a science average of 91 and above. There has been a significant difference on students' pretest and post-test and academic achievement as revealed by the computed t value of 6.07 which exceeds the critical value of 2.262.

DISCUSSIONS

Results obtained from the study demonstrated the need for varied approaches and/or strategies graphic organizers to improve students' academic performance. Since science graphic organizers have proven to be effective strategies, they could be adopted and applied across the curriculum to facilitate learning of the subject content.

KEYWORDS: graphic organizer, Science Grade 8, students' achievement, Lumampong National High School

SUBMISSION ID: R04A-CAVITP-0019

Improved Centrifuge: An Equipment for Separating Mixtures

Michaelo Medalla, Researcher

Abstract

INTRODUCTION

One of the most cited problems of public schools in the Philippines has been the lack of adequate science laboratory apparatuses comparable in Ulango Integrated School. This occurs as a result of the inability of schools to meet the cost of these materials due to insufficient funds to purchase all the necessary equipment and apparatus needed for science teaching. Also, schools where materials and equipment are available still encounter the problem of insufficiency of these materials due to the increase enrolment of students. Defective equipment's and school appliances can be recycled in many ways. Improvisation or Substituting Integrated Science materials are clearly an effort towards cost reduction in Integrated Science teaching. It involves teachers making use of available and recyclable materials as substitute for laboratory equipment where necessary.

METHODS

Scrap materials and defective appliances can be used to construct an improvised laboratory apparatus. An old electric fan and other scrap materials can be used and converted into an improvised centrifuge. Construction of Improved Centrifuge costs less and gives benefits with regard to lessening the bulk of waste/scrap materials generated in school. The Improved Centrifuge can successfully separate mixtures of substances at different rating time scale. It revealed the positive assessments and acceptance on the accuracy, correctness, flexibility, user of Improved Centrifuge.

RESULTS

Results show that the improvised centrifuge can perform well and cost less. Positive assessment in the accuracy, correctness, usability, flexibility, and user-friendliness will be given by all Science Students from Ulango Integrated School. T-test will be used to compare the responses on the assessments made

DISCUSSIONS

To construct an improvised centrifuge from scrap materials, a defective electric fan will be used. Defective electric fan motor will be repaired and scrap metals, wood, used stainless curtain rod will be cut, shaped and welded to the electric fan motor casing. This will be painted and attached to a base made of wooden block, metal block with cement and rubber matt. A 5-gallon mineral water container will be used as cover to protect the improvised centrifuge. The main reasons for conducting the study is to solve inadequate number of apparatuses to deepen learner's critical understanding in doing inquiry-based learning.

KEYWORDS: Improved Centrifuge, lack, defective appliances, accuracy, scrap materials

SUBMISSION ID: R04A-CAVITP-0805

In-Vitro Inhibitory Effects of *Sansevieria Trifasciata* 'Laurentii' (Snake Plant) Extract On Alpha-Amylase and Alpha-Glucosidase Activities

Diether Santiago & Rianne Isabel Cayas

Abstract

INTRODUCTION

Diabetes mellitus is a disease that affects four million Filipinos per year, most of them relying on Acarbose, a drug available on the market which manifests some risky side effects to the patients taking them, with worse cases leading to death of the person. This study aims to prove the in vitro anti-diabetic activities of *Sansevieria trifasciata* "Laurentii" through determining its percentage rates of alpha-amylase and alpha-glucosidase inhibition.

METHODS

A kilogram of Snake Plant first underwent extraction and was stored inside a low-temperature container for 3 days. After the extraction, 1.68 mg/mL, 3.36 mg/mL, 6.72 mg/mL, and 13.40 mg/mL concentrations of Acarbose and Snake Plant extract were made. Three replicates were made for the Snake Plant and one for the Acarbose. The concentrations were tested to inhibit the alpha-amylase and alpha-glucosidase enzymes. Using UV-VIS Spectrophotometer, the absorbance rates were determined and results were analyzed using One-Way ANOVA.

RESULTS

Results indicate that the Snake Plant is capable of inhibiting alpha-amylase and alpha-glucosidase- thus proving its effectivity against diabetes. 13.40 mg/mL was identified as the most effective concentration out of the four levels as it exhibited 38.6% average alpha- amylase inhibition rate and 71.3% average inhibition rate of the alpha-glucosidase enzyme. Next to this is the 6.72 mg/mL, with inhibition rates of 60% of alpha-glucosidase and 32.6% alpha-amylase; then 3.36 mg/mL, with 52.1% and 26.5%; then lastly the 1.68 mg/mL with 16.4% and 34.1%.

DISCUSSIONS

Based on statistical tests, the results regarding the percentage of inhibition of Snake Plant to both alpha-amylase and alpha- glucosidase enzymes are comparable to the Acarbose's inhibition rates. Thus, we can conclude that Snake Plant could be an effective anti- diabetic plant since it effectively inhibited both enzymes.

KEYWORDS: Alpha-Amylase, Alpha-Glucosidase, Snake Plant

SUBMISSION ID: R04A-CAVTP-0933

Insecticidal Activity of Acacia Bark Extract Against Isoptera

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Abstract

INTRODUCTION

Ninety percent of insects are in land including those that are found in our house. One of the common type of insects lurking around our homes is the termite. Termites are a group of eusocial insects that digest food and their food are pieces of wood, paper and other materials containing cellulose. Unfortunately, all of our homes, regardless of the construction type, can provide cellulose food for termite infestation making wooden foundations weak. For many years, man has always been making innovative ways in striving against insects, which led to production of various chemical insecticides which are very hazardous to everyone. Due to this, organic insecticides became widely known and one of them was made of acacia bark extract. According to Schaller (2008), acacia bark extract yields positive results in insecticidal activity. Acacia bark extract's two major components that kill termites are saponin and tannin. Due to these pressing reasons, the researchers were motivated to produce an organic insecticide out of acacia bark extract.

METHODS

The collected acacia barks were dried for 3 days. After that, it was pulverized using mortar and pestle. Ethanolic extraction was done by soaking the pulverized acacia barks on ethanol for 24 hours. After soaking the acacia barks, it was filtered using ordinary filter paper. Then, the extracted liquid was put on the spraying bottle. Twenty termites were placed on each jar cover. The produced alternative insecticide was sprayed three times to each of the labeled jar cover containing equal number of termites.

RESULTS

The following are the findings obtained from the study. in terms of execution time, the result showed that higher concentration of acacia bark and lower concentration of ethanol can kill termites faster. in terms of mortality rate, the results showed that any concentration of acacia bark and ethanol has the capacity to kill termites.

DISCUSSIONS

1. Treatment 3 (T3) having concentrations of 100g of Acacia Bark extract and 200g of Ethanol is highly accepted in terms of execution time.
2. Treatment 3 (T3) having concentrations of 100g of Acacia Bark extract and 200g of Ethanol is highly accepted in terms of mortality rate.

KEYWORDS: Insecticide, Isoptera, Acacia Bark, Ethanol, Saponin, Tannin

SUBMISSION ID: R04A-CAVITP-0933

Insecticidal Effect of Calamansi (*C. microcarpa*) Extracts Against Rice Weevils (*S. oryzae*)

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Department of Education - Cavite, ETTMNHS
(Adviser: Celso Latosa)

Abstract

INTRODUCTION

Rice being the most common staple food in our country is threatened by insect pests during storage. Several strategies are utilized in controlling storage pests by using synthetic insecticides causing harm and damage to human health and the environment. This offers motivation in searching for more alternative methods of controlling rice pests. In recent years, several researchers have concentrated for the search for natural products that can be found from terrestrial plants as natural insecticide. Calamansi, *C. microcarpa*, has a major component which is called d-limonene, a bitter taste that irritates insects by destroying the wax coating of insect's respiratory system, making it as a good repellent.

METHODS

The extracts of *C. microcarpa* (carpel, seeds and peels) underwent through steam-distillation and d-limonene from each extract was obtained. To determine the mortality effect of the extracts on rice weevils, parallel research design was applied wherein all the groups received the treatment at the same time. The set-ups were observed for five days in 12-hour intervals to determine the mortality of rice weevils. One Way Analysis of Variance was the statistical tool applied to compare the means of the three groups of independent samples.

RESULTS

From the results of the study, the peel extract had the highest mortality among all the extracts, followed by the seed extract and lastly, the carpel extract had the lowest mortality effect on the rice weevils. This was based on the determined mortality during the experimentation. The results revealed that the extracts could terminate rice weevils and show a significant difference among the extracts in terms of its insecticidal effect against rice weevil. The researchers proved that *C. microcarpa* extracts can be an effective insecticide on rice weevils.

DISCUSSIONS

The study turned out successfully since the *C. microcarpa* extracts has a capability of terminating the rice weevils. Further studies should be conducted about investigating other parts of *C. microcarpa* tree, leaves or roots in terms of its insecticidal effect to see if the following parts also have an insecticidal activity against rice weevils. It is recommended that the extracts be analyzed using Gas Chromatography Analysis to determine its chemical characterization and to prove that the d-limonene is present on the fruit and to improve its methodology.

KEYWORDS: extract, rice weevils, insecticidal effect

SUBMISSION ID: R04A-CAVITP-1669

Insecticidal Effects of *Sandoricum koetjape* (Santol) Ethanolic Leaf Extract on *Coptotermes gestroi* (Asian Subterranean Termites)

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Abstract

INTRODUCTION

Termites are posed as one of the major problems in the community due to damage in property (Pestana, 2017). Due to their infestations, billions of dollars are spent annually for control and prevention measures worldwide. The condition worsened following the overuse of chemical insecticides as termite control tools have resulted in public's concern on environmental and health issues, causing further difficulties in controlling termite infestation. This research aimed to know if the extract of *Sandoricum koetjape* leaves can be a partial substitute for commercial *Coptotermes gestroi* exterminator.

METHODS

The experimental study utilized a randomized complete block design. Each treatment was done in triplicates and each test vial initially contained ten (10) *C. gestroi*. Through the use of pipette, 0.5 mL of each produced extract was dropped in each container. The reaction of the termites was observed and the mortality rate was recorded after two minutes. The determination of the significant difference between number of deaths in the control group and the experimental group were done using One-Way ANOVA statistics at 5% level of confidence probability.

RESULTS

Screening of ethanolic leaf extracts with different concentration of *Sandoricum koetjape* showed that as the concentration of *S. koetjape* increased, the mortality rate of *C. gestroi* also increased. The result showed that the positive control, which is 95% Ethanol yielded the greatest mortality rate with an average of 9.67 and was followed by pure extract of *S. koetjape* with an average of 9.33 in which they were classified as lethal.

DISCUSSIONS

With the results obtained, *S. koetjape* ethanolic leaf extract has a mutagenic effect on the *C. gestroi*. Moreover, the concentration of *S. koetjape* ethanolic leaf extract performs a significant effect on the *C. gestroi*. In relation to the study, an extract of the seed of *S. koetjape* were evident and have been proven to reduce the growth rates and increase times to pupation of fall armyworm (*Spodoptera frugiperda*) or European corn borer (*Ostrina nubilalis*) larvae at lower dose levels while significant mortality was noted at higher dose levels (Powell, 1991).

KEYWORDS: Mutagenic, Termites, Ethanolic leaf extract, Lethal dose, Mortality rate

SUBMISSION ID: R04A-CAVITP-0083

Larvicidal Activity of Cadena de Amor (*Antigonon leptopus*) Leaves Extract Against Mosquito Larvae

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Abstract

INTRODUCTION

Gastrointestinal parasites (GIPs) remain as one of the most common threats in hog production in many developing countries. Among the GIPs, *Ascaris suum* is a prevalent species in pigs (Dadas, 2016). Reports of resistance of pig nematodes to anthelmintics have been identified in Denmark and Germany (Gerwent et al, 2002). Drug residue in meat may cause direct effects on the consumer. Moreover, availability of anthelmintic to local farms and the expensive cost in developing countries where the pig industry is common serves as a major setback. Thus, finding a natural alternative anthelmintic is significant to the industry. This research study aims to find a natural anthelmintic which effectively eliminates adult *A. suum* worms.

METHODS

The main processes done were: collection and authentication of plant and worm materials, extraction and phytochemical screening of *C. longa* ethanolic extract, anthelmintic activity test, data gathering, waste disposal, and data analysis. The anthelmintic activity test was performed according to the methods of Husori, Bancin, Muhaimin, Bahri, and Patilaya (2016) entitled "Anthelmintic Activity of Ethanolic and Aqueous Extracts of *Allium fistulosum* L. Leaves on *Ascaris lumbricoides*.

RESULTS

Results on the phytochemical screening of *C. longa* ethanolic extract showed that it is abundant in saponins, sterols, and triterpenoids. Additionally, it has traces of alkaloids, glycosides, flavonoids, and tannins. For the anthelmintic test, the average time to paralysis is 152 minutes, while the time to death is 162 minutes. Both were faster than the negative control but slower than the positive control. Since the ethanolic extract remained unused for two weeks, the bioactive components may have been affected. Furthermore, the consistency affected the solubility of the extract. The statistical analysis showed that when compared to the positive control, the time of paralysis and time of death were significantly different with their p-values, 8.05E-12 and 7.29E-12, both lesser than the $\hat{I}\pm = 0.05$.

DISCUSSIONS

Through phytochemical analysis, high concentrations of plant constituents were present in the plant extract. The results of anthelmintic activity showed that the time it took to paralyze and kill the worms were slower than the positive control. This may be caused by the extract's solubility. However, statistical tests show that both results are significantly different when compared to the positive control. Thus, it was suggested to change the extraction method for better results.

KEYWORDS: anthelmintic activity, pigs, GIPs, *Ascaris suum*, *Curcuma longa*, turmeric

SUBMISSION ID: R04A-CAVITP-0412

Java Plum (*Syzygium Cumini*) Seeds and Bark for The Control of Blood Sugar Level in Diabetic Mice

Miguel Andrew Soledad

Abstract

INTRODUCTION

The management of diabetes has changed dramatically during the past several thousand years. The current pharmacological armamentarium used to manage diabetes has resulted in a dramatic reduction in morbidity at mortality. Java Plum (*Syzygium cumini*) seeds and bark for the control of blood sugar in diabetic mice deals with the production of tea from Java Plum seeds and bark aimed to help the society especially the diabetic people to manage mellitus.

METHODS

The gathered Java Plum seeds were washed, dried and pulverized, and the barks were washed and decocted. Each variable were divided into 2 treatments, one pure treatment and one mixed with water that made it easy to determine the effectiveness of the product. Observations were done by testing the blood sugar levels of the mice before raising the blood sugar, after raising and after reducing it. The application of the treatment was done after a week.

RESULTS

Using the 4 treatments, the data were subjected to F-test. The study showed the result of the two main problems, the sensory characteristics and the glucose reduction of Java Plum seeds and Bark. in terms of sensory characteristics, higher addition of water made the color lighter and, higher addition of water made the product's odor lesser. Products with Java Plum bark have higher glucose level reduction than the Java Plum seeds. The treatment which contained 100% bark had the best result in glucose reduction among all the treatments. The results also showed that the produced tea out of Java Plum seeds and bark in all concentrations really decreased the blood sugar levels of the mice.

DISCUSSIONS

The results show that the amount of added water has significant effect for both the sensory characteristics and glucose reduction of the produced tea out of Java Plum seeds and bark. The tea out of Java Plum bark is more effective than the tea out of Java Plum seeds. Therefore, the results will be a great help in the field of medicine for curing diabetes. The study suggests to determine the optimal amount of Java Plum tea to administer for best blood glucose level reduction as well as the best time to administer the tea.

KEYWORDS: Java Plum, Blood Sugar, Diabetic Mice

SUBMISSION ID: R04A-CAVITP-0182

Larvicidal Activity of Cadena de Amor (*Antigonon leptopus*) Leaves Extract Against Mosquito Larvae

Maher Grace Marquez

Abstract

INTRODUCTION

This research aims to determine the larvicidal activity of Cadena de Amor's leaf extract against mosquito larvae and to present the significant difference in mortality rate of mosquito larvae in different concentrations. Mosquito related diseases is one of the major issues nowadays and insecticides and larvicides is pricey that the lower sector of society can't afford the other hand, Cadena de Amor is considered destructive for its uncontrollable propagation, this research aims to maximize the use of Cadena de Amor as an alternative larvicide that is more affordable than commercialized one.

METHODS

This study used a quantitative method aimed to test the larvicidity of Cadena de Amor's leaf extract against mosquito larvae wherein the Cadena de Amor leaf extract is the variable that will be manipulated. The study involved three replications executed at the science laboratory of Trece Martires City Senior High School where each treatment, differing in concentrations of extract, was applied to samples composed of 30 mosquito larvae each. After that, the number of mortality rate of mosquito larvae was recorded. The data was then tabulated and interpreted.

RESULTS

in assessing the mortality rate of mosquito larvae exposed to different concentrations of extract to test the larvicidal activity of Cadena de Amor's leaves extract, T1 which contained 35% extract and 65% H₂O was rated very effective with a mean score of 18.7. T2 which contained 75% extract and 25% H₂O were rated most effective with a mean score of 26. Lastly, T3 which contained 100% extract and 0% H₂O was rated most effective with a mean score of 29. Results shows that T3 which had the highest number of mortality rate recorded is the most effective. Therefore, it is concluded that as the concentration increases the mortality rate of mosquito larvae per given time also increases. Testing for the difference of the larvicidity of different concentrations of Cadena de Amor leaf extract in terms in mortality rate of mosquito larvae using one- way ANOVA test, a P-value of 0.1359 was obtained which meant that there is a significant difference on the different concentrations of Cadena de Amor extract.

DISCUSSIONS

Hence, this study found that Cadena de Amor's leaf extract has a larvicidal activity needed to promote the mortality rate against mosquito larvae wherein the more concentrated the extract, the more effective it is for the given sample. Thus, this study proves that Cadena de Amor's leaf extract is effective as a larvicidal agent.

KEYWORDS: larvicidal activity, Cadena de Amor, extract, mosquito larvae

SUBMISSION ID: R04A-CAVITP-0679

Larvicidal Activity of Extracts from Dried and Fresh *Muntingia calabura* (Aratiles) Leaves against Mosquito Larvae

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(Adviser: Jellina Rosga)

Abstract

INTRODUCTION

in the Philippines, thousands of dengue cases are recorded each year. It is caused by *Aedes aegypti*, a dengue- carrying mosquito. There are plants that have been reported for their insecticidal properties and one of those is the *Muntingia calabura* or locally known as aratiles. Its leaves contain flavonoids, chalcones, terpenoids, and phenolic compounds. Determination and comparison of the effectivity of a larvicide from dried and fresh *Muntingia calabura* (aratiles) leaf extracts through ethanolic extraction and decoction is the primary aim of the study. This is of great significance in the development of environmental friendly ways of eradicating disease-carrying mosquitoes in the future.

METHODS

Dried and fresh aratiles leaves were pulverized and shredded, respectively, and undergone rotary vacuum evaporator to obtain the ethanolic extracts. The same amount of dried and fresh aratiles leaves went through decoction using distilled water. Mosquito larvae were cultured in a controlled environment and ten of which were placed in each setup with pure concentrations of the dried and fresh aratiles leaf extracts. The number of dead mosquito larvae was deduced within 30 minutes. The procedure was repeated three times and the mean was computed for analysis. Using IBM SPSS Statistics Data Editor v.23.0.0.0, T-test of independent means and point biserial coefficient of correlation were utilized.

RESULTS

The results of the three trials in the different extracts showed that in ethanolic extract from dried aratiles leaves, eight mosquito larvae were killed after 30 minutes of observation. While in the ethanolic extract from fresh aratiles leaves, all mosquito larvae were killed. The next setup: the decocted extract from dried aratiles leaves, one mosquito larvae was killed after 30 minutes of observation and on the other hand, three mosquito larvae were killed in the decocted extract from fresh aratiles leaves.

DISCUSSIONS

Results showed that the extraction method and kind of leaf used both showed a significant difference and a very high positive correlation with the mortality rate of mosquito larvae. Furthermore, results showed that fresh aratiles leaf extracts in both methods of extraction were more effective than the dried leaf extracts. Overall, the ethanolic extract from fresh aratiles leaves was the most effective extract. The results of the test showed that the ethanolic extract from fresh aratiles leaves is an effective larvicide against mosquito larvae.

KEYWORDS: *Muntingia calabura*, larvicide, ethanolic extraction, decoction, mosquito larvae

SUBMISSION ID: R04A-CAVITP-1008

Larvicidal Activity of *Jatropha curcas* (Tuba-Tuba) Leaf Extract Against *Aedes Aegypti* Mosquito

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Abstract

INTRODUCTION

Like some mosquito-borne diseases, dengue fever has no specific treatment, but we can prevent mosquitoes from spreading diseases through natural ovicide or larvicide (Mosquito World, 2018). *Jatropha curcas* (Tuba-tuba) is a readily available biomass in existence and can be used as a larvicide. Hence, this research focuses on the use of Tuba-tuba leaf extract as a larvicidal agent against *Aedes aegypti* mosquito.

METHODS

Tuba-tuba leaves were gathered, authenticated and dried, then soaked in 95% ethanol and was processed for extraction. The method used to test the extract on *Aedes aegypti* mosquito was adopted from the Guidelines for Laboratory and Field Testing of Mosquito Larvicide of WHO (2005). The extract was tested using four treatments from 5,000ppm to 30,000ppm and a control using deionized water with 5% ethanol. After 24 hours exposure, larval mortality was recorded and pooled for analysis using linear regression probit analysis and one way ANOVA.

RESULTS

The larvicidal activity of Tuba-tuba leaves against *Aedes aegypti* mosquito 3rd/early 4th instar larvae was observed at concentration range from 5,000 ppm to 30,000 ppm that yielded percentage larval death from $8.33 \pm 2.98\%$ to $93.33 \pm 5.77\%$ after 24 hours exposure period, while no larval death was observed at the control using de-ionized water with 5% ethanol during the 24 hours of exposure period. The results from the One-Way ANOVA test shows that the p-value is lower than the critical value, thus, the null hypothesis was rejected. The lethal concentration at 50% and 90% larval kill or LC50 and LC90 were estimated at 14,851ppm and 33,598ppm respectively with linear regression equation of $Y=3.61x - 10.06$.

DISCUSSIONS

There was a significant difference between the concentrations of Tuba-tuba leaf extract in terms of mortality rate. The results show that the *Jatropha curcas* leaf extract could serve as a potential larvicidal agent against *Aedes aegypti* mosquito larvae.

KEYWORDS: lethal concentration, mortality rate, 3rd/early 4th instars larvae, larvicidal activity

SUBMISSION ID: R04A-CAVITC-0029

Larvicidal Activity of Kalabo (*O. vulgare*), Pandan (*P. amaryllifolius*), and Tanglad (*C. citratus*) against *Culicidae* (Mosquito) Larvae

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Abstract

INTRODUCTION

Mosquito-borne diseases have been affecting people for centuries. Apparently, there is a need to source out effective mosquito biological control to arrest the growing cases of sickness and fatalities brought about by this disease vector. In this study, the mosquito larvicidal activity of backyard plants --- Kalabo (*O. vulgare*), Pandan (*P. amaryllifolius*), and Tanglad (*C. citratus*) --- were assessed.

METHODS

Mosquito larvae were cultured using mongo sprouts as attractant. Three-day old larvae were used as test organisms. Mosquito Larvae Lethality Assay was performed using leaves aqueous extracts. Five treatments were made --- Kalabo, Pandan, Tanglad, (+) control (chlorinated water), and (-) control (untreated water). Mortality counts were done after a period of 24 hours.

RESULTS

Results showed that (+) control had the highest mortality rate (91.67%), followed by Tanglad (83.33%), Kalabo (31.67%), Pandan (6.67%), and lastly untreated water (0%). The following are the lethal concentrations (mL/L) of the extracts: Tanglad (LC50=2.15, LC90=7.91), Kalabo (LC50=12.77, LC90=116.49), and Pandan (LC50=153.11, LC90=3291).

DISCUSSIONS

Tanglad (*C. citratus*) has comparable potency with the (+) control as ANOVA revealed that the two treatments had no significant difference in their mortality rate. It is apparent that Tanglad is more effective as a mosquito biocontrol agent than the other plant extracts used. Tanglad is the most practical plant to use as it only needs small dosage to kill mosquito larvae.

KEYWORDS: *C. citratus*, *Culicidae*, mosquito larvicide, *O. vulgare*, *P. amaryllifolius*

SUBMISSION ID: R04A-CAVTP-0215

**Larvicidal Activity of Rain Tree (*Albizia saman*) Methanolic Leaves
Extracts against *Aedes aegypti* Larvae**

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Gregana, San Pablo City Science High School
(Adviser: Franz Kevin Manalo)

Abstract

INTRODUCTION

Dengue and Zika virus have been causing a huge problem all throughout the world, especially in the Philippines. These issues became more difficult to remove due to the widespread distribution and rapid reproduction of *Aedes aegypti* mosquitoes. The use of chemical agents on the other hand, affect humans and environmental health. Thus, there is a need for a new search of effective yet safe and organic treatment. In this study, *Albizia saman* methanolic leaf extract was evaluated to determine the bioactive compounds present and to analyze its larvicidal activity against *Aedes aegypti*.

METHODS

Albizia saman leaves were collected, authenticated in University of the Philippines Museum of Natural History and were then prepared for methanolic extraction. The *Albizia saman* methanolic leaf extract was screened for presence of bioactive compounds that have larvicidal activities. Fourth instar larvae of *Aedes aegypti* were gathered from Institute of Weed Science, Entomology and Plant Pathology and were cultured in petri plates with different concentrations of the methanolic leaf extracts (25%, 50%, 75%), normal saline solution (negative control) and black pepper solution (positive control). The larvae were monitored for 24 hours for any changes in the behavior, morphology and mortality rate of the mosquitoes.

RESULTS

Bioactive compounds that have larvicidal activities against *Aedes aegypti* were found to be present in *Albizia saman* methanolic leaves extract such as alkaloids (++), flavonoids (+), and saponins (+). Thirty minutes after application of the extracts, the mortality of the larvae increased. The 75% concentration exhibited the highest mean mortality of 8.67. Meanwhile, the 25% and 50% exhibited mean mortalities of 4.00 and 4.67, respectively. As to the morphology and behavior of the *Aedes aegypti*, these were observed: (1) agitated behavior; (2) narrowing of abdomen; (3) darkening of abdominal canal and; (4) anal gill deterioration. High mortality and many kinds of morphological and behavioral abnormalities were mainly observed.

DISCUSSIONS

Results showed that *Albizia saman* methanolic leaf extract drastically affected the mortality, morphology and behavior of *Aedes aegypti*. In conclusion, it could be used as an organic larvicide. However, relevant studies with the use of different solvents and plant parts of *Albizia saman* in order to further establish its effectiveness against *Aedes aegypti*.

KEYWORDS: *Albizia saman*, *Aedes aegypti*, larvicidal activity, mortality, morphology

SUBMISSION ID: R013-SURSUR-0096

Larvicidal Trap Using Anonas (*Annona reticulata*) Leaves

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(Adviser: Eric Laurence Gandia)

Abstract

INTRODUCTION

Mosquitoes have been one of the highest causes of deaths per year. Despite of size, diseases mosquitoes carry can be fatal for the human body. The aim of the study is to lessen the mosquitoes in our community by making a larvicidal trap using Anonas (*Annona Reticulata*) leaves extract.

METHODS

The *A. Reticulata* was osterized along with the 3000 mL of dechlorinated water in order to get the crude extract. The researchers used black cup and 6 x 1.5 inches of lawanit (piece of wood) in constructing the larvicidal trap. The crude extract was then diluted in water to obtain different concentrations of: 100%, 50%, and 0% for each black cup. After the construction, the 10 mosquito larvae were put in each cup. The mosquito larvae mortality was observed in 3 days.

RESULTS

The researchers used T-test of independent samples to determine the significant difference of *A. Reticulata* and the negative control. Null hypothesis was rejected since the computed t-value of 7.00 is greater than the critical value of 4.30. The researchers also used One Way Analysis of Variance (ANOVA) and Scheffe's test to see the significant differences among the concentrations of the extract. The computed f-value was 19.5 against a critical value of 5.14. Meanwhile, in the Scheffe's test, it showed that there was a significant difference between 100% and 0%; 50% and 0% but no significant difference between 100% and 50%.

DISCUSSIONS

in the results, it showed that the *A. Reticulata* extract was effective since it showed that there was a significant difference between the extract and the negative control. This depicts that the *A. Reticulata* extract is effective and can be used as a larvicidal trap. However, it is said that there is no significant difference between the 100% and 50% concentrations of *A. Reticulata* extract. This means that using 50% of concentration as larvicidal trap is the same as using 100% concentration of the extract. This also means that using 50% can be more efficient rather than using 100% because the usage of the extract will be less and can be used for the future larvicidal traps. All of these conclusions show that the *A. Reticulata* leaves extract is indeed effective as a larvicide.

KEYWORDS: anonas, osterization, larvicide

SUBMISSION ID: R04A-CAVITP-0320

Larviposition Responses of *Aedes Aegypti* Mosquito On Fermented Rice Wash (*Oryza Sativa*) and Fresh Milk

Brian Harvey Tagustos, Department of Education

Abstract

INTRODUCTION

Aedes aegypti is a mosquito known as the vector of dengue, a neglected tropical disease ranked by the World Health Organization (WHO) as the most important viral disease transmitted by mosquitoes worldwide. To date, there is no specific vaccine or antiviral drug for the treatment of dengue and only supportive treatment is given to dengue patients. Thus, the search for selective treatment of dengue is still in progress so vector control is the best strategy. To solve this problem, chemical insecticides may be used to control mosquitoes, but most of them are not selective, and harm beneficial insects and humans. For these reasons, the use of organic mosquito attractants must be promoted. Studies have found that Rice wash, mainly composed of carbohydrates and fresh milk containing lactic acid bacteria species when it has undergone carbohydrate fermentation will produce Lactic Acid, a compound commonly found in the human body that naturally attracts mosquitoes.

METHODS

A specific amount of rice wash and fresh milk was fermented one after the other for a total of 14 days. The produced mixtures were then placed inside black plastic cups with lawanit paddles and placed securely inside the classrooms of LNHS - Indang Annex. The attractants were monitored for five (5) days to determine the number of positive attractants and time of attraction.

RESULTS

Treatment 3 was proven the most effective in terms of number of attractants with mosquito larvae and the time it took for an attractant to have mosquito larvae with 69 positive responses and average time of attraction of 2.17 days.

DISCUSSIONS

in terms of characteristics as number of mosquito attractants with mosquito larvae, Treatment 3 was the most effective. Treatment 3 was also proven effective in terms of the time it took for an attractant to have mosquito larvae. There is a significant difference in the effectiveness of the mosquito attractants and the treatments in terms of number of attractants with mosquito larvae and the time it took for an attractant to have mosquito larvae.

KEYWORDS: LARVIPOSITION, *Aedes aegypti*, Mosquito Attractant

SUBMISSION ID: R04A-CAVITP-1670

Laurus nobilis* (Bay Laurel) Leaves Extract Against the Growth of Two Gram-Positive Bacteria: *Staphylococcus aureus* and *Bacillus subtilis

Juliana Amelie Luna & Alaine Magsombol

Abstract

INTRODUCTION

Gastroenteritis is an aggravation of the gastrointestinal tract including both the stomach and the small digestive tract. It is usually associated with food poisoning which may be bacterial or chemical in origin. This research study aims to determine the efficiency of the *Laurus nobilis* (Bay Laurel) extract as a potential substitute for Vancomycin in inhibiting the bacteria *Staphylococcus aureus* and *Bacillus subtilis*.

METHODS

Plant verification was done to authenticate and verify the plant. The fresh leaves were prepared and subjected to soxhlet extraction for the isolation of the essential oil. The different concentrations (25%, 50%, 75%, and 100%) of the isolated constituent, Vancomycin (positive control), distilled water (negative control) and 95% ethanol as controlled variable. The accomplished extract was subjected to an antibacterial test using several processes such as disc diffusion method and incubation. The zone of inhibition was measured using a metric ruler and analyzed using One-way ANOVA at .05 level of significance.

RESULTS

Results showed that the 100% concentration containing pure isolated extract exhibited the greatest zone of inhibition against *Staphylococcus aureus* and *Bacillus subtilis*.

DISCUSSIONS

The research study can serve as a proof or basis that Bay Laurel can inhibit *Staphylococcus aureus* and in *Bacillus subtilis* which will be a great help to experts and other researchers. This research can be applied in the field of pharmacy and medicine.

KEYWORDS: *laurus nobilis*, *staphylococcus aureus*, *bacillus subtilis*, zone of inhibition, soxhlet extraction, pure isolated extract, gastroenteritis

SUBMISSION ID: R04A-CAVTP-0163/ R04A-CAVTP-0317

Lethal Response of *Manduca sexta* (Tomato Hornworm) to Chrysanthemum Leaf Extracts

Ernie Santoyo, Department of Education

Abstract

INTRODUCTION

Most people in Rosario are farmers and majority of their plant yields are fruits and vegetables. Pests such as *Manduca sexta* or tomato hornworm damage the quality of these crops that results to less production. Chrysanthemum, a kind of flowering plants of the Genus Chrysanthemum in the family Asteraceae, has the capability to control the mechanisms that *Manduca sexta* or tomato hornworm. Thus, it is the intention of this scientific study to determine the lethal response of tomato hornworm to chrysanthemum leaf extracts (CLE).

METHODS

Experimental research design was used to prove the lethal response of tomato hornworm to CLE. Following CRBD, four experimental setups were created using the log-dose response relationship (LDR) standards with different mixtures of CLE and water; Set up A 10mL CLE or 100% concentration, set up B 8mL or 80% concentration, set up C 6mL or 60% concentration and Set up D 4mL or 40% concentration. Physical characterization test was done to all experimental concentrated CLE. Acclimatized tomato hornworms were subjected for LDR test having mortality rate of the specimen vs time as the dependent variable to different CLE concentrations.

RESULTS

Based on physical property tests, pure CLE exhibited a very dark color and had the greatest viscosity and 4mL or 40% concentration of CLE is very light in color and least in viscosity. Pure CLE had the highest potent toxicity that caused immediate lethal effect on tomato hornworm within 4 minutes upon application. The computed F-value at 0.05 significance level is 20.490 (df=3) was not significant at p-value = 0.17, thus the null hypothesis was accepted. It simply revealed that different concentrations do not affect the potent toxic effects of chrysanthemum leaf extracts (CLE) to tomato hornworm. It also showed that CLE was a good organic pest control agent against tomato hornworm.

DISCUSSIONS

Chrysanthemum leaf extracts exhibited a highest form of potent toxic log - dose response to the targeted specie, tomato hornworm, in its purest concentration. It was also concluded that diluted concentration of CLE did not affect its potent toxic effects against tomato hornworm for as long as the specimen is exposed in a longer period of time. It is recommended that CLE may be further tested to extract more findings for its commercial use as an organic pest control agent. Lethal Response, chrysanthemum leaf extracts (CLE), organic pest control agent.

KEYWORDS: Lethal Response, chrysanthemum leaf extracts (CLE), organic pest control agent.

SUBMISSION ID: R04A-BATANP-0566

Lethality Effect of *Podocarpus costalis* to Nauplii of *Artemia salina*

Camila Jaz Del Carmen, Department of Education
(Adviser: Adelma Topacio)

Abstract

INTRODUCTION

Podocarpus costalis, locally known as "Igem dagat" is a species of conifer in the family Podocarpacea attracted much interest as a potential source of natural antioxidants. Phytochemical studies of a number of species have led to the isolation and elucidation of various terpenoids and nor - and dinorditerpenoid dilactones. Bioflavonoids of the amentoflavone and hinokiflavone groups are present in the great majority of *Podocarpus* species, and together with nor - and bis - nor diterpenes these are said to be taxonomic markers of this genus. This study aims to determine the total phenolic and flavonoid content of *Podocarpus costalis* leaves.

METHODS

This study was quantitative-experimental in nature. It involved the determination of total phenolic and flavonoid content of *Podocarpus costalis* leaves and evaluated the cytotoxic effect of *Podocarpus costalis* leaves using nauplii of brine shrimp (*Artemia salina*). The following steps were employed: collection and Identification of plant parts, preparation of *Podocarpus costalis* extract, determination of phenolic content and total flavonoid content, Hatching of Brine Shrimp Cyst, and determination of mortality rate.

RESULTS

Podocarpus costalis leaves are rich in phenolics with average content 56.19 $\mu\text{g/g}$, while its leaves have flavonoids with average content of 7.57 $\mu\text{g/g}$. *Podocarpus costalis* exhibited cytotoxic activity against the brine shrimp and considered to contain active or potent components.

DISCUSSIONS

Affirmed total phenolic contents of the *Podocarpus costalis* leaves suggests that the *Podocarpus costalis* leaves may have anti- allergenic, antiatherogenic, anti-inflammatory, anti-microbial, anti-thrombotic, anti-obesity, cardioprotective, and vasodilatory effects. These beneficial effects have been attributed to the antioxidant activity of phenolic compounds. The leaf extracts of *Podocarpus costalis* exhibited cytotoxic activity against the brine shrimp and considered to contain active or potent components. This is because their LC50 values are less than 1000 ppm or $\mu\text{g/mL}$. in toxicity evaluation of plant extracts by BSLA, LC50 values lower than 1000 $\mu\text{g/ml}$ are considered bioactive (Meyer et al., 1982). Norditerpenes and totarols from other *Podocarpus* species are known to have cytotoxic activities against several forms of cancer including, P388 murine leukemia cells. (Park et al., 2003, 2004).

KEYWORDS: *Podocarpus costalis*, cytotoxic effect, cytotoxic activity

SUBMISSION ID: R04A-DASMAR-0021

Level of Competence of Grades 8 to 11 Students of Villa Perez National High School, Gumaca, Quezon in Biology for Grades 7 to 10

Rose Ann Alvarez, Villa Perez National High School

Abstract

INTRODUCTION

The main purpose of this study is to determine the level of competence and least mastered competencies of students in Biology of Grades 8 to 11 of Villa Perez National High School, Gumaca, Quezon for lessons in Biology designed for Grades 7 to 10. After identifying the least mastered competencies of the respondents for Biology lessons designed for Grades 7 to 10, the researcher was able to develop Biology Model Making Activity- Based Manual that was subjected to the level of acceptability tests using ACAS model (acceptability, comprehensibility, attractiveness and self-involvement).

METHODS

This study utilized a descriptive-evaluative method of research to describe the level of competence of students as well as in identifying least mastered competencies. The main instruments used in the study were four teacher-made achievement tests for "Grades 7 to 10 Biology" administered to students from Grades 8 to 11.

RESULTS

Based on the results of the examination, it was found that the level of competence of all student-respondents in Biology was interpreted as "not knowledgeable." This meant that most of the students scored were below 75 percent and indicated that the students have little or no knowledge regarding Biology. Most of the competencies in the four subtopics were interpreted as "low mastery" and were considered as least mastered competencies.

DISCUSSIONS

A Biology Model Making Activity- Based Manual was developed and subjected to acceptability test, wherein, the grand weighted arithmetic means of 3.45 indicated that it is "Highly Acceptable". With teacher's creativity and adherence to the current trend of improvisation and contextualization in science education, Biology Model Making Activity- Based Manual was developed and can be utilized to enhance least mastered competencies of students. Specific recommendations were also made for science teachers, school principals, curriculum planners, instructional material developers and future researchers. This study has its unique contribution to improving the teaching-learning process in Biology by contextualizing learning materials suited to students' needs.

KEYWORDS: Biological Science, Biology Model Making Activity- Based Manual, level of competence

SUBMISSION ID: R04A-QUEZON-0001

Madre de Cacao (*Gliricidia sepium*) Leaves Extract as a Main Component in Making Mosquito Coil Repellent

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Abstract

INTRODUCTION

The DOH suspected dengue cases from January 1 to August 5 2017, they recorded 58,598 cases in the Philippines. and they also suspected Japanese encephalitis cases from January 2017 to August 5 and have recorded 392 cases with 9 deaths in the Philippines. With this, the researcher decided to make a mosquito repellent because of the number of cases of dengue and Japanese encephalitis in the Philippines.

METHODS

The researcher used Madre de Cacao as a component in making mosquito repellent in a form of coil. The coil was made by: first, the Madre de Cacao leaves were extracted using cheesecloth, then, the materials such as the extract and dried Madre de Cacao leaves were mixed. There were different concentrations of Madre de Cacao leaf extracts and dried leaves on the 4 treatments. After that, the coil was used to mold the mixture then it was placed inside the oven for 10 minutes and the mold was removed. Lastly, the coil was tested and observed using incubated mosquitoes. The characteristics of the coil were evaluated by grade 3-6 MScI students of Jose Rizal Memorial School.

RESULTS

The researcher found out that the properties of the coil were observed on each treatment, in which treatment 1 had the longest burning time and ignition time while treatment 4 had the most mosquitoes repelled. With these, it can be concluded that every time the Madre de Cacao leaf extract increases, the number of mosquitoes repelled also increases.

DISCUSSIONS

Based on the data that the researcher gathered, it was concluded that every time the Madre de Cacao leaf extract was increased, the number of mosquitoes that are repelled also increased.

KEYWORDS: repellent, mosquito, madre de cacao, mixture, extract, repelled

SUBMISSION ID: R04A-CALAMB-0012

Melon (*Cucumis Melo*) Peel Extract As Biodegradable Plastic

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(Adviser: Eric Laurence Gandia)

Abstract

INTRODUCTION

As the population increases, plastic wastes increase with it and plastic pollution is spreading in our country. In line with this, bio-based plastics are novel approaches which are found to be a good alternative for petroleum based plastics. Researchers found that pectin which can be found in fruits is a key component to making bio-plastics. This research aims to construct a biodegradable plastic out of extracted pectin from Melon (*Cucumis Melo*) peel.

METHODS

This study consisted four phases including extraction of pectin where the peel was dried and pulverized. It was then mixed with water and denatured alcohol which produced the pectin. The construction of bio-plastic then follows: the pectin was mixed with water, vinegar and glycerin in a low heat pan, the constructed bio-plastic was then flattened on a foil, and the mixture was air dried for a day. To see if the bio-plastic was acceptable in terms of its appearance, odor and texture, a 4-point Likert Scale was utilized. The durability of the plastic was tested using an improvised tensile strength test which involved adding weights until it reached its breaking point. Biodegradability was also tested where the bio-plastic and the commercial biodegradable plastic were buried for a week and the result was also rated through a scale.

RESULTS

The results showed that the bio-plastic is acceptable in terms of its appearance, odor and texture since its weighted mean was 3.8, 3.8, and 3.6 respectively. T-test of independent samples was used in determining its tensile strength. Melon bio-plastic had a mean of 5.42 while the commercial plastic had 3.92. The computed t value of 1.22 is less than the critical value of 3.80. Thus, null hypothesis was accepted. Therefore, there is no significant difference between bio-plastic and the commercial one in terms of tensile strength. Also t-test independent was used in biodegradability test where the computed t value is 4.00 and it is less than the critical value of 4.30. Hence there is also no significant difference between the two in terms of biodegradability.

DISCUSSIONS

Results show that bio-plastic has almost the same results with commercial plastic. With that, the researchers concluded that the Melon (*Cucumis Melo*) Peel Bio-plastic can be a good alternative for petroleum plastic products and can be further improved to be a usable bio-plastic product.

KEYWORDS: melon, bio-plastic, pectin

SUBMISSION ID: R04A-CAVITP-0168

Mixture of Corn Husk Fiber, Sawdust and Rice Bran as Alternative Substrate for Growing Oyster Mushrooms (*Pleurotus ostreatus*)

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San Pablo City National High School
(Adviser: Renelyn Banasihan)

Abstract

INTRODUCTION

Oyster mushroom (*Pleurotus ostreatus*) is a saprotrophic fungus growing from woods that breaks down cellulose. The researchers found a new way of growing mushrooms through the substrate with corn husk fiber. This fiber is one of the major agro-waste products which contains nutrients that could support the growth of oyster mushroom. Instead of being discarded, this fiber could be used innovatively as an oyster mushroom's substratum.

METHODS

in doing the experiment, corn husks were finely shredded and mixed with saw dust and rice bran. The mixture was composted and inoculated to stimulate the growth of mycelium. The mycelium were introduced to the substrates and were placed in an enclosed area for incubation to be readied for fruiting process and gathering of data.

RESULTS

Mushroom yields obtained from treatments were different with each other. The highest amount collected was 60g of oyster mushrooms which was found from set-up with 100g of rice bran, 175g of sawdust and 525g of corn husk fiber. Using One-Way ANOVA, deviation method of partitioning the sources of variation was used. The computed F-value was 2.36. This computed value was compared with the Tabular F-value. The decision criterion was that, if the computed F-value was greater than the Tabular F-value, then there were at least two treatment yields that were significantly different from each other. in this particular case, however, the Tabular value was smaller.

DISCUSSIONS

The results showed that the mixture of corn husk fiber, saw dust and rice bran can be an alternative substrate for growing oyster mushroom for it was found out that substrates with corn husk and substrate with only saw dust produced equal quantities and qualities of oyster mushrooms.

KEYWORDS: Oyster mushroom, cornhusk fiber, substrate

SUBMISSION ID: R04A-SANPAB-0042

**Molluscicidal Effect of *Amaranthus spinosus* (Urai) Leaf Extract
Against *Pomacea canaliculata* (Golden Apple Snail)**

Aubrey Anne D. Ranga, Elizabeth Anne D. Carpo, John Claude Gerald C.
Ynion, & John Moises D. Carta, Therese Angelica B. Sungacanossa School
(Adviser: Christian R. Geronimo)

Abstract

INTRODUCTION

Pomacea canaliculata (golden apple snail) is one of the serious pests of rice in the Philippines. Chemical molluscicides used to be able to manage this pest effectively but its harmful effects on the environment and human health pose a significant problem. This study was conducted to determine the molluscicidal effect of *Amaranthus spinosus* (urai) leaf extract against golden apple snails.

METHODS

Three hundred sixty snails of different sizes with shell diameters ranging from 10-28 mm were exposed to three concentrations of leaf extract (30%, 60% and 100%). Each container has 10 snails giving a total of 30 snails per treatment. Mortality of snails was determined by probing with a needle to which the snails give no response. One-way ANOVA was used to determine if there is a significant difference among the different treatments of urai leaf extract.

RESULTS

Results showed that the percentage of mortality for small-sized snail is 86.67%, 96.67%, and 100.00%, while 66.67%, 93.33%, and 96.67% for medium-sized, and 70.00%, 86.67%, and 96.67% for large-sized, for all treatments A (30%), B (60%), and C (100%), respectively. One-way ANOVA showed that the computed F-value, 3.06 (small-size), 8.47 (medium-size) and 5.66 (large-size) are greater than the critical F-value, 2.43, which indicates that there are significant differences among the different concentrations and the standard molluscicide. Using Sheffé's test, it was identified that there is no significant difference in the mortality of snails for all treatments used in small-sized snails. For both medium-sized and large-sized snails, it showed that 60%, 100% concentrations and the standard molluscicide have no significant differences in terms of their molluscicidal effect.

DISCUSSIONS

Within the course of the study, the researchers have found that bioactive components such as saponin are present in the urai leaf extract. The application of organic molluscicide with saponin as bioactive component destroys the red blood cells by means of hemolysis and therefore, reduces oxygen uptake and alter hemoglobin concentration. Also, the effect of urai leaf extract against golden apple snail was observed within two days after the application which is within the 2-3 day duration of what is considered a good molluscicide. Qualitative and quantitative phytochemical analyses of the plant extract are recommended for further study to identify the actual amount of bioactive components. It is also recommended to apply the product in field testing to ensure the reliability of the extract.

KEYWORDS: *Amaranthus spinosus*, *Pomacea canaliculata*, molluscicide, bioassay

SUBMISSION ID: R04A-LAGUNA-0003

Mouthwash Induced Cytotoxicity in Red Onion (*Allium Cepa*) Roots

Raine Gem Flores, Laguna Senior High School

Abstract

INTRODUCTION

The rapid growth in industrialization is parallel to the growth of lines of different products like mouthwash which is universally used to improve oral health and dental hygiene. As we all know, after usage, people just spit out mouthwash down the drain and eventually released to the environment. Because of this, a need to know the effects of undiluted or even the diluted mouthwash arises. This research titled "Mouthwash Induced Cytotoxicity in Red Onion Roots" shows the effect of mouthwash to the growth of plants, particularly of Red Onion, in the cellular level.

METHODS

To assess the effect of mouthwash on red onion, an experiment was done. Two sets of fifteen red onion bulbs which were pre-soaked in 50 ml purified water for 24 hours were prepared. After that, onion bulbs were immersed on eight different mouthwash concentration levels. The first set having A with 100%, B with 75%, C with 50% and D with 25%. Second set having A with 20%, B with 15%, C with 10% and D with 5%. Two sets of Setup E, which was the control setup with 0% concentration were prepared. Each setup was replicated thrice. After a day, a physical observation was done on the roots and the results were noted. Then, the roots were measured, collected and fixed. Slides were prepared for proper observation and mitotic index was computed after observation.

RESULTS

The physical observation revealed that in both sets, only Setup E maintained the normal appearance while the other setups changed color from white to different shades of green and became limp. Consequently, the Mitotic Index revealed that on the First Set, Setup E had the highest M.I. of 2.6% while the other setups obtained a result ranging from 0 to 0.1%. On the Second Set, Setup B got the highest M.I. of 7.1%, followed by Setup E which got 3.7%, Setup D with 3.5%, Setup C got 3.4% and lastly Setup A which got the lowest with 0.5%.

DISCUSSIONS

For both sets, considering that Setup E yielded a high mitotic index, it can be said that division of cells seldom happen when mouthwash acted on cells and thus, stops the growth of roots. The presence of an abnormality (C-metaphase) in the Second Set, Setup B suggests that mouthwash also caused aberration in the cell division of onion roots. In summary, it is justified that mouthwash induces a cytotoxic effect that inhibit the growth of red onions.

KEYWORDS: cytotoxic, mitotic index, mouthwash, onion

SUBMISSION ID: R04A-LAGUNA-0018

***Musa acuminata* (Banana) Peel: An Effective Water Purifier and Cleaning Agent**

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Abstract

INTRODUCTION

Water covers 75% of the Earth and only 11% of it is safe for drinking. It is essential for all known forms of life. It is used for cleaning, drinking, cooking and so forth. Nowadays, water pollution is a major problem which dramatically requires further evaluation and water revision. According to research, water pollution is one of the leading worldwide causes of deaths and diseases. It accounts for the death of more than 14,000 people daily. Thus, this study aims to address the problem.

METHODS

The researcher conducted sets of trials that dealt with the effectiveness of the Banana Peel Water Purifier. The trials served as main data gathering instrument. The researcher made sure that the trials done underwent the security experts regarding the subject area of the study to establish the content validity of the purifier. Upon completion of the instruments needed, the researcher put various amounts (increasing amount from 1.5g to 3.5g) of dried banana peels powder to contaminated water to see its results.

RESULTS

The study revealed that the amount of dried banana peel powder must be added to obtain a crystal clear water that is safe for drinking. There is a difference in the result if various amounts of purifier are applied (1.5g to 3.5g). The results also showed that the banana peel powder is effective when large amount of it was added on the water as evidenced by trial. Aside from these, the study revealed how the BPWP is less costly than the commercial purifier and is better in terms of purification time of water and being eco-friendly. The effectiveness of the water purifier concluded through the result of the trials showed better drinking water, more purified and cleaner. Since banana peels contain carboxylic acid so the heavy metals tend to stick to the peels.

DISCUSSIONS

The study conducted prove that there are organic materials that can be used in turning unsafe water into safer drinking water and can be of great help for students and teachers in producing safe drinking water. The transformation of unsafe drinking water into a safe one helps lessen the amount of unsafe drinking water in the school and occur as soon as the banana peels were placed into the water. Moreover, there is significant difference between the commercial purifier and the Banana Peel Water Purifier. A similar study may be conducted regarding banana peel to further verify the results of this study.

KEYWORDS: Water purifier, cleaning agent, purification

SUBMISSION ID: R04A-BATANP-1379

Music Stimulation to the Growth and Quality of Okra

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& Nicole Christine C. Abaja, Batangas State University
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Abstract

INTRODUCTION

Okra is a major economic crop in South East Asian region where the Philippines can be found. Okra is a good source of nutrients including vitamins, minerals, antioxidants and phytochemicals. Music has been known to have a positive effect to living organisms. Hence, utilizing music as a technique to enhance the growth and quality of crops has a potential in food production. In this study, the researchers sought to compare the effectiveness of Classical, Jazz and Rock music stimulation to the growth and quality of okra in terms of the standard agronomic parameters and determine which among the selected genres of music is the most ideal to use as a technique in improving the growth and quality of okra.

METHODS

An experimental and quantitative research design was used in this study. Using an experimental method, the researchers utilized four groups of okra plants, namely Classical, Jazz, Rock and Control, with three samples each. The musical pieces used for stimulating the plants were "Suite No. 1 in G major" by J.S. Bach, "Take Five" by Dave Brubeck, and "Sweet Emotion" by Aerosmith. Statistical treatments including one-way ANOVA test, Bonferroni Post Hoc test and Mean Plot Diagram were also utilized in the analysis of data.

RESULTS

Classical music significantly improves the growth and quality of okra plants. In terms of the parameters measured, the plant samples under the Classical group had the shortest number of days it took to reach flowering stage with 63 days, the greatest number of leaves at flowering stage with 10.7 leaves, the lengthiest plant height with 58.3 cm, and the thickest stem circumference with 2.00 cm. It was also statistically proven that there is a significant difference between the use of Classical, Jazz, Rock and no music stimulation to the growth and quality of okra in terms of the standard agronomic parameters. The proposed output is an agricultural program which will serve as a platform for promoting the use of music stimulation as technique that will improve the growth and quality of okra. Music stimulation significantly improves the growth and quality of okra such that it accelerates the time period to reach flowering, it increases the number of leaves and it proliferates the plant height and stem circumference. Among the selected genres, Classical music greatly improves the growth and quality of okra and is the most ideal to use as a potential technique to enhance the growth and quality of okra.

KEYWORDS: Okra, *Abelmoschus esculentus*, music stimulation, agronomic parameters

SUBMISSION ID: R04A-BATANC-0170

**Mycoremediation of AA Alkaline Batteries through White Mushroom
(*Agaricus bisporus*)**

Brian Christoper Barachina & Elwin Dale Dirain

Abstract

INTRODUCTION

Currently, there is no reliable method to completely dispose of household hazardous waste. This study aims to examine the potential using White Mushroom (*Agaricus bisporus*) as a method of biodegrading hazardous waste, specifically, the alkaline batteries. *Agaricus bisporus* is able to biodegrade these toxins, because of the enzymes from the mycelia, such as ligninases.

METHODS

Expired and leaking batteries were placed in sawdust along with the fungal spawn. As the spawn grew, the pH was monitored to determine whether the hazardous component -potassium hydroxide- was indeed degraded. A control sample of batteries and sawdust without fungi was used as a comparative tool. The fungi were then allowed to grow for one week and the method used was ASTM 4972-01*.

RESULTS

Results found that the pH of the sawdust mixture decreased after one week by significant amount in all three samples of the fungal mixture. The control mixture exhibited a comparatively small decrease in pH. The alkalinity of the batteries were significantly weakened after one week of exposure to the fungal spawn. After the experiment, the result was 5.48. In testing, we used the Test Parameter, Unit (pH of 20% solution @ 25 degrees C). In one week, the fungi were able to significantly reduce the pH of the hazardous component. When exposed to the mycelia, the rate of reduction of pH was drastically increased relative to the rate without the fungi. (t value= -19.65)

DISCUSSIONS

This study displays a method of accelerating the degradation of household hazardous waste. However, based on the result given by the testing center, the pH was decreased. Further research is necessary to determine the long term potency of such a method. This study examined the effectiveness of mycelia in the biodegradation of alkaline batteries.

KEYWORDS: Mycoremediation, AA Alkaline, White Mushroom

SUBMISSION ID: R04A-CAVTP-1680

**Nematocidal Activity of *Artemisia vulgaris* Linn. (Damong Maria)
Against the Root-knot Nematodes, *Meloidogyne* spp**

Jay-R Bendicion, Michaela Cruz, & Mikylla Marie Sayoc, TNCHS

Abstract

INTRODUCTION

Several methods are currently implemented for nematode-control. Nematicides are substances that inhibit or prevent the growth of these organisms. However, these usually bring life-threatening conditions especially for synthetic nematicides. For this reason, the researchers evaluated the nematocidal activity of *Artemisia vulgaris* Linn. (damong maria) against root-knot nematodes, *Meloidogyne* spp.

METHODS

Laboratory exposure of the nematodes were performed by placing 100 microliters of nematode suspension per well. Each well contains an average number of 15 second stage juveniles and treated with 10%, 30% and 60% concentrations of *Artemia vulgaris* Linn. ethanolic plant extract and 3 granules of Furadan as the positive control. This experiment was done in four replicates. Data were collected after 1, 2, 3, 6, 15, and 24- hour periods of observation.

RESULTS

It was observed that the inhibitory activities of the varied concentrations of *A. vulgaris* plant extract grew more aggressive as time progressed. On the first hours of exposure, the effects were not as noticeable as that of the positive control, Furadan. As the period of exposure got longer, the inhibition of the target species drastically increased. At the last point of observation, the activities were virtually alike with Furadan. Highest concentration of plant extract also showed highest inhibitory rate among all concentrations.

DISCUSSIONS

The results established the need of a non-toxic method of nematicide utilization that would not pose hazardous risks to plants and humans. Continuous usage of synthetic nematicides that possess several toxic chemicals can bring a lot of threats to the life of the plants and individuals.

KEYWORDS: Nematicide, nematodes, exposure, inhibition

SUBMISSION ID: R04A-CAVITP-1294/R04A-CAVITP-1299

Non-invasive Glucose Test Using Saliva as an Alternative Detector for Diabetes Mellitus

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Abstract

INTRODUCTION

Philippines has a 6.1 prevalence rate of diabetes mellitus which means that six million Filipinos are currently diagnosed as diabetic according to Litonjua (2016). Moreover, he stated that this figure can be doubled to 12 million or even more by 2040 because of undiagnosed diabetes cases. In addition to this, according to Department of Health, diabetes mellitus is one of the main causes of disease-related deaths in the country. In this study, the researchers thought of a non-invasive way to test the glucose on salivary samples.

METHODS

Purposive sampling was used. Twenty-five diabetic and 25 non-diabetic individuals with human informed consent forms, ages 21 years old and above, male and female, were included in the study. The blood glucose levels of the participants were read using blood glucose meters. Five milliliters of saliva were collected, then 25 microliters ($\frac{1}{4}$ L) of it was mixed with 750 $\frac{1}{4}$ L of Profame Diagnostic Reagent and was boiled in order to activate the glucose in each sample. Each sample was then placed in V-1100D spectrophotometer, having the absorbance of each salivary sample read. To get the salivary glucose levels, the absorbance of saliva was divided by the absorbance of the standard and was multiplied by 100.

RESULTS

Paired t-test was used to determine the significant difference between salivary glucose level and blood glucose level. For the significant difference of salivary and blood glucose levels of diabetic individuals, the computed t is 24.2083. On the other hand, for the significant difference of salivary and blood glucose level of non-diabetic individuals, the computed t is 34.9306. Pearson Correlation was used to correlate the salivary glucose level and blood glucose level. For the correlation of salivary and blood glucose level of diabetic individuals, the computed R is .9449. On the other hand, for the salivary and blood glucose levels of non-diabetic individuals, the computed R is .6001. Using the gathered data, the study came up with a suggested range of glucose levels of saliva which was 40 to 65 mg/dL for non-diabetic individuals and 66 mg/dL and above for diabetic individuals.

DISCUSSIONS

The results showed that there is a strong positive correlation between blood and salivary glucose levels among diabetic individuals and a moderate positive correlation between blood and salivary glucose level of non-diabetic individuals. This suggests that saliva can be utilized to detect glucose levels, especially those who are diabetic.

KEYWORDS: diabetes mellitus, non-invasive, saliva, salivary glucose levels

SUBMISSION ID: R04A-CAVITP-0332

ORE-katol: *Organum Vulgare* as a Mosquito Repellant

Dhaniel C. Erasga

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Abstract

INTRODUCTION

Mosquito borne diseases are major human and animal health problem in all tropical and subtropical countries. The diseases transmitted include malaria, filariasis, yellow fever and dengue. There has been exploration of various methods over the centuries to combat threats from mosquito borne diseases. Considerable research efforts have proven that essential oil compounds and extracts with their derivative are an effective and alternative means of controlling nuisance mosquitoes and their property of rapid degradation in the environment has favored for its increased specificity. Studies reflect that insect repellants play an important role in preventing the mosquito vector, deterring an insect from flying to, landing on or biting human and animal skin. Generally, the widely used compounds as insect repellants are synthetic chemical repellants but they bear the disadvantage of being unsafe for humans, especially children and domestic animals because they may cause irritation, hot sensation, rashes or allergy. So the researchers thought about making an alternative mosquito repellent incense that can be effective as commercial product. It helps to minimize the different diseases caused by mosquitoes such as Dengue and Malaria.

METHODS

With the preparation of the following materials: dried oregano leaves, oregano leaf extract, charcoal, gum Arabic powder and hot water. The materials were then subjected to the following procedures: Sundry the oregano for 1-2 day/s, pulverize the dried oregano using a mortar and pestle. and then mix 20 grams of gum Arabic, 2 tsp. of crushed charcoal, and 6 tsp. of crushed dried oregano, then add the oregano extract and add hot water to make paste like consistency and then mix thoroughly in a bowl. Mold the mixed ingredients in a stick to form its shape.

RESULTS

We tested the product's effectiveness in different areas; kitchen area and under the dishwashing area. We observed that the aroma (smoke) spread in different direction in each area where they were placed the incense. The number of mosquito that died is noted as presented in our table of observation. To analyze the data, Likert Scale and Percentage Scale were used with its corresponding range.

DISCUSSIONS. It was found that there is no significant difference in using the oregano leaves as mosquito repellant as compared to the commercial brand. Thus, oregano can be an alternative source for repelling mosquitoes.

KEYWORDS: Oregano, Mosquito, Repellant, Incense, Aroma, borne diseases, dengue, malaria, effectiveness, alternative

SUBMISSION ID: R04A-CALAMB-0112

Pan De' Latiris: Production and Utilization of Kerson Fruit in Making Bread

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Abstract

INTRODUCTION

in the locality of Palingon, Sampiruhan, Lingga, aratiles is one of the trees which are abundant but most of the people do not find any value out of its fruit. *Muntingia calabura* or aratiles is a fast-growing tree that has a cherry like fruit with multiple health benefits: Such as lowering blood sugar, preventing cancer, promoting cardiovascular health, lowering blood pressure, and blocking pain, just to name a few. For this reason, the researchers decided to make a product which involves aratiles fruit in order for the people to be aware about the use and essential benefits of aratiles fruit. The study mainly aimed to determine the acceptability of bread made of aratiles in terms of its taste, odor and texture.

METHODS

Experimental method of research was used in the study to determine if bread made of aratiles can also be accepted to the consumers compared to the commercial bread available in the market. Questionnaire was used in evaluating the quality of pan de' ratiles in terms of its taste, odor and texture.

RESULTS

Result of the study revealed that the product is highly accepted to the consumers and it was also proven that aratiles can also be a good ingredient in making bread. Also, results showed that bread made of aratiles was rated high in almost all the quality attributes evaluated. This indicates the feasibility of adding aratiles fruit to bread. It also shows that the flavor and texture of the bread must be improved.

DISCUSSIONS

Bread was successfully produced from the aratiles fruit. Though the bread was highly acceptable in terms of taste and odor, it has a poor physical characteristic in terms of its texture. Also, fortification of bread with aratiles was really acceptable to the consumers. Bread produced from aratiles had best sensory attributes. This study shows that fortification of bread with aratiles could be of great nutritional advantage to the people. This product can also be of great help to the people because it is cheaper than other kinds of bread.

KEYWORDS: acceptability, bread making, feasibility, pan de'latiris

SUBMISSION ID: R04A-CALAMB-0030

**Papaya (*Carica Papaya*) Seed Extract and Its Effect on Mosquito
(*Culicidae*)**

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Tria Tirona Memorial National High School
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Abstract

INTRODUCTION

Mosquitoes commonly bring serious and dangerous problem in everyone's health. The best thing to control mosquitoes is to spray insecticides in our place but synthetic insecticides may cause bad effects in our environment and other organisms because of its chemicals. Thus, making insecticide out of organic components could be a good alternative. Hence, the research study was conducted to determine the insecticidal effect of papaya seed extract against mosquitoes.

METHODS

In order to get the mortality effect of the extract on mosquito, the papaya seeds underwent crude extraction. A total of three set-ups were used for the experiment, each set-up was composed of two plastic cups container connected by a straw with nine mosquitoes. Two of the set-ups received the treatments wherein one was sprayed with the papaya seed extract and the other by a commercial product, while the last plastic cup container served as the negative control group that will confirm the ability of the treatments in killing the mosquitoes. The set-ups were observed three times with a five-minute interval.

RESULTS

The average number of mosquitoes died in three trials of papaya seed extract was 9/9 and as for the commercial brand was 6/9. In order to analyze the number of mortality of mosquitoes, t-test of independent samples was utilized to compare the data gathered in Papaya Seed Extract and Commercial Product. The computed t-value was 0.71 under the critical value of 2.77 that revealed there is no significant difference between papaya seed extract and the commercial product. Qualitatively, common effects in mosquito such as lesser activity, dizziness and unconsciousness were observed in both treatments but not in the negative control.

DISCUSSIONS

Descriptively, the papaya seed extract is more effective than the commercial product since the total number of mortality by the former is greater than the latter. However, through the statistical analysis conducted, the papaya seed extract and commercial insecticide are just comparable in terms of its ability to kill mosquito. With these results, it can be concluded that the papaya seed extract can be an alternative insecticide as it possesses the ability to kill mosquitoes.

KEYWORDS: papaya seed, crude extraction, mosquito killer spray

SUBMISSION ID: R04A-CAVITP-0157

Physicochemical Analysis of Palico River: Input for Biodiversity Conservation

Irene Andino, Teacher

Abstract

INTRODUCTION

Water resources play a very important role in all biotic organisms. Republic Act 9275 or the Philippine Clean Water Act of 2004 was enacted that centers on protection or preservation of water bodies like rivers. However, there are still a number of factors that contribute today adding to its destruction. In this study, the researcher believes that the river is one important water resource and must undergo physicochemical assessment. It must be done to ensure its water quality condition and to advocate awareness and environmental concern through biodiversity conservation.

METHODS

The study used experimental research through sampling method of water samples. Water samples were collected (Palico River, Palico, Nasugbu, Batangas) and brought to a licensed testing laboratory. Biological Oxygen Demand (BOD) and Fecal Coliform count were tested. Also, pH, salinity, and turbidity were assessed through the help of Nasugbu Water District. A number of people and residents living near/ around the river were interviewed to enhance the data. With this, experimental approach was used in data collection in this qualitative- quantitative research that gives the ability to collect accurate data on and provide a clear picture of the phenomenon under study.

RESULTS

As regards to the descriptions of the river it was determined to be great in terms of agricultural and recreational activities. Many residents in the area are planting corns, kangkong, sili, papaya, gabi plants, banana trees, and sugar canes and houses were built near the river. Palico river physicochemical assessment indicated the condition of the river. On the average, pH, BOD, salinity measurement, and fecal coliform count were determined to have positive results. The BOD and fecal coliform count three years ago did not affect the result on the assessment of the river. Thus, conservation through the integration plan had identified the areas of concern to improve the biodiversity.

DISCUSSIONS

The results show that Palico community may be able to use the river watershed for planting other crops or plants that can be a source of income. Additionally, a biodiversity conservation plan for the community was prepared by the researcher which can be adapted and implemented to address the identified areas of concern. Implementation of this biodiversity conservation plan may help the community to maintain a clean and green water environment. Also, future researchers may consider exploring same water parameters in undertaking studies related to this present study.

KEYWORDS: physicochemical, assessment, biodiversity, conservation

SUBMISSION ID: R04A-BATANC-0188

Phytochemical Screening and Antibacterial Activity of *Eleusine indica* (Paragis) Flower and Leaf Extract

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(Adviser: John Cyrus L. Doblada & Dianne Lane Randal)

Abstract

INTRODUCTION

Many diseases are mainly caused by food borne bacteria that have a large impact on human health. Synthetic medicines were used for treatment but do not guarantee cure and cannot be afforded by the underprivileged. These issues with regards to synthetic antibiotics and the pass face evolution of bacteria to resist antibiotics lead to a remarkable breakthroughs and trends with the use of herbal plants in the different countries around the world. *Eleusine indica* (goose grass or paragis plant) is an invasive plant species in some parts of the world. in the Philippines, the *E. indica* plant is not yet included in the approved list of herbal medicines even if it is widely used as folk or herbal medicine. These reports confer its medicinal properties however; there are still not enough data to back up these claims.

METHODS

Fresh samples of *E. indica* plant was collected near the vicinity of Manuel I. Santos Memorial National High School. The *E. indica* flowers and leaves were pounded to obtain the pure extract. The extracts subjected to phytochemical screening to determine the essential compounds and antimicrobial assay to determine its potential to selected food borne bacteria.

RESULTS

Based from the results, *E. indica* plant has phytochemicals which are proven to have antioxidant and antibacterial property. The presence of alkaloids, flavonoids and tannins based from the result of qualitative screening supports the wide range potential of *E. indica* flower and leaf extract. The antimicrobial assay results show that extracts have inhibited the growth of food borne bacteria such as *Escherichia coli*, *Salmonella typhimurium* and *Staphylococcus aureus* significantly.

DISCUSSIONS

Based on the results, the presence of essential phytochemicals with proven antibacterial property is the reason why *Eleusine indica* (Paragis) flower and leaf extract can inhibit the growth of *Escherichia coli*, *Salmonella typhimurium* and *Staphylococcus aureus*. This finding strongly supports the researchers' idea that *E. indica* plant has high. Potential in herbal medicine. The results of the study also imply that *E. indica* plant has a therapeutic value that can be used in traditional and folk medicine.

KEYWORDS: *Eleusine indica*, phytochemicals, antibacterial property, foodborne bacteria

SUBMISSION ID: R04A-RIZALP-0082

Phytochemical Screening and Free Radical Scavenging Activity of *Caesalpinia Pulcherrima* (Caballero) Crude Extract

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Abstract

INTRODUCTION

The use of plant extract is well documented either as alternative or complimentary medicine for treatment of different diseases. Many people depend on herbal medicine because it is more affordable and has lesser side effects. Medicinal plants are beneficial because of the presence of phytochemical constituents, a variety of plant - derived compounds with therapeutic activities. *Caesalpinia pulcherrima*, also known as Caballero, belongs to the legume family, Fabaceae, the second largest family of medicinal plants being used as traditional medicine. Leaves of *C. pulcherrima* have anti-inflammatory, anti-microbial, anti-viral and purgative properties. With this background, an investigation was undertaken to identify the bioactive molecules that will back-up the claimed medicinal benefits of *C. pulcherrima*.

METHODS

Fresh samples of *Caesalpinia pulcherrima* leaves were collected from Manuel I. Santos Memorial National High School for crude oil extraction. The crude extract of *C. pulcherrima* leaves was subjected to different phytochemical test using standard procedures to identify the phytochemical constituents qualitatively. To determine the antioxidant activity of *C. pulcherrima*, the crude extract was also used for DPPH free radical scavenging activity.

RESULTS

Based from the data, *C. pulcherrima* crude oil extract, revealed the presence of carbohydrates, reducing sugars, flavonoids, alkaloids, tannins, glycosides, saponins, sterols and triterpenoids which is found to be good source of medicinally active elements that can be attributed to its high antioxidant activity. The crude extract free radical scavenging activity of *C. pulcherrima* shows that the Caballero crude extracts have radical scavenging capacity (RSC) in all concentrations.

DISCUSSIONS

The crude extract of *Caesalpinia pulcherrima* leaves contained many bioactive chemical constituents including carbohydrates, reducing sugars, flavonoids, alkaloids, catecholic tannins, cardiac glycosides, saponins, sterols and triterpenoids which is found to be good source of medicinally active elements. Thus, the leaves of *C. pulcherrima* possesses a high antioxidant activity. The phytochemical constituents screened from the crude extract of *C. pulcherrima* have medicinally active elements which can be further exploit to isolate and synthesize modern medicines. The result of the study implies that *C. pulcherrima* has a therapeutic value that can be used in traditional and folk medicine.

KEYWORDS: *C. pulcherrima*, phytochemical screening, free radical scavenging activity, antioxidant

SUBMISSION ID: R04A-RIZALP-0081

**Potential Alternative Source of Cooking Fuel: Water Hyacinth
(*Eichhornia crassipes*) Briquettes**

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National High School
(Adviser: Arachelle Catle)

Abstract

INTRODUCTION

The prevalent overpopulation of water hyacinth in the nearby Laguna lake causes many problems among the inhabitants of the area. Oxygen allotted for fish were depleted, problems with drainage and hindrance in water transportation are the few problems of this phenomenon. The water hyacinth stalks are used traditionally as weaving materials but the leaves become trash and wasted with no economic importance. The researchers sought to determine the comparative study of water hyacinth briquettes as to ordinary commercial charcoal. In addition, the researchers tried to identify which was the best part of the plant to use for briquetting for biomass fuel.

METHODS

The water hyacinth was collected, separated, sun-dried, carbonized, mixed with a starch binder, molded, then sun-dried again and were subjected to a two-part test. The first test was conducted by the researchers based on their capabilities and resources. They compare a sample by mass of the combination water hyacinth sample and ordinary charcoal for flammability test with burning rate, peak temperature, burning duration, and ash content. The second test was to verify which part of the water hyacinth (leaves, stalks, a combination of leaves and stalks) has the best quality in terms of heating value and approximate chemical analysis which was conducted in DOST- Forest Products Research Development Institute.

RESULTS

The briquettes can be used as an alternative fuel source to charcoal for domestic use like simple cooking, boiling, and frying. In addition, as per the laboratory testing conducted in by the DOST - PRDI, it was found that the leaves produced the highest amount of heat per gram of sample. In terms of moisture, the leaves registered the lowest moisture content, the highest percentage of volatile combustible matter, lower ash content which are good indicators of fuel efficiency. Recommendations of the researchers include the use of different binder ratios and other types of binder to attain maximum effect.

DISCUSSIONS

The water Hyacinth briquette has a lower temperature, faster duration, higher ash content, lower volatile matter, and lower gas emission. This data showed that water Hyacinth could be an alternative to charcoal. Producing these cleaner water Hyacinth briquettes, lower cost is consumed but with the same effectiveness. Using these briquettes, many families will be helped in reducing their expenses for charcoal, instead, increase their income, and the environment will be saved from the destructive effects of water Hyacinth.

KEYWORDS: briquetting, water hyacinth, charcoal, fuel

SUBMISSION ID: R04A-BINANC-0001

Potential Immunomodulation of *Moringa oleifera* Crude Ethanol Extract on *Danio rerio* (Zebra fish)

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CNSHS

Abstract

INTRODUCTION

Fishes are prone to many viral pathogens; some can be identified but some are still unknown. Viral infections of fishes can be caused by poor water quality and other environmental conditions. However, there are some treatments or the preventive way in those viral pathogens (Metapathogen.com, n.d.). This research study aimed to investigate the immunomodulatory effects of *Moringa oleifera* crude ethanol extract as feed additives on *Danio rerio* (zebrafish), which could possibly improve the health of the fishes and strengthen their immune system from various types of pathogens that are present in their environment.

METHODS

Ten (10) kilograms of *Moringa oleifera* were gathered in Naic, Cavite while twenty-seven (27) mixed-sex zebra fishes were bought from Cartimar, Pasay City. *Moringa oleifera* stalk was then separated from its leaves and dried for a week, then soaked in 95% ethanol for 48 hours and was processed for extraction. Two concentrations were prepared, concentration 1 with 50 g/kg and Concentration 2 with 100 g/kg and were coated on the feeds. Then, the fishes were fed with the extract. After two weeks, the fishes were dissected and spleen samples were collected and subjected under histological analysis. the formation of melanomacrophage centers was recorded through the use of ImageJ software.

RESULTS

in comparison to the treatments with *Moringa oleifera* crude ethanol extract, the Control Group showed the least percentage of formation of splenic MMCs with an average of 1.142%. Concentration 1, the lower concentration with an average of 2.559% showed the highest percentage of formation of MMCs in the spleen of *Danio rerio* and 1.755% for the Concentration 2 respectively. It can be inferred from the average results that as the concentration increases, the percentage of formation of splenic melanomacrophage centers in *D. rerio* decreases, not including the Control Group.

DISCUSSIONS

The results inferred that *Moringa oleifera* crude ethanol extract was able to increase the percentage of formation of splenic MMCs per field of view. in addition to this, as the concentration of *Moringa oleifera* extract increases, the formation of splenic melanomacrophage centers increases. There is a direct proportionality between the concentration of the extract and the formation of MMCs per field of view. However, a low number or formation of MMCs suggests a strong immune system. Thus, it can be concluded that *Moringa oleifera* does not exhibit an immunomodulatory property on *Danio rerio* (zebrafish).

KEYWORDS: *Moringa oleifera*, immunomodulatory activity, ethanol extract, *Danio rerio*, melanomacrophage center

SUBMISSION ID: R04A-CAVITP-0216

**Potential of *Plectranthus amboinicus* (Lour.) Sprengel Essential Oil
Extracts as an Antifungal Agent**

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Abstract

INTRODUCTION

Several diseases are mainly caused by pathogenic fungal organisms that largely affect human health. Issues with regards to the dangerous side effects of synthetic medicines lead to remarkable breakthroughs and trends with the use of herbal plants in different countries around the world. One of the most documented species belonging to family Lamiaceae is *Plectranthus amboinicus* (Loureiro), Sprengel. Studies provide information that *P. amboinicus* contains active fungal components (thymol and carvacrol). With this background, an investigation was undertaken to determine the potential of *Plectranthus amboinicus* essential oil as an antifungal agent against the three fungal organisms (*Candida albicans*, *Trichophyton mentagrophytes*, and *Aspergillus niger*).

METHODS

Fresh *P. amboinicus* leaves samples were obtained from Manuel I. Santos Memorial National High School garden. To extract the essential oil the plant samples were subjected to water distillation method. The essential oil was administered to antimicrobial assay to determine the inhibitory effect on three test fungal organisms.

RESULTS

Based on the data, *P. amboinicus* essential oil extract have a significant inhibitory effect to *C. albicans*, *T. mentagrophytes* and *niger*. It also shows that the plant sample yields a close result compared to commercial antifungal cream based from the antimicrobial index.

DISCUSSIONS

Plectranthus amboinicus (Loureiro) Sprengel essential oil extract can be considered as a potential antifungal agent. This finding also supports the researchers' theory that essential oil extract has very high antimicrobial activity. The result of the study implies that *P. amboinicus* essential oil extract has a therapeutic value which can be used for further medicinal researches.

KEYWORDS: *Plectranthus amboinicus*, antifungal agent, the zone of inhibition, essential oil.

SUBMISSION ID: R04A-RIZALP-0083

**Powder-post Beetle Frass from Bamboo (*Bambusoideae*) and
Cornstarch Mixture as Wood Putty**

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Abstract

INTRODUCTION

During summer, termites are more aggressive in eating home constructions such as ceilings, walls, and wood furniture. The aftereffects of it are gap holes which make a wood weaker. Using Powder post beetle frass from Bamboo as lignin and Cornstarch as a binder, this will produce a cheaper and effective wood putty.

METHODS

This study looked at the significant difference between the experimental set-up and the commercial putty in terms of dryness and non-shrinking test in a mass of powder post beetle frass and cornstarch in producing effective wood putty. A total of five (5) treatments with varying concentration of the mixture of powder post beetle frass and cornstarch has been produced and tested with the standard procedure of dryness and non-shrinking test methods.

RESULTS

This study depicts that the best result was Treatment #1 which had 60g of cornstarch and 40g of powder post beetle frass for their dryness and non-shrinking. This proved that powder-post beetle frass and cornstarch mixture are effective wood putty.

DISCUSSIONS

As the results show, it revealed that the mass of powder post beetle frass and cornstarch are affecting the test that been drawn. Results of MANOVA has also shown that there is a significant difference between the treatments and standard set-up in terms dryness and non-shrinking test.

KEYWORDS: Wood putty, Cornstarch, Non-shrinking, Powder-post Beetle Frass

SUBMISSION ID: R04A-SANPAB-0030

Production and Utilization of Talisay (*Terminalia Catappa*) Leaves as Fabric Dye

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Abstract

INTRODUCTION

The first recorded dyeing application was dated back 2600 B.C. in which natural pigments were mixed with water and oil to decorated skin, jewelry and cloths Donatelli 2018. As mentioned by Bechtold and Mussak 2009, there are many varieties of plants that can be the main source of different colors of natural dye like atsuet, indigo, and molds in tropical countries. Horn 2013 also discussed that natural dyes were used even before the inventions of synthetic colorants. in the Philippines, Fernandez 2013 written that the revival of the natural dye industry in the fashion world has influenced many weaving firms in the province to explore dye-yielding plants as a source of dye for fabrics and this was observed to La Herminia Piñera Weaving, Inc. The study aimed to determine the acceptability of fabric dye from Talisay leaves in terms of its appearance and its effectiveness in terms of colorfastness to laundering as to change in color and degree of staining and to rubbing as to dry and wet.

METHODS

The experimental method of research was used in the study to determine if Talisay leaves as fabric dye can be effective in the industry of dyeing fabric. Questionnaires were used in evaluating the quality of Talisay leaves as fabric dye applied to jusi and piñera fabric in terms of its appearance and laboratory test were also conducted at Philippine Textile Research Institute in Bicutan, Taguig City to determine the potential of this dye as applied to jusi and piñera fabric in terms of its colorfastness to laundering and rubbing. Fifteen (15) embroiderer and fifteen (15) embroidery dyer from Lumban, Laguna were the participants of the study.

RESULTS

Results of the study revealed that the application of Talisay leaf dye to jusi and piñera fabric was aesthetically accepted by the two groups of respondents. As regards in dye colorfastness to laundering and rubbing, jusi implicates that dyeing jusi needs a long time of soaking to the dye bath and careful washing after dying to separate strictly the remaining unpenetrated colorant that may cause bleeding. in summary, the result suggested that both fabrics were applicable to use in making washable cloths.

DISCUSSIONS

The rating given by embroiderer and embroiderer dyers had no significant difference with regards to the acceptability of Talisay leaves dye's appearance as applied to jusi and piñera fabric. This result led to the acceptance of the research hypothesis since the computed t-value in both fabrics is less than the level of significance $\alpha = .05$.

KEYWORDS: acceptability, fabric dye, production, utilization

SUBMISSION ID: R04A-CALAMB-0133

Propagating Tomatoes (*Solanum lycopersicum*) using Indigenous Microorganism in Automatic Watering Container without using Electricity

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Abstract

INTRODUCTION

A hydroponic system is a type of gardening method in which the plants grow in chemical rich liquid media. Due to the expensiveness of materials and equipment for the components of the original hydroponics system, the researchers decided to innovate the system. The project turns into an alternative version that results in an Automatic Watering Container System without using electricity. The researchers decided to use the remodeled system with Indigenous Microorganism (IMO) as fertigation to produce healthy organic plants as a livelihood gardening project to propagate tomatoes. The Grow Bed Culture is the researchers' version of the system where the substrate or media was replaced by coconut husk, rice hull and sawdust to make gardening.

METHODS

For this research, observation using the experimental set-up was used. The materials used by the researchers in propagating tomatoes are coconut husk, sawdust, and recyclable polyethylene terephthalate bottles that lead to the construction of the Automatic Watering Container System without using electricity.

RESULTS

The researchers chose Tomato (*Solanum lycopersicum*) as the specimen under investigation. The materials used in constructing Automatic Watering Container System were coconut husk, sawdust, and recyclable polyethylene terephthalate bottles, and silicon tube. Within five weeks of observation, the tomatoes with IMO continuously increased its heights and number of leaves with an average of 2 to 3 leaves per week and its height with an average of 8.25 cm. Tomatoes planted without IMO resulted in an average number of 1 to 2 leaves per week and height with an average of 7.6 cm. Moreover, this system was found to conserve space efficiently and labor because it did not require soil in raising plants. Automatic Watering Container System is a recirculating method where it waters the plant by itself for about 8 hours without the use of electricity because of the pressure accumulated inside the water reservoir that pushes the liquid up to the system which lessens the cost of production.

DISCUSSIONS

Based on the data gathered by the researchers, tomatoes with indigenous microorganism were able to survive in Grow Bed Culture Hydroponics System using Automatic Watering Container Set-Up specifically in Laiya National High School. This study is relevant and timely to help the social problem about the land area because of industrialization. By this study, the community will be able to provide food for all and use the available land space effectively.

KEYWORDS: hydroponics system, indigenous microorganism (IMO), *solanum lycopersicum*, polyethylene terephthalate, fertigation

SUBMISSION ID: R04A-BATANP-1305

Protective and Curative Activity of the Synergism of Knifefish (*Chitala ornata*) Skin and Banaba (*Lagerstroemia speciosa*) Bark Extracts against Rice Bacterial Blight (*Xanthomonas oryzae* pv. *oryzae*)

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(Adviser: Micheal Lezondra)

Abstract

INTRODUCTION

The most serious disease in rice is bacterial blight, caused by *Xanthomonas oryzae* pv. *oryzae* (Xoo). Affected fields lose 80% of grains, but 100% loss is common. As treatments are toxic, studies suggest antimicrobial peptides (AMP) as pesticides. Some fish possess broad-spectrum AMP but none have been found in *Chitala ornata* Knifefish, yet. Quorum Sensing (QS) is a weakness of AMPs, though. Thus, Banaba (*Lagerstroemia speciosa*) was chosen as it inhibits AHL-based QS, a QS similar to that of Xoo.

METHODS

Knifefish skin was homogenized, centrifuged and purified (Agapito 2014). Banaba bark was macerated and purified (Nautiyal 2012). Antibacterial synergism was tested using ratios 1:0, 1:1, 0:1 of knifefish and banaba extracts via well-diffusion (Cui 2016). Only the significantly higher 1:1 ratio was used further. Concentration-dependent antibacterial activity was tested using 25%, 50%, 75% concentrations of the mixture via well-diffusion, and foliar application pre- (protective activity) or post-inoculation (curative activity) (Shi et al. 2011). MIC was determined via broth dilution (Rahman et al. 2014). Swarming Inhibition test was done using 25%MIC, 50%MIC, 75%MIC based on Cho (2013).

RESULTS

Synergistic antibacterial activity was found - higher inhibition zones (IZ) in a 1:1 ratio (mean=40mm), with 163% and 78% increase for the activities of knifefish skin and banaba bark extracts, individually ($p<0.003$). The activity of the 1:1 ratio is concentration-dependent ($p<0.003$), with 57mm mean IZ at 75% concentration, while 3.33mm for Ampicillin. The MIC of the 1:1 ratio is 52 µg/mL. Swarming was also inhibited, with lower colony radii at higher concentrations ($p<0.003$). The mean radius in 75%MIC was 10mm, while 58.67mm in water. In the protective and curative assays, shorter lesions were observed at higher concentrations, on the 7th and 18th day ($p<0.003$). The lesions in the protective assay were shorter than in the curative assay.

DISCUSSIONS

The observed antibacterial activity is likely due to AMP, in knife fish, and phytochemicals, for banaba (Nautiyal 2012). Their synergistic and concentration-dependent antibacterial activity is probably by complementing modes of action (Rakers 2013). As the extracts inhibit QS-based swarming of Xoo, resistance development is unlikely. The results of the protective and curative assay imply that the treatment can be a pesticide (curative agent) or immunostimulant (a protective agent), though further studies on toxicity and mechanisms are needed.

KEYWORDS: Rice Bacterial Blight, *Xanthomonas oryzae* pv. *oryzae*, *Chitala ornata*, *Lagerstroemia speciosa*, Synergy, Protective Activity, Curative Activity

SUBMISSION ID: R04A-STAROS-0003

Question-Answer Relationship (QAR) Strategy Using 5 E's (Engage, Explore, Explain, Elaborate, Evaluate) Instructional Design Model in Teaching Bioenergetics

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Abstract

INTRODUCTION

in view of enhancing science classroom instruction using Question-Answer Relationship Strategy in a 5 E's Learning Cycle, researchers must elevate the Senior High Schools' ability in terms of reading, communication, and comprehension skills so as to have ease in recognizing relationships between a question and source of possible answer locations, also to enhance performance in answering questions about content area materials.

METHODS

This study investigated the Question-Answer Relationship (QAR) strategy using 5 E's instructional design model in teaching Bioenergetics with the use of quasi-experiment, non-equivalence, pre-test and posttest research design. It was conducted to test the significant difference in the academic performance between the experimental and control group (15 participants per group) and were chosen based on the pairing of their first grading grades in a science subject. Data were gathered using a validated 20-item performance test and **results** were analyzed using the mean, square of standard deviation, and t-Test for sample differences.

RESULTS

Results had shown an increase in the mean scores of the experimental group which corresponds to an increase of their scores in a wider range from their pretest scores as compared to their posttest scores. In terms of the value of variance, the control group had slight increase while the experimental group had a great decrease on their variance which can be explained in their scores which ranges from 16-17 (Satisfactory) and 18 (Very Satisfactory) and are mostly concentrated on the moderate to highly proficient performance level and only few students failed in their performance level with scores ranging from 0-12 (Did Not Meet Expectation) as shown through a great decrease on the value of variance. For the control group, the scores were widely dispersed during pretest even on their posttest which signifies on the not proficient level of performance and only a few have a moderate to highly proficient performance level.

The computed t-value was found in the critical region of the normal curve, therefore there is a significant difference between the posttest scores of the experimental and control groups.

DISCUSSIONS

Reasons behind the increase of academic performance could be associated with an enhanced level of comprehension, build of higher order thinking skills and achieve the highest level of Bloom's Taxonomy. Furthermore, a seminar was conducted so teachers can teach using QAR Strategy.

KEYWORDS: Question-Answer Relationship Strategy

SUBMISSION ID: R012-SOUCOT-0026

Response of Meriplant Lakatan Plantlets Derived from Tissue Culture on Different Concentrations of Carrageenan

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Cavite National Science High School

Abstract

INTRODUCTION

The Philippine economy is largely dependent on agriculture. Banana is one of the major crop products that greatly contribute in Philippine economy. On 2016, Pilipino Banana Growers and Exporters Association (PBGEA) executive director Stephen Antig said that Philippine banana industry may perish. There is a low yield and low production of lakatan banana that are subjected to drought (Perez, 2017). From this, the research entitled "The Response of Meriplant Lakatan Plantlets Derived from Tissue Culture on Different Concentrations of Carrageenan" aims to create a new and innovated fertilizer to enhance the growth speed of the plant.

METHODS

To fulfill the main goal of creating a new and innovated fertilizer to enhance the growth speed of the plant, 60 meriplant lakatan plantlets were gathered and fermented carrageenan was prepared. The experimentation holds the processes of planting and watering the meriplant lakatan plantlets, and application of treatments. Waste materials were treated according to the proper disposal management of University of the Philippines - Los Banos.

RESULTS

Results showed that the lower concentrations of carrageenan had an effective result compared to higher concentrations. In comparison with the control and other treatments, it was revealed that there was a significant response on 25% carrageenan treatment. One-way ANOVA showed an F value of 329.74 which was greater than the F-critical value of 3.35. Thus, rejecting the null hypothesis. The 25% carrageenan was the best growth promoter among all other concentration. The carrageenan was able to act as an effective growth promoter on meriplant lakatan plantlets derived from tissue culture. Some problems encountered were the heavy rain and strong wind due to typhoon season. Although these problems affected the results of the plant treatments, remaining plants were able to show data of increase in height, diameter, and number of leaves that exhibit the possibility of carrageenan to be used as a plant growth promoter.

DISCUSSIONS

The concentration of carrageenan that shows the best growth is 25%. Low concentrations of carrageenan plant growth regulator were said to be effective to enhance the yield of rice (Villorente, 2016). This research has proven carrageenan treatment is a potential effective plant growth promoter to meriplant lakatan plantlets derived from tissue culture.

KEYWORDS: carrageenan, meriplant lakatan plantlets, tissue culture, plant growth promoter

SUBMISSION ID: R04A-CAVITP-0191

Rope From Gumamela (*Hibiscus rosasinensis* Linn) Plant Fibers

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Abstract

INTRODUCTION

A rope is a linear collection of plies, yarns or strands which are twisted or braided together to combine them into a larger and stronger form. It may be constructed of any long, stringy, fibrous material, but generally constructed of certain natural or synthetic fibers. It is of paramount importance in fields as diverse as constructions, seafaring, exploration, sports, hangings, theatre, and communications; and has been used since prehistoric times. In Maragondon, it was noted that gumamela plant is abundant and is only used for ornamental purposes. For this reason, the researcher sought to determine if gumamela plant fibers can be used as raw material for making fiber rope; describe it in terms of appearance and texture; determine its level of usability and acceptability and describe its tensile properties based on ASTM standards.

METHODS

Gumamela plant fibers were gathered and soaked for 3 to 5 days. A knife was used to scrape and separate the fibrous and non-fibrous materials. The scraped materials were boiled then set aside to dry. Fibers were separated and put in parallel formation to be combed easily. They were twisted into strands, tightly stretched, and twisted to make rope. The properties are determined in terms of appearance and texture as well as in terms of usability and acceptability using a survey questionnaire made for that purpose administered to 30 respondents. Tensile properties were determined by using a tensile testing machine.

RESULTS

Results show the following ratings: appearance: mean score of 4.72 and standard deviation of 0.45; texture, a mean of 3.17 and a standard deviation of 0.73; usability: mean score of 4.87 with a standard deviation of 0.34; acceptability of mean score of 4.40 and standard deviation of 0.49. Sample No. 1 had 1% elongation under a stress value of 14.9 MPa. Sample No. 2 had an elongation of 5.0% under a stress value of 22.1 MPa. Sample No. 3 had an elongation of 4.7% under a stress value of 14.6 MPa.

DISCUSSIONS

Results showed that gumamela stem fibers can be used in making ropes. Also, the appearance is outstanding and the texture is coarse. The rope is highly usable and highly acceptable. The sample with highest value of stress also has the greatest percentage elongation. The rope can withstand up to 22.1 MPa of stress before breaking

KEYWORDS: fiber rope, gumamela

SUBMISSION ID: R04A-CAVITP-1440

Sardina Sp., Sugarcane Bagasse, Wood Chips, and Agricultural By-Products as Bio-Charcoal: An Alternative Soil Enhancer for Plant Growth

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Student Government
(Adviser: Oliver Guevarra)

Abstract

INTRODUCTION

The human population is on its increasing stage. It happens not only in the Philippines but all over the world. Due to this population growth, farmlands are converted into cities, industrial parks and commercial buildings to sustain the needs for shelter and businesses. As a result, there will be insufficient land for farming and food shortage. Urban farming should be introduced and land should be maximized. In this study, the researchers proposed an alternative soil enhancer for the proper growth crops.

METHODS

The experimental method of research was used in the conduct of the study. The experimental design consisted of control set up and experimental set-ups with four container pots for three trials. Each trial has three treatments of 20g, 40g and 60g soil enhancer from SarDina sp, Sugarcane bagasse, wood chips, agricultural byproducts and other wastes such fruit peelings etc. as Bio-charcoal. The container pots were planted with four *Solanum lycopersicum* seeds with the same amount and type of growing medium watered with 50 mL water twice a day and were exposed to sunlight. The observation was done for ten days. The data collected were subjected to mean, chemical analysis and ANOVA.

RESULTS

Based on the results, it was found that there was an improved soil pH, nitrogen content, potassium content and phosphorus content on the growing medium after application of soil enhancer from SarDina sp, Sugarcane bagasse, wood chips, agricultural byproducts, and other wastes such fruit peelings etc. as bio-charcoal thus increasing the leaves length and stem height of *S. lycopersicum*. Moreover, 40g and 60g soil enhancer from bio-charcoal are needed in the proper growth of *S. lycopersicum* in terms of stem height and leaves length respectively. Furthermore, the soil enhancer from bio-charcoal also show significant results in the growth of *S. lycopersicum*.

DISCUSSIONS

Soil enhancer from bio-charcoal improves the soil quality and provide necessary nutrients (e.g. nitrogen, phosphorus and potassium) for the proper growth of *S. lycopersicum*. Soil enhancer from bio-charcoal increases the growth of *S. lycopersicum* in terms of height and leaves length. Soil enhancer from bio-charcoal shows significant results on the growth of *S. lycopersicum* in terms of stem length and leaves length based on the statistical analysis conducted. It is recommended that future researchers may determine if the yield of the tomato plant in terms of its weight will show a significant effect.

KEYWORDS: Soil enhancer, wood chips, *Sargassum crassifolium*, *Padina australis*, Sugarcane bagasse, bio-charcoal

SUBMISSION ID: R04A-BATANP-0105

Sinturis (*Citrus nobilis*) Blend with Aloe Vera: An Effective Home Remedy to Augment Hair Growth

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(Adviser: Jed Tolentino)

Abstract

INTRODUCTION

Hair loss, including the deterioration of one's hair health, is one of the most common health issues today. Over time, hair loss had become one of the major issues of both men and women - affecting everyone at any age the same way. Alopecia is a condition that cannot be fully cured as of this time. But it can be delayed by boosting the hair growth. Existing solutions are being used to boost hair growth but most of these are synthetically made or costly. Hence, the researchers have studied a new natural alternative solution to boost hair growth while being economically friendly, accessible, and efficient.

METHODS

An experimental research design was used in this study. Using four experimental procedures, the researchers determined the effectiveness of the varying degrees of concentration of Sinturis (*Citrus nobilis*) extract blend with Aloe Vera gel (Solution A = 75% Sinturis juice and 25% Aloe Vera gel in 10 mL, Solution B = 50% Sinturis juice and 50% Aloe Vera gel in 10 mL, and Solution C = 25% Sinturis juice and 75% Aloe Vera gel in 10 mL) in the augmentation of hair growth. One-way ANOVA, Bonferroni Test, and Mean plot diagram was used in the statistical treatment and analysis of data.

RESULTS

The findings revealed that the group treated with solution B having 50% Sinturis (*Citrus nobilis*) juice and 50% Aloe Vera gel extract, showed the most significant result in terms of hair length. The results showed that the most ideal solution to augment hair growth is solution B. Solution B had the highest mean of hair growth in terms of hair length with 2.30 cm. It is followed by a solution which has a mean of 1.65 cm and then followed by solution C with a mean of 1.00 cm. The control group showed the least mean of hair growth with 0.45 cm.

DISCUSSIONS

The results demonstrate that Sinturis (*Citrus nobilis*) juice blend with Aloe vera gel extracts significantly augment and boost the hair growth of the treated samples within the 4 weeks of experimentation. Among the tested varying degree of concentration, Solution B consisting of 50% Sinturis juice and 50% Aloe vera gel extract is the most ideal solution. The neutrality of the solution is the most effective in augmenting hair growth in terms of hair length. Thus, garnering a natural alternative on boosting and augmenting hair growth which is proven to be efficient and economically friendly is then obtained.

KEYWORDS: *Citrus nobilis*, Aloe Vera, Hair Growth, Hair Loss, Alopecia, Augment, Boost, Remedy, Deterioration

SUBMISSION ID: R04A-BATANC-0155

Social Media Usage of High School Students in the Division of Lipa City: Basis for Curriculum Enhancement

Anabel Marano, Teacher

Abstract

INTRODUCTION

Young generations are born with technology and they are expecting to use these gadgets and new computer programs in teaching them. Students cannot be separated from the digital world so a careful study must be done on how to use social media for the advancement of education. Social media can also have a positive effect on students' study if used carefully. With this in mind, this research aims to study the use of social media and academic performance of students as basis for enhancing a curriculum with integration of social media networks.

METHODS

The study used a descriptive type of research wherein the questionnaire was the main guide. The population aggregates of this study consisted of 357 grade 9 students in the Division of Lipa City. The researcher chose five (5) schools through a simple random sampling technique from 15 National High Schools in this division. To identify the students who answered the questionnaires, simple random sampling was also used. The data were analyzed and interpreted with the use of percentage, mean with reference to the majority criterion, as well as T-Test and ANOVA.

RESULTS

Among the 357 grade 9 students who participated in this study, 208 were female and 149 males. The majority of the respondents were of age 14 which constituted 205 or 57.40% and a family monthly income of 5,001-10,000 which comprised 103 or 28.90%. The student respondents strongly agree that Messenger and Google have positive effects on their study, with a mean score of 3.46 and 3.41 respectively. and the majority of the respondents agree that YouTube, Pinterest, Facebook, Edmodo, and Twitter can be used to improve their academic performance in school. There is a significant difference in the assessment of the usage of Pinterest when they grouped according to age, a significant difference of usage of Facebook when they group according to gender and family economic status. Other Results showed that there is no significant difference in their usage on the types mentioned above of social media when they grouped according to profile. The use of Pinterest varies with age which depends on the interest and needs of the respondents. The use of Facebook differs in gender and family economic status. Male often used Facebook than females. and students belonging to low family income are the ones who often use Facebook website.

DISCUSSIONS

Social media has a positive effect on students' performance in school if used wisely. The study recommends for educational social media sites like Edmodo and Pinterest to be used as an extension of the classroom teaching and learning process to further improve the academic performance of the students, particularly when the teacher cannot meet the class due to class suspension like the occurrence of the typhoon. The teacher should integrate different enhancement activities with the use of social media sites to cope with the changing learning styles of digital learners.

KEYWORDS: Social Media Usage, High School Students, Academic Performance, Curriculum Enhancement, PUP Open University System, Master in Education Management

SUBMISSION ID: R04A-LIPAC1-0125

Species Abundance of Sea Cucumber in Three Selected Coastal Barangays of San Jose, Dinagat Islands

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Abstract

INTRODUCTION

Dinagat Island is one of the most well-known provinces of the Philippines due to its wonderful beaches. It is also known for its rich marine resources like sea cucumbers. Aside from agriculture, residents rely on fishing as their main source of income and daily food consumption. The high market value of sea cucumbers contributes to great demand in exporting countries. Moreover, the depletion in sea cucumber supply is due to the expansion of fisheries, in which both density and diversity are affected (Hasan and Abd El-Rady, 2012). This study generally aimed to assess the abundance of sea cucumber.

METHODS

This study was conducted in 3 coastal barangays namely Wilson, Sta. Cruz and Matingbe in San Jose, Dinagat Island. Sampling was done on March 1-3, 2018 at low tide. Three stations with 10x2m transect using a calibrated straw were established on each study sites. Sea cucumber species were identified using the Conand's FAO Species Guide and SPC Beche-de-Mer Identification Card. A slate board with pencil was used in recording field data such as sites, date, time, number of individuals, type of substrates, as well as the physical and chemical parameters. Collections of sea cucumbers were done by hand-picking with the use of protective gloves. All collected sample specimens were counted, recorded and documented in their habitat using an underwater camera.

RESULTS

Twelve species of sea cucumbers underclass Holothuroidea belonging to 2 families, Holothuriidae and Synaptidae were identified. These were *Actinopyga echinites*, *Actinopyga miliaris*, *Actinopyga sp.*, *Euapta godeffroyi*, *Holothuria arenicola*, *Holothuria fuscocinerea*, *Holothuria hilla*, *Holothuria impatiens*, *Holothuria leucospilota*, *Opheodesoma grisea*, *Synapta maculata*, and *Synaptula sp.* A total of 145 individuals were observed in 3 study sites in which study site 3 had the highest number of individuals (60), followed by site 2 (46); site 1 had the least number of individuals (39). *H. leucospilota* showed to be the most abundant species (46.89%) and the highest mean density (0.13 ind/m²) and *A. echinites*, *A. miliaris*, and *Actinopyga sp.* were the least (0.69%) with a mean density of 0.002 ind/m².

DISCUSSIONS

H. leucospilota showed to be the most abundant species compared to other species in the 3 study sites. This might be due to their preferred habitat which they tended to occur on coral debris patches. This species was reported to be traded with other low-value species in the dried form due to its less meat compared to other species (FAO, 2012).

KEYWORDS: Dinagat Islands, *Holothuria leucospilota*, sea cucumbers, species abundance

SUBMISSION ID: R013-SURSUR-0114

**Squash (*Cucurbita maxima*) Peelings as Ripening Agent for Papaya
(*Carica papaya*)**

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National High School
(Adviser: Renelyn Banasihan)

Abstract

INTRODUCTION

Cucurbita maxima, locally known as Kalabasa, is a coarse climbing, herbaceous vine. It is widely cultivated throughout the Philippines as vegetable produce and planted in all warm countries. Fruit peel or fruit skin is the outer, protective covering in fruits. Its thickness varies widely, even in the same family fruits. Some peelings of other fruits can be eaten while most of them are usually disposed of and inedible. *Carica papaya* or Papaya, a tropical fruit that is a good source of Vitamin A, B, and C. Papaya fruits also possesses medicinal values. Papaya is recently grown for local fresh fruit markets, for canning, and for papain processing. Due to the high demand for papaya in the local market, there is also a demand for agents that could fasten its ripening process.

METHODS

Squash Peelings that are used for this study were collected from San Pablo City Market. The papaya fruits that were treated with the ripening agent were gathered from Brgy. Santa Ana, San Pablo City. their necessary equipment such as scales and containers for every set -up were all provided by the researchers. The number of squash peelings varied in each set-up and served as the independent variable. The control set-up did not have any variables applied, the papaya fruits remained untouched. The papaya fruits were packed polyethylene bags together with the squash peelings. The variation of the number of squash peelings in every set-up were: 50 grams, 100 grams, and 150 grams. After two days, the papaya fruits were taken out of the bags and the observation started. The difference between the ripening rates in experimental and the control set-up was recorded. One-way ANOVA was used for statistical analysis because only one factor was observed in the experiment.

RESULTS

After approximately twelve days of experimentation, the observations were recorded. The results gathered indicated that Treatment 3 with 150 grams of squash peelings was the best amount of squash peelings as ripening agent for papaya.

DISCUSSIONS

The significant difference between the experimental and control group was observed. It showed that the varying amount of Squash peelings in the experimental group had different effects on the ripening rate of each Papaya. Among the experimental group, the one with the highest amount of Squash Peelings had the highest ripening rate.

KEYWORDS: ripening agent, squash peelings, papaya

SUBMISSION ID: R04A-SANPAB-0035

Star fruit (*Averrhoa carambola*) Extracts Utilization for Shampoo Production

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Abstract

INTRODUCTION

in this study, the extract of Star fruit is used to produce an alternative shampoo. Star fruit extract is used because its fruit is known for benefits and nutrients which is beneficial for hair growth, keeping the hair strong and healthy and keeping the metabolism steady and allowing healthy follicular growth. This study aimed to produce an alternative shampoo out of Star fruit extracts. It also aimed to determine the effect of different concentration of Star fruit extracts in produced shampoo in terms of its color, odor, and viscosity.

METHODS

The researchers used quantitative research design specifically, experimental research design. Two treatments of the shampoo out of star fruit extracts with the manipulated concentration of the extracts: 20 ml and 30 ml. After finishing the product, 30 citizens from Brgy. Inocencio Trece Martires City, Cavite served as the participants to evaluate the produced shampoo out of star fruit extract and commercial shampoo in terms of its sensory properties such as color, odor, and viscosity. The answers of the respondents were evaluated with the use of t-test: paired two samples for means.

RESULTS

Based on the results of the study, star fruit can be used as an ingredient for making an alternative shampoo. in terms of sensory properties, the statistical analysis, t-test: paired two samples for means showed that both of the treatments have a significant difference from one another and also these two treatments have a significant difference compared to the commercial shampoo because of the significant value of 0.000 for the color, odor, and viscosity. Therefore, the null hypothesis was rejected since the different concentration of star fruit extract has a significant difference on each other and to the commercial shampoo.

DISCUSSIONS

The results show that the different concentration of produced shampoo out of star fruit extract has a significant difference on each other and to the commercial product in terms of its sensory properties. Therefore, the results will be great for people with hair loss and for those who want to maintain strong and healthy hair. It could also help the environment to reduce pollution by utilizing uneaten star fruit.

KEYWORDS: star fruit, alternative shampoo

SUBMISSION ID: R04A-CAVITP-0672

**Talumpunay (*Datura metel*) Seeds as Fumigant in Eliminating Maggots
among Eggplant (*Solanum melonsena*)**

Gwyneth Pareja

Abstract

INTRODUCTION

Philippines is one of the world's "mega biodiversity" countries, rich both in fauna and flora. Batangas, a province in CALABARZON ranks second in having the most number of agricultural farms in the region as stated by Philippines Statistics Authority last 2016. Agriculture is the main economic activity of Batangueno's. High agricultural production in Batangas was recorded in crops including eggplant. One of the problems usually encountered by eggplant growers is the poor harvest of their product due to infestation of worms or commonly known as maggots in the vegetable in their farm. To help plant growers solve this threatening problem in farming, the researcher proposed a product that made use of the seeds of Talumpunay (*Datura metel*) in producing an effective deworming organic solution in eliminating the maggots causing fruit rot in eggplants.

METHODS

The purpose of this project was to determine the effects of talumpunay seeds as a fumigant in eliminating maggots among eggplants. Matured talumpunay fruits were collected. Seeds were extracted and air dried for 1 week. Stone was heated. Talumpunay seeds were placed on the top of the heated stone and 2 drops of oil were added. The set-up was enclosed in a glass type funnel and eggplant infested with worms were put directly in the fumes. The researcher made 3 set-ups for the experiment wherein the stone was heated for 30 mins, 1 hour and 2 hours. The researcher also made 2 treatments in this study. The 1st was treated without talumpunay seeds while the 2nd was with talumpunay seeds.

RESULTS

The result of the study showed that the talampunay seeds as fumigant eliminated the maggots in the eggplant. The time the stone was heated showed different effects on the maggots fumigated with talampunay seeds. The longer the stone was heated, the more effective the fumigant is in eliminating the maggots in the eggplant.

DISCUSSIONS

The researcher wished to recommend testing the varying amount of Talumpunay seeds as controlled variables in their study. The researcher also recommends testing Talumpunay seeds as a fumigant in eliminating other pests aside from maggots in different crops.

KEYWORDS: Talumpunay seeds, Eggplant, fumigant

SUBMISSION ID: R04A-BATANP-1456

The Adaptation of Kolb's Learning Style in Improving the Performance Level of Grade 8 Students in Particle Nature of Matter

Gemmarie Calingasan, Balayan National High School & Laicka Implamado,
Occidental Mindoro State College

Abstract

INTRODUCTION

Strength and weaknesses are inevitable and are in the natural state of existence. There might be things that some can do but other people cannot. Those things that were influenced by people's unique characters and personalities that affect the way of living, adapting, and learning of every individual. A point of view that teachers should use as first principle to consider in teaching. This research aimed to provide an action plan to improve the performance level of grade eight students in the particulate nature of matter by adapting the learning styles pioneered by David Kolb. Through this the researchers were able to identify the preferred learning style of the students based on Kolb's Learning Style Questionnaire and create an action plan on improving the performance of the students in science and for the teacher to become aware of the area and learning style to be strengthened for the sake of students' learning.

METHODS

Descriptive method of research was used in this study with the designed activities and Kolb's Learning Style Questionnaire as the main source of data. Twenty (20) students from Balayan National High School served as the subject of the study.

RESULTS

Based on the findings, as doers, nine (9) students project a moderate preference which ranked first. First on the rank as reflector was very strong which was projected by ten (10) students. On the other hand, as a thinker, the students' performance showed a moderate preference by nine (9) individuals and with the highest frequency projected by thirteen (13) students. They projected a very strong preference as a decider. Acquired from Kolb's Learning Style Questionnaire, it was known that the preferred learning style of the respondents was the decider, which ranked first as projected by thirteen (13) students.

DISCUSSIONS

The Kolb Learning Theory is an effective principle in teaching and learning process so that the teachers would become aware of the areas to give emphasize for the sake of the improved student learning and it is also significant to provide various teaching activities to give chances for the diverse learning style of the students.

KEYWORDS: Kolb's Learning Theory

SUBMISSION ID: R04A-BATANP-1250

The Antimicrobial Activity of *Terminalia catappa* Leaves Extract and the Utilization of Aloe Vera Gel as an Organic Hand Sanitizer

Chona B. Redillas, Michelle C. Astillero, & Marissa T. Barundia

Abstract

INTRODUCTION

Skin being the most exposed part of the body requires protection from skin pathogens. Nosocomial infections have emerged as a critical issue resulting in hospitalization. Many of the chemical antiseptics are now available in the market as alcohol-based sanitizers. In this connection, this investigatory project aims to create a product that is naturally-made but will give the same quality and effect as the commercial products. The main objective of this study is to determine the potential of natural plant extracts as an antibacterial agent and make an organic hand sanitizer out of its antimicrobial activity.

METHODS

Herewith is the procedure in making organic sanitizer using *Terminalia catappa*. First, is the methanolic extraction of *Terminalia catappa* leaves? Next, filter the resin. Then, sterilized the extracts and keep fermented in three weeks. After three weeks, in a clean container mixed the following: 300ml *Terminalia catappa* extracts, 200ml aloe vera gel, 1 tablespoon of witch hazel, half teaspoon of tea tree oil, a quarter teaspoon of vitamin E oil, 10 drops of essential oil such as peppermint, and 10 drops of natural scent. Lastly, stir well.

RESULTS

The laboratory testing used Disk Diffusion Assay with media material Mueller Hinton Agar for *Escherichia coli* with positive and negative control, the Nalidixic acid (30 µg) and distilled water. The leaves extract gathered 14 ± 1.15 in the zone of inhibition (diameter in mm) against *E. coli*, which categorized as an active agent in inhibiting *E. coli*. Leaves extract with aloe-vera gel gathered 10 ± 2.31 categorized as a partially active agent. The test organism is susceptible to both substances tested.

DISCUSSIONS

Therefore, the researchers concluded that the methanolic extracts of *Terminalia catappa* leaves can be used as an alternative in alcohol-based hand sanitizers. In the laboratory result conducted, found out that the methanolic extracts of the leaves show different degrees of activity against some pathogens like *E. coli*. The methanolic extract is significantly efficient in inhibiting the investigated strain. The result of the antimicrobial activity of *Terminalia catappa* leaves extract in methanolic extraction proves that it can kill microbial strains.

KEYWORDS: methanolic, *Terminalia catappa*, *Escherichia coli*, inhibition, Disk Diffusion Assay, Mueller Hinton Agar

SUBMISSION ID: R04A-CABUYA-0032

The Antimicrobial Property of Paragis (*Eleusine indica* L.) as an Inhibitor of Airborne Microbes using Nutrient Agar Plate

Alexandra D. Gerona, General Emilio Aguinaldo NHS
(Adviser: Junior Emil Aquino)

Abstract

INTRODUCTION

This research aims to test the antimicrobial property of Paragis (*Eleusine indica* L.) as a growth inhibitor of airborne microbes using a nutrient agar plate. The researcher conducted this study to inhibit the rapid increase in the number of airborne microbes to prevent and solve problems such as skin allergies and diseases. The results of this study could provide information about the microbial potential of paragis and could be also concluded that the plants used by the local communities as medicines have high potential as an antimicrobial agent.

METHODS

Materials were gathered. The plant materials were powdered for the preparation of the extract. It was soaked for 24 hours in different solvents, filtered using filter paper, and distilled down to come up with the final extract. Nutrient agar was mixed with the boiling water, carefully added into 12 Petri dishes and were autoclaved to be sterilized to avoid the accumulation of microbes inside. 3 nutrient agar plates were exposed to each different places and setups were prepared: A1, A2, A3 (Comfort room, classroom, and the court treated with aqueous extract respectively). E1, E2, E3 (Comfort room, classroom, and the court treated with ethanol extract respectively). M1, M2, M3 (Comfort room, classroom, the court treated with methanol extract respectively). EM1, EM2, EM3 (Comfort room, classroom, and the court treated with ethanol-methanol extract respectively). Data were gathered and plates were autoclaved for decontamination and disposal after an observation was done.

RESULTS

The results show that as the day progresses, the number of colonies is also decreasing in number. The aqueous extract in three locations inhibited with a total of 33 colonies. The ethanol extract in three locations inhibited with a total of 32 colonies. The methanol extract in three locations inhibited with a total of 65 colonies and lastly, the ethanol-methanol extract inhibited 29 colonies.

DISCUSSIONS

in the phytochemical analysis conducted, it revealed that in Aqueous extract, two phytochemicals are present namely flavonoids and alkaloids. in Ethanol extract, two phytochemicals are present namely cardiac glycosides and flavonoids. in Methanol extract, two phytochemicals are present namely flavonoids and alkaloids. in Ethanol-Methanol extract, two phytochemicals are present namely flavonoids and alkaloids. and these phytochemicals caused the inhibition of microbes present in the plates.

KEYWORDS: antimicrobial, nutrient agar, paragis

SUBMISSION ID: R04A-IMUSC1-0028

**The Collective Awareness of the Selected Grade 10 Students with
Regards to the Effort of the Implementers of DRRM Plan of Calubcub
1.0 National High School**

Noel Salagubang, Calubcub 1.0 National High School

Abstract

INTRODUCTION

Disasters are inevitable. They are caused by unsustainable development that has not taken account of possible hazard impacts in that location. They can be less damaging if the population has a better understanding of locally-experienced hazards and implement preventive or mitigating measures against them. Risk management is needed for disaster prevention to ensure sustainable development so that people can lead a good, healthy, and happy life without creating damage to the environment.

METHODS

As a qualitative, narrative study, this research will utilize an interview-intensive approach to stick with a narrative description. The subjects of the study were 10 (ten) selected Grade 10 students of Calubcub 1.0 National High School. in pursuit of acquiring first-hand information regarding the topic inquiry, it involves the use of interview method, interview questions are administered to gather necessary information real time and up to date answers for accuracy and validity.

RESULTS

When it comes to what extent is the level of awareness of the students about Risk reduction management was overwhelming. The majority insisted that through the hard work crafted by the school managers and implementers. The visibility of the efforts that came from them was transferred to the students that according to them they were enlightened and educated not just to become academically and scholarly prepared but also in times of crisis. But on the downside of this a respondent also insisted an answer that still there are still gaps, challenges, and lapses on how to apply it in real life situations that it turned out that they don't take it seriously that for them this is just a drill without noticing that it may be a factual situation that may happen anytime.

DISCUSSIONS

Through this enhancement, this shows that stakeholders were complying the global campaign to build the resilience of the nation and community. While on the other hand, it was stated also that the implementers also have a big significant role the decentralize the actions that go hand in hand as the first responders to integrate and mainstream the DRRM approach with the help also of the local government. This evaluative process to check the efficacy of the implementers doing the action was very evident and depending on the program evaluation theory, practice about how interventions described and evaluated through the input-output process.

KEYWORDS: Disaster, Risk Reduction, Risk Management, Implementer's

SUBMISSION ID: R04A-BATANP-2035

**The Comparative Analysis Between the Mortality Rate of
Staphylococcus aureus Exposed to Pansit-Pansitan Methanolic Plant
Extract and Serpentina Methanolic Leaves Extract**

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Maulanin, Airish May J., & Medina, Joanna Louisse L., Carmona National
High School

(Adviser: Roxanne Maglaya)

Abstract

INTRODUCTION

Staphylococcus aureus, a gram-positive, round-shaped bacterium, member of the Firmicutes, is the leading cause of skin, soft tissue, and several types of infections. It can also be a cause of life-threatening diseases such as Pneumonia and meningitis. With this, the researchers aimed to find a way to inhibit the growth of *Staphylococcus aureus* using medicinal plants. Herbal plants have been widely used in the country to treat several diseases, these include Pansit-pansitan and Serpentina. Both plants contain flavonoids that have the potential in inhibiting the growth of bacteria. In this study, the difference between the antibacterial activity of Pansit-pansitan and Serpentina was observed.

METHODS

Three kilograms of Serpentina and Pansit-pansitan were extracted using 1.5 liters of methanol each plant as a solvent. The extract was then applied to 10 replication of the cultured bacteria, *Staphylococcus aureus*.

RESULTS

The result was then DRAFT compared using the test independence and it showed that there is a significant difference between the two. It showed that the Serpentina has more potential in inhibiting the growth of *S. aureus* than the Pansit-pansitan.

DISCUSSIONS

In this research, it can be concluded that the Serpentina contains a higher amount of antibacterial components than Pansit-pansitan against *Staphylococcus aureus* and can be used in the medical industry to make something valuable to the people who are suffering from diseases caused by these bacteria.

KEYWORDS: Pansit-pansitan, Serpentina, *Staphylococcus aureus*, flavonoids, methanol

SUBMISSION ID: R04A-CAVITP-0593

The Comparative Analysis of Ground Dried Fish Gills of Round Scad and Milkfish with Dried Hyacinth Leaves as Feeds to Tilapia

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(Adviser: Roxanne Maglaya)

Abstract

INTRODUCTION

The Philippines is abundant with different bodies of water which is why fish farming is one of the largest business industry in the country, however, the use of commercial pellets are uneconomic, costly, and can destroy the aquatic habitat. With this, the researchers came up with the idea of making an alternative fish feeds composed of fish gills, since it has no economic value and frequently discarded from public markets, and water hyacinth leaves since it is often a burden for its ability to reproduce quickly that can cover a large portion of lakes and ponds. Fish gills are found to contain iron, zinc, calcium, fat, protein, carbohydrate and phosphorus.

METHODS

This study used Parallel Group Design as their research design because it has one control group and three experimental groups used in the experiment. The independent variables of the study are the round scad gills with water hyacinth, milkfish gills with water hyacinth, and the combined gills of round scad and milkfish with hyacinth leaves; while the control variable is the commercial pellets. The gills were sun-dried and pounded while the water hyacinth was air dried and cut into smaller pieces. Every two weeks, the researchers measured the length and weighted DRAFT from five randomly picked tilapia from each tub. The researchers used the Two-way ANOVA commonly known as est, as the statistical tool.

RESULTS

Based on the results of the conducted experiment, it showed that there is no significant difference between the fishes fed with commercial pellets and those fishes fed with the three different experimental feeds. Hence, Round Scad and Milkfish gills with water hyacinth leaves (Tub C) have the potential in becoming an alternative feed to tilapia.

DISCUSSIONS

This study recommends the following: (1) Researchers can test the alternative feeds of the study to other animals; (2) Researchers can use other types of fish gills aside from the independent variables of the study; (3) Researchers can mix the fish gills and water hyacinth to their additive components that can help increase the nutrients in the alternative fish feeds; and (4) Test the effectivity of water hyacinth stems and roots as an alternative fish feeds to tilapia or other types of fishes.

KEYWORDS: Tilapia, Round Scad, Milkfish, Gills, Water Hyacinth, Commercial pellets, alternative feeds

SUBMISSION ID: R04A-CAVITP-0035

The Effect of *Amaranthus viridis* L. on the Blood Sugar Level of *Mus musculus*

Floramyr Sarvida, Lifetime Associate member

Abstract

INTRODUCTION

Hyperglycemia has been a major problem not only by the Filipinos but throughout the world. Even just maintaining the normal blood sugar level is a pain in the neck for most people especially today that prices have gone up. Usually, high levels of blood sugar may lead to diabetes. As we all know that diabetes may cause blindness, birth defects, strokes or paralysis, multiple organ failures or even death. ([HTTP://www.diabetes.org](http://www.diabetes.org)) Kolitis plants (*Amaranthus viridis* L.), are a wild-crafted plant which is rarely used by medical practitioners. This plant has been used as a remedy for dysentery and inflammation. Because of the deaths caused by high levels of blood sugar, the researchers aim to use kolitis extract as a cheaper means to maintain or lower blood sugar levels.

METHODS

Stems of "Kolitis" plant were collected, boiled with distilled water for 15 minutes and filtered. The filtrate was used as decoction based on the following treatments: T1= 100%, T2=75%, T3=50%, and T4=control and was administered to the 9 out of twelve mice as test organisms. These host specimens were grouped into four having three mice per group. Each group of mice was given orally with 0.5 mL solution 3x a day using the aboveDRAFTmentionedtreatments.

RESULTS

Data analysis revealed that the decoction obtained from Kolitis extract has a significant effect in reducing the blood sugar level of *Mus musculus* using 3 different concentrations- 50%, 75%, and 100%. Reducing of the blood sugar showed a significant difference from the control set-up; for T1= 47%, T2= 42%, T3= 33 %, and T4=2.3%. This means that the reducing effect of 100% plant extract is significantly different from that of 50% and 0%. in addition, the reducing effect of 50% concentration is not significantly different from that of 75% concentrations. Also, the reducing effect of 75% concentration and 50% concentration varies significantly than that of 100 % and 0% concentration

DISCUSSIONS

Results concluded that "kolitis" stem plant extract has a significant effect in reducing of blood sugar level and therefore can be used as an alternative and effective insulin enhancer for individuals who have a symptom of diabetes mellitus. If the blood sugar level is already at a normal level, reduce the dosage once a day. Plants are natural antioxidants and effective herbal medicines, in part due to their anti-diabetic compounds, such as flavonoids, tannins, phenolic, and alkaloids that improve the performance of the pancreatic tissues by increasing the insulin secretion or decreasing the intestinal absorption of glucose (ncbi.nlm.nih.gov). More researches are needed in order to separate the active components of plants and molecular attractions of their compounds for analysis of their curative properties.

KEYWORDS: Medicinal plants, diabetes, symptom, herbal, treatment

SUBMISSION ID: R013-SURNOR-0002

The Effect of Copper Sulfate Solution Mixed with *Averrhoa bilimbi* (Kamias) Fruit Extract to the Corrosion Rate of Tin

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Abstract

INTRODUCTION

The use of metals has been gaining interest in the field of product manufacturing all through the years. However, the resistance of metals to corrosion has been a major problem. Protective coatings are used which are not economically friendly and eventually blister, unlike electroplating. In the process of electroplating, an additive (with antioxidants for corrosion) is formed when metals are exposed to oxygen and water. This study aims to determine other environment-friendly additives for copper plating. Kamias extract contains antioxidants which reduce the oxidative damage caused by free radicals and chelating metals namely: flavonoids, vitamin A, and C.

METHODS

For the electroplating procedure to work, the extract was included in the copper sulfate solution. Three preliminaries were conducted in each electroplating with added substances and without. After plating tin, it was exposed to 1% nitric acid, corrosive chemical. Corrosion rates were determined using the metal loss formula.

RESULTS

The results concluded that the corrosion rate of tin with additives was significantly lower than that of tin with 10% hydrogen peroxide, especially the one without additives. SEM photomicrographs were taken to know the nature of the deposition. Other metals, other than oxygen, tin, and copper, were observed in the copper-plated metals. The additive that had the lowest average is the fruit additive or the *Averrhoa bilimbi* fruit extract. It has 628.40 while the commercial additive had 3351.49, followed by with no additive which is 5287.58.

DISCUSSIONS

Copper-plated tin with additive exposed to nitric acid caused rare corrosion for this acid is a chemical. and rare corrosion only happens when a metal is exposed to chemicals. Since corrosion is produced when a metal is in contact with oxygen and water. Therefore, antioxidant properties in the additive helped in reducing the corrosion rates of tin plates.

KEYWORDS: Kamias, Corrosion Rate, Copper Plating

SUBMISSION ID: R04A-CAVITP-0962

The Effect of Increasing Concentrations of Formaldehyde on the Cellular Respiration in Columba Livia Liver Cells

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Abstract

INTRODUCTION

Cellular respiration is one of the most important processes in the cell due to its catabolic effects that were able to produce ATP and other energy sources needed for biosynthesis and performing the cell function with the help of enzymes in catalyzing these reactions. Enzymes are proteins that aid in catalyzing and quickening the process, but inhibitors may compete with these enzymes or on substrates binding with each other that may permanently or temporarily hinder the action of the enzyme. An example of an inhibitor is formaldehyde (HCHO) which is a substance commonly used to preserve decaying bodies due to its ability to stop cellular respiration, avoid desiccation, and induces cell apoptosis.

METHODS

in the experiment, pigeon liver homogenate was used along with the addition of the substrate, succinate, and increasing concentrations of formaldehyde (5%, 10%, and 15%) was added to determine its effectiveness as an inhibitor. The solutions were added with dichlorophenolindophenol (DPIP) to monitor its reduction and measure its respiration rate using spectrophotometry with 605nm. The RESULTS were recorded and tabulated. The average and partial respiration rates were also computed.

RESULTS

The OD605 readings of tubes containing pigeon liver homogenate, liver homogenate with succinate, liver homogenate with succinate and 5% HCHO, liver homogenate with succinate and 10% HCHO, and liver homogenate with succinate and 15% HCHO, along with DPIP. in Tube 1, there was no reduction of DPIP which was added to the solution before being read by the spectrophotometer, indicating respiration. in Tube 2, the same conditions were observed as in Tube 1. in Tubes 3 to 5 where increasing HCHO concentrations were added (5%, 10%, and 15%), the trend is generally decreasing, indicating respiration and reduction of DPIP.

DISCUSSIONS

Formaldehyde is synthesized from methanol with pungent odor and produces gases that are readily absorbed by the body at high concentrations and is converted to formic acid which inhibits the cellular respiration by binding to the cytochrome c and cytochrome a oxidases, which leads to acidosis wherein too much acid was produced and occurs at conditions such as poisoning of alcohols or severe dehydration. Results show that the concentrations used were not enough to inhibit cellular respiration. However, formaldehyde inhibits cellular respiration theoretically, and higher concentrations may inhibit the process.

KEYWORDS: cellular respiration, formaldehyde, enzymes, inhibitors, substrate, catalyst, biology, cell, cell biology

SUBMISSION ID: R04A-CAVITP-0684

The Effect of Insecticidal Chalk Made from Neem Leaf Extract and Calcium Carbonate in the Mortality and Survival Rate of Cockroaches

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Bucal National High School

Abstract

INTRODUCTION

Insecticides are used widely in the household to control flies, mosquitoes, and other insects. However, because of its harmful chemical contents, some people get discouraged in using it. On the other hand, the potential of neem leaf extract as an insecticide was long been established. But its potential as such when mixed with other material has not been investigated. For this reason, the researchers sought to find out the potential of oyster shell neem chalk.

METHODS

The crude extract of neem leaves was prepared. Oyster shells were collected, cleaned, dried and pulverized. Mixtures of plaster of Paris, oyster shell powder, neem leaf extract, and cornstarch were prepared based on the designed treatments. For Treatment 1, 100g plaster of Paris, 25g pulverized oyster shells, 25ml neem leaf extract, and 50g cornstarch was mixed. For Treatment 2, 100g plaster of Paris, 50g pulverized oyster shells, 50ml neem leaf extract, and 50g cornstarch. For Treatment 3, 100g plaster of Paris, 100g pulverized oyster shells, 100ml neem leaf extract, and 50g cornstarch. Each mixture was molded to the shape of insecticidal chalk. On the other hand, three containers were labeled T1R1, 1R2, 1 R1 and assigned for Treatment 1. Another three containers were labeled T2R1, T2R2, and T2R3 and assigned for Treatment 2. Also, three containers were labeled T3R1, T3R2, and T3R3 and assigned for Treatment 3. The nine containers were used to house 10 cockroaches each and three other containers with 10 cockroaches each served as the controlled set-up where commercial insecticidal chalk was used. The 4 different chinks were rubbed around the inside of the 12 containers. Then the cockroaches were observed for 3 days.

RESULTS

Results show that the observed number of cockroaches who died in containers To R1, To R2 and To R3 are 1, 2 and 1 respectively. On the other hand, the number of cockroaches that died in setups T1 R1, T1 R2, and T1 R3 are 5, 6 and 7 respectively. The number of cockroaches that died in set-ups T2 1, T2 2, and T2 R3 are 7, 8 and 8 respectively. Lastly on the T3 R1, T3 R2 and T3 R3 are 10, 9 and 9 respectively.

DISCUSSIONS

Results reveal that after exposed to T1, 5, 6, and 7 cockroaches died. When exposed to T2, 7,8 and 8 cockroaches died. When exposed to T3, 10, 9 and 9 cockroaches died. This means that the chalk with neem leaf extract is an effective insect repellent. Moreover, chinks with a higher concentration of neem leaf extract are more effective than those with lower concentration.

KEYWORDS: neem leaf, insecticidal chalk, oyster shell

SUBMISSION ID: R04A-CAVITP-1639

**The Effectivity of *Cocos nucifera* (Coconut Haustorium) Extract
Against *Escherichia coli* and *Candida albicans***

Prince Joseph B. Pastores & Cherina H. Vizcarra

Abstract

INTRODUCTION

The Department of Health (DOH) release data about the growing number of cases in the Urinary Tract Infection (UTI) especially here in Cavite. 1.5 million of the six million elementary students in the Philippines developed this infection, meaning that one in every four pupils had Urinary Tract Infection. According to the journal Emerging Infectious Diseases (EID), *Escherichia coli* and *Candida albicans* are major bacteria that cause these infections. This problem guides the researchers in formulating of a solution using a Coconut Haustorium. According to the India Coconut Development Board, it has an acidic pH balance of 4.5, and it contains different nutrients that are essential to the human body.

METHODS

The Coconut Haustorium were undergone Crude Extraction. Then, the extracts were applied to *Escherichia coli* and *Candida albicans* using the disk diffusion method. Different concentration (50%, 75%, 100%) of Coconut Haustorium extract were prepared. The limitations are the treatments are only to be done in three trials in every antibacterial activity test. The agar disk diffusion test was applied in the testing of antibacterial activity. It was conducted in the Department of Science and Technology (DOST) from April to May 2018. After that, the zone of inhibition was measured using a caliper. The bacteria used were disposed of properly, and the gathered data were analyzed using One-way ANOVA.

RESULTS

It had inhibitory activity (+++) and reactivity (3) against the test organisms, *Escherichia coli*, and *Candida albicans*. Based on the One-way ANOVA test, the zones of inhibition of the different concentrations of the plant extracts have significant differences. The results of the analysis on *Escherichia coli* and *Candida albicans* showed that the computed f-value of samples which was 86.056 and 52.8701 more than the value of f-critical, so the hypothesis was accepted. Therefore, the Coconut Haustorium extract could inhibit those bacteria.

DISCUSSIONS

The findings of this study would rebound to the benefit of the people with UTI to prevent further infection. It can also be used to make alternative medicine for less fortunate people. It is recommended that to further improve the development of this study, future researchers should analyze and test other parts of the coconut. The extract can be also used to test into other microorganisms such as *Staphylococcus saprophyticus*, *Pseudomonas aeruginosa*, and *Klebsiella pneumonia*.

KEYWORDS: Coconut Haustorium, Crude Extraction, *Escherichia coli*, *Candida albicans*, *Staphylococcus saprophyticus*, *Pseudomonas aeruginosa*, *Klebsiella pneumonia*

SUBMISSION ID: R04A-CAVITP-1366

The Effectivity of Lemongrass Oil as a Natural Insecticide

Maica Darwin, Department of Education

Abstract

INTRODUCTION

According to Insect-Pest Management and Control, insects become pests when they reduce the quantity or quality of the food and fiber in a production. One of the most common household pests is the cockroach that is commonly seen in warm homes, kitchens and wall cavities. Cockroaches are known to spread diseases, but there are insecticides that are commercially available, however, these insecticides are synthetic and contain chemicals that are dangerous to both health and environment. One of these chemical compounds that are effective in eliminating cockroaches is the citronella that is a major component of the oil from *Cymbopogon* plants. According to Gagan, S. et. al, (2011) the reported phytoconstituents are essential oils that contain Citral $\hat{I}^{\pm}$, Citral $\hat{I}^2$, Nerol Geraniol, which is a constituent of lemongrass oil. Due to these pressing reasons, the researchers are motivated to produce natural insecticide from lemongrass oil.

METHODS

Steam Distillation was done by placing a large amount of plant material in a large round-bottomed flask. A claisen adapter was used. The water was heated with a Bunsen burner to create steam directly. The extracted oil was a pipette. All three (3) transparent containers were covered with clear plastic wrap and were equipped with holes for the cockroaches to breathe. Four (4) cockroaches were placed inside each container. To apply, simply wipe the destined amount of oil to each of the labeled containers containing an equal number of cockroaches. Time was recorded after the cockroaches were placed inside each.

RESULTS

The following are the findings obtained in the study based on the experiment conducted by the researchers at the researcher's residence. in terms of mortality rate, any concentration of lemongrass oil is effective in exterminating the cockroaches. in terms of the average time of extermination, the higher concentration of lemongrass oil is more effective and has the fastest time of extermination

DISCUSSIONS

1. The produced natural insecticide has the capability to exterminate cockroaches.
2. The higher concentration of lemongrass oil in the produced insecticide has the fastest average time of extermination.

KEYWORDS: insecticide, cockroach, lemongrass oil, citronella

SUBMISSION ID: R04A-CAVTP-1667

The Effects of Fermented Vegetable Peelings on the Life Span of a Stem Cut Rose (Rosa)

Em-Em Bandahala, General Emilio Aguinaldo NHS
(Adviser: Corazon Mariano)

Abstract

INTRODUCTION

Solid waste disposal is one problem being faced by nowadays; however, these food wastes can be converted into useful materials such as compost. This research study aims to determine the effects of fermented vegetable peelings on the longevity and appearance of stem cut rose flower (Rosa). The results of this study will surely a big help to those who are in the flower business at the same time this study will pave the way to other possible use of food waste especially vegetable and fruit peelings.

METHODS

A descriptive method of research was used in this study. Vegetable peelings were collected from Imus Public Market, it was then weighed and cleaned thoroughly. A mixture of 1500 grams of vegetable peelings and 30 mL of water was blended and fermented for 1 week using 4 grams of yeast. Two setups were prepared; F1 with the fermented vegetable peelings and F2 containing just tap water. The setups were observed for 1 week.

RESULTS

The results showed that there is a possibility of using fermented vegetable peelings to prolong the life span of stem cut rose (Rosa). Roses soaked in fermented vegetable showed slow rate in blooming (opening of the petals) compared with roses soaked in water which already bloom during the first 3 days of observation.

DISCUSSIONS

The study showed a possible solution for prolonging the life span of a stem cute rose through the use of fermented vegetable peelings. Fermentation process is a slow decomposition process of organic substances deduced by microorganisms or enzymes that essentially convert carbohydrates to alcohol or organic acids. Lactic acid fermentation increases shelf life of fruits and vegetables and also enhances several beneficial properties. The fermented vegetable peelings solution gave better results in terms of prolonging the life span of the rose

KEYWORDS: Fermented vegetable peelings

SUBMISSION ID: R04A-IMUSC1-0021

**The Effects of Hands-on and Minds-on Activities among Grade 7
Students Academic Performance and Motivation to Learn Towards
Biology**

Arlene Tupas, Department of Education - Teacher

Abstract

INTRODUCTION

The Grade 7 students having difficulty in their biology topics which is one of the major concern of the researcher in conducting this study. The identified least mastered skills based on students' achievement the previous year, which guided the researcher to develop lessons and activities in biology following the k to 12 Curriculum Guide of Grade 7 Science using hands-on and minds-on activities. The study focused on the effects of Hands-on and Minds-on Activities among Grade 7 Students Academic Performance and Motivation to Learn Towards Biology. This study was conducted at Silway -8 National High School, Polomolok, Division of South Cotabato during the second quarter of the school year 2016-2017.

METHODS

A quasi-experimental non-equivalence static group comparison pretest-posttest design was used in the study, where two (2) intact classes participated in the study. One class was randomly assigned to the control group instructed by a conventional method using the k to 12 curriculum guide and the other class was randomly assigned to an experimental group instructed using Hands-on and Minds-on Activities. In the process, a researcher made a test and the lessons were validated by the experts and the adopted Students' Motivation towards Biology Learning Questionnaire (SMTBL) by ndressa et al. (2015) was also used in this study. Researcher-made test in Biology with the reliability of 0.796 was administered as pretest and posttest for both groups to assess the academic performance. The data were treated with mean, standard deviation and Analysis of Covariance (ANCOVA) at the 0.05 level of significance.

RESULTS

The Results revealed that the academic performance of the Grade 7 students in Biology taught with the hands-on and minds-on activities is higher compared with those who are taught with the conventional.

METHODS

There is a significant difference in the academic performance between the experimental group and the control group in favor of the experimental group. The students taught in Biology with hands-on and minds -on activities show a high level of motivation towards biology. This study has shown the instructional strategy that can be used to facilitate learners to be physically and mentally active in the learning process.

DISCUSSIONS

The results demonstrate that the use of hands-on and minds-on activities as evident for experiential learning enhances the academic performance and motivation to learn biology among the grade 7 students.

KEYWORDS: Hands-on, Minds-on, Motivation to Learn

SUBMISSION ID: R012-SOUCOT-0028

The Embryotoxicity and Teratogenicity of Radish Seed (*Raphanus sativus* L.) Ethanolic Crude Extract Using Zebrafish (*Danio rerio*) Assay

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Science High School
(Adviser: Maria Teresa Beloy)

Abstract

INTRODUCTION

Approximately one in every 250 newborn babies who have congenital structural defects are caused by the adverse effects of environmental factors on prenatal development. In other words, teratogenic and embryotoxic substances can cause a permanent abnormality in the structure or even death of the embryo or fetus. It is important to identify these environmental factors which include the mother's diet, as well as the food we put on our tables and their potential embryotoxic and teratogenic properties. In this study, the embryotoxic and the teratogenic effects of radish seeds in the embryos of zebrafish were built up.

METHODS

The pulverized radish seed was soaked in 95% ethyl alcohol for 72 hours and was filtered and subjected to rotary evaporation. The researchers used zebrafish embryo to identify the toxic and teratogenic effects of radish seeds. The survival rate, the number of melanocytes, and heart rate of embryos are determined after the exposure to different concentrations of radish seed ethanolic crude extract.

RESULTS

The extracts at 100%, 25%, 6.25%, and 1.56% volume concentrations are highly toxic to zebrafish embryos as early as 72 hours of exposure. It also showed teratogenic properties as indicated by the zero-survival rate and high percentage of low heartbeat rate, growth and morphological abnormalities of the embryos which include deformities of the yolks and stunted tails. Embryos exposed to the 1.56% concentration exhibited growth retardation while embryos exposed to higher volume concentrations exhibited a decrease in heartbeat rate. On the other hand, upon exposing embryos to 100% concentration, it was observed that the ethanolic crude extract from radish seeds severely affected the growth and mortality of the zebrafish embryos. Meanwhile, the mean number of melanocytes is at maximum at 1.56% volume concentration.

DISCUSSIONS

The results showed that exposure of the embryos to radish seed extract delayed their development and decreased their survival rate. Despite the healthful effects of radish seeds, an extract of this plant exhibits embryotoxicity and teratogenicity in the development of zebrafish embryos. Based on the RESULTS of the study, the researchers recommend running High-Performance Liquid Chromatography (HPLC) test to determine the active ingredients present in radish seed ethanolic crude extract.

KEYWORDS: Chromatography, Crude extract, Embryotoxicity, Melanocytes, Teratogenicity, Zebrafish

SUBMISSION ID: NCR1-PASIGC-0015

The Feasibility of Jicama (*Pachyrizus erosus*) as Low Carb Tea

Honeyz Jamille C. Garcia, Francisco G. Perez Memorial National High School
(Adviser: Aiza Bukas)

Abstract

INTRODUCTION

Many commercialized products are out in the market nowadays that may prolong well-balanced nutrition. This study begins with us thinking about how to develop a sufficient and affordable product that can sustain essential nutrients to our body while maintaining good health condition. In this study, the researcher aimed to use Jicama (*Pachyrizus erosus*) (singkamas) in producing a nutritious, effective and cheap low carb tea that is also rich in fiber to prevent weight gain or even promote weight loss.

METHODS

Experimental method was used. We used indicators such as hydrochloric acid, calamansi extract, vinegar and Benedict solution to test and compare the presence of carbohydrates in the extracted raw Jicama (*Pachyrizus erosus*)(singkamas) and the pulverized Jicama (*Pachyrizus erosus*)(singkamas) in order to make sure that the carbohydrate content of the product will not be affected despite of being toasted. We used mice as control and experimental variables to show the effectiveness of Jicama as a weight loss tea.

RESULTS

The study revealed that after testing the presence of carbohydrates in the raw extracted Jicama and the Jicama Low Carb Tea, there was no difference in carbohydrate content even if we toast the Jicama. It still has its obtained presence of relatively low carbohydrates. In addition to this, the experimental variable (Mouse was treated with Jicama (*Pachyrizus erosus*) (singkamas) Low Carb tea gained a total average growth of 10.71 grams per day which is relatively lower to that of the control variable (Mouse B treated with water) which obtained a total average growth of 19.64 grams per day. These two variables were treated in a span of 28 days only. It was shown in the results of the experiments conducted that Jicama Low Carb tea is effective for weight gain prevention.

DISCUSSIONS

Since we have found out that Jicama (*Pachyrizus erosus*) (singkamas) is effective in producing a low-carb tea even though it has undergone the process of toasting, it is highly recommended to use this product in preventing weight gain. Jicama has high levels of dietary fiber which has a notable effect in attaining the goal of this tea. This affordable product can sustain essential nutrients to our body while maintaining good health condition.

KEYWORDS: Jicama (*Pachyrizus erosus*) (singkamas), low carb, control variable, experimental variable

SUBMISSION ID: R04A-BATANP-1670

**The Insecticidal Property of Pulverized Mango (*Magnifera indica linn*)
Leaves in Producing Mosquito Coil**

Robelyn S. Beldia, San Pascual National High School
(Adviser: Jonilyn Abao)

Abstract

INTRODUCTION

Nowadays, many people die because of different diseases which come from mosquitos such as Malaria, Chikungunya, Zika Virus, Yellow Fever, and Dengue Fever. All these diseases can cause death if not treated immediately. Dengue is a deadly disease that can be found throughout the Earths Tropical belt. It is one of the most common mosquito-borne diseases in the Philippines, infecting thousands of people on a yearly basis. The present study aimed to evaluate the insecticidal property of Mango (*Magnifera indica* Linn) leaves, to produce an effective mosquito coil using the pulverized dried mango leaves and to determine if the component present is suitable as mosquito coil repellent. This is to provide an alternative to commercialize mosquito coil which is eco-friendly and non-hazardous.

METHODS

The researcher gathered all the materials needed that is present in the vicinity. The Mango leaves, grinded candle, potato starch, and water. The dried leaves were pounded and powdered using the mortar and pestle. The pulverized dried mango leaves was mixed together with the heated mixture of grinded candle, starch, and water. After mixing the materials, the entire mixture was made thick and was cooled down. The appeased mixture was poured out into the mosquito coil molder and was placed in the oven for five minutes. The coil was removed from the molder and cooled for at least 2-3minutes.

RESULTS

Table 1 shows the effect of using pulverized mango leaves in killing mosquitos. The researcher made three trials for testing whereas in Trial 1 mixture containing 100 grams of pulverized mango leaves killed 5 mosquitos in 30 seconds. In Trial 2 mixtures of 150 grams pulverized mango leaves killed 8 mosquitos in 20 seconds. While the mixture having 200 grams of pulverized mango leaves killed 13 mosquitos in just 10 seconds. Therefore, the researcher concluded that the effectiveness of the mosquito coil depends on the amount of the pulverized mango leaves applied in every mixture.

DISCUSSIONS

The result of the comparability test proved that the mosquito coil made of pulverized mango leaves were comparable to other commercial mosquito coils. Therefore, it can be used as an effective yet inexpensive and eco-friendly mosquito coil repellent in the market. The community should be encouraged to use the Mosquito coil made from Mango leaves. The product is advised to be tested by Department of Health, and Department of Science and Technology. Other potent sources may be used to produce mosquito coil product.

KEYWORDS: alternative, non-hazardous, Eco-friendly

SUBMISSION ID: R04A-BATANP-1436

The Physico-Chemical and Biochemical Properties of Water and Microbiological Properties of Talaba (*Crassostrea iredalei*) in Timalan, Naic, Cavite

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Abstract

INTRODUCTION

One of the prime sources of livelihood in Timalan, Naic, Cavite is oyster farming. Operations are by a homestead and a privately held company. Oysters provides us a lot of nutrition like protein, omega 3 unsaturated fats, calcium, zinc, Iron, and vitamin C. Despite all this nutritional benefit, the oysters are now suffering from the inhumane effects of pollution. This study focuses on the physio-chemical and biochemical properties of water and microbiological properties of talaba (*Crassostrea iredalei*) in Timalan, Naic, Cavite. The results of this study would be a great help to increase awareness and promote action to the concerned authorities after studying level of water contamination and its effects to oysters that are in turn consumed by humans.

METHODS

The needed materials were gathered. The oyster and water samples that were taken in the oyster farm were carefully brought to the Food and Nutrition Research Institute, Department of Science and Technology in Taguig City, Manila. For the water samples, it was brought to the Cavite Water and Waste Water Testing Center, Department of Science and Technology in Trece Martires City, Cavite. Upon the receipt of the results, they were recorded, analyzed and interpreted. This was then repeated every first Tuesday of the months of March, April, and May.

RESULTS

The results were obtained and was computed to find its mean and standard deviation. For the physico-chemical properties of water, the Total dissolve solids (TDS) mean score was 6819 mg/L and the standard deviation was 4889.53 mg/L. The dissolve oxygen (DO) has a mean score of 5.3mg/L and the standard deviation was +/- 1.68 mg/L. The water pH mean score was at 7.13 mg/l at 25oC and the standard deviation was +/- .015 mg/L. The oil and Grease mean was at less than 2mg/L. For the microbiological properties of water, the total coliform count mean was at 11,733 MPN/100 g and the standard deviation was +/-10,869.38 MPN/100 g. The E.coli count mean was at 3,967 MPN/100 g and the standard deviation was +/- 3605. 83 MPN/100 g. For the microbiological properties of oysters, the total coliform count mean was 7,713 MPN/100 g and the standard deviation was at +/- 10,689.38 MPN/100 g. The E.coli count mean was 886.7 MPN/100 g and the standard deviation was +/- 3605.83 MPN/100 g.

DISCUSSIONS

The water pH, Dissolve oxygen, and oil grease passed the acceptable value while the total coliform count, E. coli of the water and oyster of Timalan, Naic Cavite failed or wasn't able to meet the satisfactory level of the acceptable value. This study proved that the oysters founded in Timalan, Naic, Cavite were not safe for human consumption. Since the oysters failed to passed the acceptable value.

KEYWORDS: Physico-chemical, Total Dissolve Solids, Dissolve Oxygen, Oil and Grease, Total Coliform Count, Total E.coli Count

SUBMISSION ID: R04A-CAVITP-0946

The Phytotherapeutic and Antibacterial Properties of Avocado Seeds and Leaves Extract as Medicinal Coffee and Tea

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Abstract

INTRODUCTION

The presence of bacteria in the environment is widespread, affecting many people. These bacteria can cause illness or bacterial infections that may be responsible for many deaths each year. This study aimed to assess the ability of the extract of the Avocado seeds and leaves against bacteria like *S. aureus* and *E. coli*. In this study, the researcher sought to answer to the following problems: (1) Determine: the antimicrobial activity of avocado seeds extract using paper disc diffusion method applied to *E.coli* and *S. aureus* bacteria, (2) the presence of bioactive component and micronutrient content of avocado seeds and (3) leaves extract and the acceptability level of avocado seeds coffee and avocado leaves tea.

METHODS

Various processes were used. Avocado seeds and leaves were collected and prepared for the Alcohol-based Extraction to test its micronutrient content. Different Phytochemical & Antimicrobial Analysis, to screen the presence of bioactive components. And Sensory Evaluation for Acceptability level of Avocado leaves as Tea and Avocado seeds as Coffee.

RESULTS

The analysis of the fruit constituents reveals that it abounds in various bioactive compounds. Phytochemical analysis showed the presence of alkaloids, tannins, flavonoids, saponins, anthraquinones and steroids. Abundant presence of the micronutrients in avocado leaves extract in terms of Iron content which is 1.84mg/l and Zinc content of 0.28 mg/l which was classified as abundant with this nutritive value. And the taste of both avocado coffee and tea are acceptable based on the Sensory Evaluation.

DISCUSSIONS

The results revealed that avocado seed and leaf ethanolic extract has medicinal effect due to high presence of antimicrobial activity against with *S. aureus* and *E. coli* with zone of inhibition of 28.0mm and 20.43mm classified as very active. This review highlights and focuses on the important pharmacological activities of this therapeutically important fruit and its oil. Thus, avocado seeds as coffee and avocado leaves as tea could be used commercially as coffee and tea with health and medicinal benefits comparing it with the existing commercial coffee.

KEYWORDS: phytotherapeutic, antibacterial, avocado, extract, medicinal coffee and tea

SUBMISSION ID: R013-SURNOR-0004

The Potential of Spinach (*Spinacia oleracea*) Leaves Extract in Increasing Platelet Count

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Abstract

INTRODUCTION

There are various diseases caused by mosquito bite and dengue virus is the most prominent and the easiest to acquire. The type of mosquito which brings the said virus is abundant in places where there are containers filled with stagnant water. Upon foraging the ways to exterminate the increasing number of dengue patients, the researchers came up with an idea of finding means on how to increase the platelet count using spinach leaves extract. It is supposed to benefit the people who are suffering from low platelet count caused by the dengue virus, and to help the pharmaceutical industry to create a cost-effective treatment starting off by experimenting with different concentration levels.

METHODS

The researchers used four female rabbits for the study. They got the initial platelet count of the rabbits and had undergone acclimatization. The researchers worked on the extraction on the spinach leaves using 95% of Ethyl Alcohol for 48 hours. The Ethyl Alcohol present in the extract was then evaporated. After that, the spinach leaves extract with 25%, 50 %, and 100 % concentration was administered to the four female rabbits respectively, twice a day, for three days. The final platelet count of the four female rabbits was taken and compared with the initial count; and the concentration that is most effective among the three, shall be compared to the 75% concentration of Spinach leaves extract.

RESULTS

The T-test showed that the t-computed value of 2.5 taken from the 100% concentration is greater than the t-tabular value of 2.35 at 0.05 level of significance with 3 degrees of freedom.

DISCUSSIONS

This concluded that the spinach leaves extract with 100% concentration was more effective compared to 75% in increasing the platelet count.

KEYWORDS: Spinach, Dengue Virus, Platelet Count, Concentration, Exterminate, Abundant, Rabbit

SUBMISSION ID: R04A-CAVITP-0585

The Growth of Broiler Chicken (*Gallus gallus domesticus*) Treated with Commercial Feeds and Fermented Corn Malunggay Seed and Oyster Shell Mixture

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Abstract

INTRODUCTION

Poultry in the Philippines has been a significant contributor to the country's agriculture sector, considering the economic status of our country and the high cost of commercial chicken feeds in the market, poultry farmers can't afford buying it. Even in industrial agriculture or commercial poultry farming, feed serves as the largest cost of the operation. This problem will eventually affect the poultry industry as it will limit poultry production. This study aimed to determine and compare the effects of commercial feeds and fermented corn, malunggay seeds and oyster shells mixture on the masses and height of broiler chickens (*Gallus gallus domesticus*).

METHODS

The cages were labeled as set-up A (Control) Commercial Feeds and set-up B (Experimental) Fermented feeds. There were 5 chickens as replicates for each of the treatments. Observation on the said parameters was done every day for three weeks from day 7 to day 28 of age of the broiler chickens. This study does not include the temperature, amount of sunlight and the kind of cage where the chickens stored. Proper ventilation, beddings and water were provided. Accurate measurements were determined by weight of oyster shells, corn and malunggay seeds. These were used in preparing fermented feed by means of Lacto-Fermentation to produce the best result.

RESULTS

The controlled set-up showed the greatest height of broiler chickens with an average of 13.3cm during week 1, 17.2cm during week 2 and on week 3 it had an average of 19.86cm. On the other hand, the experimental set-up had an average height of 12.5cm during week 1, 17 cm on week 2 and week 3 with an average of 19.2 cm. In terms of mass, commercial feeds showed the greatest mass in broiler chickens with an average of 95.2g during week 1, 135.8g during week 2 and on week 3 it had an average of 155g. On the other hand, fermented feeds had an average height of 81.6g during week 1, 126.4g on week 2 and week 3 with an average of 147.2g. An adaptation period of several weeks is required on the use of lacto-fermented feed for chickens to see benefits in chickens that were previously given dry feed.

DISCUSSIONS

Based on the result of the ANOVA test at $p < 0.05$ level of significance, it showed that there is no significant difference between the effect of commercial feeds and fermented feeds on the masses and height of the broiler chickens. This study has shown that commercial feeds are comparable with fermented corn, malunggay seeds and oyster shells mixture as alternative chicken feeds.

KEYWORDS: fermented feeds, lacto fermentation, broiler chicken

SUBMISSION ID: R04A-IMUSC1-0025

**The Growth of Eggplant (*Solanum melongena* L) Treated with HUMOS
(Human Urine *Moringa oleifera* Leaves and Pulverized Oyster Shells)
Mixture**

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Abstract

INTRODUCTION

Eggplant (*Solanum melongena* L.) is one of the economically important vegetable crops in the Philippine economy, vegetable-growing communities remain in general poverty because some of the farmers are too poor to purchase a pre-made fertilizer. This study aimed to determine the effects of the plant treated with human urine, malunggay leaves and oyster shells mixture (HUMOS) in terms of height and number of leaves of eggplant (*Solanum melongena* L.).

METHODS

Experimental design was used in the study. The experiment consisted of two nutrient sources: HUMOS (human urine, *Moringa oleifera* leaves and pulverized oyster shells mixture) and commercial fertilizer and the control. The black plastics with the same amount of soil were filled with five (5) eggplants (*Solanum melongena* L.) each. The resulting mixture was applied to the eggplants in experimental set-up. Observation on the said parameters was done every day for four weeks from day 7 to day 35 age of the eggplants. Accurate measurements were determined by weight of oyster shells (10g) and malunggay leaves (10g) and the volume of water (35ml) and human urine (5ml). These were used in preparing the mixture as alternative fertilizer.

RESULTS

The controlled set-up (A) showed the average height of eggplants of 25.29cm during week 1, an average of 36.60cm during week 2, week 3 of 43.06 cm and during week 4 of 50.36 cm. On the other hand, experimental set-up (B) had the greatest average height of 27.72cm during week 1, 43.86 cm on week 2 and week 3 with an average of 56.46 cm and week 4 of 68.46 cm. Set-up C during week 1 had an average height of 25.29 cm, week 2 of 36.71 cm, week 3 of 45.43cm and week 4 of 54.49 cm. (HUMOS) showed the greatest height in eggplants. The controlled set-up (A) showed the average number of leaves of eggplants of 2.65 during week 1 to week 4. On the other hand, set-up (B) had a greatest average number of leaves of eggplant of 2.79. Set-up C during week 1 to week 4 had an average number of leaves of eggplants of 2.70. This means that eggplants in set-up B (HUMOS) still had the greatest number of leaves among three set-ups.

DISCUSSIONS

Based on the ANOVA test done on eggplants (*Solanum melongena* L.), the results revealed that the application of HUMOS had significant difference on the growth of eggplants in terms of height and the number of leaves as compared to the control and commercial fertilizer. This means that the use of HUMOS provided fastest growth in eggplant in terms of height and number of leaves. The presence of essential plant nutrients, its easy preparation and its ecofriendly nature suggest the greater practical importance of HUMOS as an effective alternative fertilizer.

KEYWORDS: humos, fertilizer

SUBMISSION ID: R04A-IMUSC1-0026

Turnips (*Brassica rappa*) Extract as a Source of Alternative Vinegar

Aila Marie Silan

Abstract

INTRODUCTION

Vinegar, from the French "vin aigre", meaning "sour wine", can be made from almost any fermentable carbohydrate source. It has been found out that for every 100 grams of turnip extract, there was 6 grams of carbohydrates. In a broader perspective, it has been recorded in April that the country's inflation rate rose to 5.1% -- the highest in more than 6 years. Commercial vinegar's prices rose with the inflation rate. The purpose of this study was to determine the significant difference between the turnip vinegar and the commercialized vinegar through physical and chemical properties, pH level and the percentage acidity. This study explored the said aspects of the produced turnip vinegar as a low-cost alternative to the vinegar in the market.

METHODS

Two treatments were produced and conducted in the study. In preparation of treatment 1, the turnips were crashed to get 500mL of juice. The mixture rested for 3 minutes and was filtered using cheese cloth to remove dregs. $\frac{1}{2}$ cup of vinegar starter and 5 tablespoons of sugar were added before the fermentation begun. The researchers repeated the process for treatment 2 with 1L turnip juice, 3 tablespoons of sugar and $\frac{1}{4}$ cup of vinegar starter. The treatments were fermented for a month and were heated for 20 min to get rid of all microorganisms present in the mixture. The treatments were placed in glass bottles.

RESULTS

The sensory evaluation revealed that in terms of color, there is no significant difference among three treatments. In terms of taste and odor, only T1 is comparable to T3. However, the densities of both T1 and T2 are not comparable to T3. The researchers went to JefCor Laboratory in Barangay Langkaan, Dasmariñas City, Cavite to test the two treatments. Based on the result, Treatment 1 has a pH level of 3.6 and contains 2.53% of acid while Treatment 2 has a pH level of 3.9 and contains 1.95% of acid which indicates that both treatments were acceptable as vinegar and safe for human consumption. Analysis of Variance (ANOVA) and t-test were used to analyze the data gathered in the study. The color, taste, odor and density of the vinegar were evaluated using ANOVA and t-test.

DISCUSSIONS

The results showed that the amount of the turnip extract, sugar and water used to produce vinegar affected the chemical and sensory properties of the turnip vinegar. Treatment 1 was the closest to commercialized vinegar. Therefore, there is a possibility of producing vinegar out of turnips extract as a closest substitute to commercialized vinegar.

KEYWORDS: Vinegar, Turnip juice, Commercialized vinegar

SUBMISSION ID: R04A-CAVITP-0243

The Use of Aloe Vera Extract in Fabric Softeners

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Christian Joshua V. Sevillano, Students
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Abstract

INTRODUCTION

Pollution of waterways due to human activities results to the destruction of the marine environment. Household activities, in particular, contribute to water pollution because of the chemical-based products used. In this study, the researchers intend to determine the potential of aloe vera extracts as organic fabric softener.

METHODS

Experimental research was used. Several trials were made to identify the ideal formulation. The outcome of the experiments was recorded in a journal.

RESULTS

From the trials, a formulation with fresh aloe vera extracts was determined. The formulation does not leave residue on different types of fabrics as it softens all fabric types. Plant extracts may be used to formulate organic household products.

DISCUSSIONS

Results show that aloe vera is not only useful for its medical properties but also for its moisturizing characteristics. Preference to organic products, such as aloe fabric conditioner, may reduce risks of environmental pollution and health issues of the users.

KEYWORDS: aloe vera, organic, fabric softener

SUBMISSION ID: R04A-BATANC-0453

The Utilization of the Anti-Quorum Sensing Activity of Bioluminescent Bacteria Isolated from the Freshwater Fish Species of Taal Lake as a Novel Approach in Combatting Antibiotic Resistance

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Abstract

INTRODUCTION

Increasing incidences of antibiotic resistance among pathogenic bacteria posed detrimental effects to patients. Bioluminescent bacteria that can be found usually among marine animals are very promising to be a potential source of antimicrobial and anti-quorum sensing compound. However, very few studies reported on the existence of bioluminescent bacteria in freshwater fish species especially those found in the Philippines. Thus, this study aimed at evaluating the anti-quorum sensing activity of the isolated bioluminescent bacteria from freshwater fish species of Taal Lake against swarming motility of *Pseudomonas aeruginosa*, a common pathogen.

METHODS

In this study, two freshwater fish species, *Leiopotherapon plumbeus* (Ayungin) and *Parachromis managuensis* (Dugong) in Taal lake, were found to have bioluminescent bacteria in the gut and in the eyes. Three consistently luminescing BLB isolates from these two species were assayed for antibiotic resistance against gentamycin, erythromycin and ampicillin and assayed for antibacterial bioactivity and screened for anti-quorum sensing against *Pseudomonas aeruginosa*.

RESULTS

There was no antibiotic resistance exhibited by all the three BLB isolates. Also, antimicrobial activity is also not evident for both the unboiled and boiled cytosolic fractions of the BLB isolates. Interestingly, the anti-qs bioactivity of isolates 1 and 2 are higher at boiled CF with a mean zone of inhibition of 40.60 mm and 42.71 mm respectively. However, in isolate 3, higher anti-qs activity was observed at unboiled CF with a mean zone of inhibition of 33.50mm.

DISCUSSIONS

The BLB isolates did not exhibit any antimicrobial activity against *P. aeruginosa*. On a lighter side, the isolates were not resistant to antibiotics such as gentamycin, erythromycin, and ampicillin. This indicates that the possible identity of the BLB isolates does not belong to common human pathogens that are now known to be resistant to multiple antibiotics. Most important among the results obtained would be the anti-quorum sensing bioactivity of the BLB isolates to which isolate 3 have the greatest strength measured in terms of zone of inhibition. Thus, this study would alleviate the understanding on the biodiversity of bioluminescent bacteria thriving in the rich freshwaters of Taal Lake. As such, this study could serve as basis for further work on identifying bioluminescent bacteria with anti-quorum sensing activity that could solve problems related to antibiotic resistance.

KEYWORDS: bioluminescent bacteria, anti-quorum sensing, antibiotic resistance

SUBMISSION ID: R04A-BATANP-0033

**The Utilization of Cardaba Banana (*Musa acuminata* L— *balbisiana*)
Peel as the Essential Oil of Lotion**

Alyssah Suyat

Abstract

INTRODUCTION

Lotion provides many benefits to people who use it on a regular basis. The researchers used banana peel as the main variable in the production of lotion because it is a good source of vitamins and minerals that can enhance the appearance of the skin. This study was conducted to produce cardaba banana peel lotion specifically, it aimed to evaluate the characteristics of the produced lotion in terms of viscosity, odor, and after-feel, and assess its level of acceptability.

METHODS

The researchers used an experimental quantitative research design. Wherein, two identical treatments of lotion out of cardaba banana peel extract with manipulated concentrations of 5ml and 7.5ml were prepared. The banana was separated from its peel, chopped, grinded, and mixed with coconut oil. After storing it for two days, it was mixed with oil, emulsifying wax, water, and preservatives. A total of 30 respondents from Barangay Conchu, Trece Martires City, Cavite were randomly selected to participate in this study.

RESULTS

Based on the results of the study, it was concluded that lotion can be produced from cardaba banana peel. There is no significant difference between two treatments because of their significant value of 0.476 for viscosity, 0.625 for odor, 0.380 for after-feel, and 0.375 for the overall acceptability. Between two treatments, treatment 1 was more acceptable with a mean score of 2.67 than treatment 2 with 2.57 only. Therefore, the null hypothesis was accepted in terms of its sensory properties including viscosity, odor, after-feel, and the overall acceptability of the produced cardaba banana peel lotion.

DISCUSSIONS

The researchers found out that different concentrations of produced cardaba peel lotion have insignificant effect for the sensory properties. Since the variable used in this study was locally available and abundant therefore, the product can help the pharmaceutical industry for it can be a good and unique product to be sold in the market.

KEYWORDS: cardaba banana, banana peel, alternative lotion

SUBMISSION ID: R04A-CAVITP-0654

The Utilization of Edible Wild Food Resources of the Hanunuo and Buhid Tribes in Bongabong, Oriental Mindoro

Rachelle Nazareno, TMCSHS

Abstract

INTRODUCTION

This study investigated the utilization of edible wild food resources of the Hanunuo and Buhid tribes in Bongabong, Oriental Mindoro. Specifically, this determined the existing edible wild plants consumed by the indigenous inhabitants of Bongabong, Oriental Mindoro, documented the relevant information about the identified wild plants, and identified the nutrient composition of selected edible wild plants.

METHODS

Descriptive research design using mixed methods approach drawing on both qualitative and quantitative methods. This covered two Mangyan tribes in Bongabong, Oriental Mindoro, namely: the Hanunuo and the Buhid tribes. The quantitative part of this research summarized the socio-demographic profile of the participants, the botanical characteristics, ethnobotany and related information on the plants utilization. The qualitative portion was used to provide narratives on other knowledge of the participants related to the target plants and to describe the threats to the plant species.

RESULTS

This study documented 14 wild plant species which served as the sources of food of the Hanunuo and the Buhid Mangyans in Bongabong, Oriental Mindoro. Of the 14 plant species, seven were fruit crops, five were vegetable crops and only two were root/tuber crops. In terms of growth habit, seven of the identified edible wild plants were trees, four were herbs, two were vines and only one was classified as shrub. Both tribes generally gather food from the wild with the use of bare hands. Fruit is the most frequently consumed part of the plant. Boiling was the most common form of food preparation for the identified edible wild plants. The said tribes consume the wild food plants immediately after harvest since they do not normally preserve the gathered plants for future consumption. It also revealed that there is a diminishing traditional knowledge and practices about wild food plants among Hanunuo and Buhid Mangyans in the Municipality of Bongabong.

DISCUSSIONS

It was concluded that the identified wild food plants can be considered important in the dietary requirement of Hanunuo and Buhid Mangyans of Oriental Mindoro. The presence of important nutrients and minerals and other phytochemicals in the identified plants show the potential of these plants to become a good source of vitamins and minerals needed by the body.

KEYWORDS: Edible wild plant, Plant utilization, Alternative food resource, Ethnobotany

SUBMISSION ID: R04A-CAVITP-0238

The Utilization of Indigenous Plants as Mosquito Repellent

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Abstract

INTRODUCTION

One of the major problems of DepEd and DOH has been battling with is dengue and other mosquito-related illnesses. In the Philippines, there were numerous plants that repel mosquitoes including lemongrass and oregano for its strong scented-aroma. This study attempts to ascertain the degree of repellency of the said plants against mosquitoes to use it with no side effect and feedback of environmental ill effect, as an alternative to synthetic chemical repellents.

METHODS

This is an experimental research design and utilized the Completely Randomized Design in determining the degree of repellency of lemongrass and oregano oil extracts when mixed with bees wax candles. To form candle repellents, a 210mL bees-wax is mixed with 5mL oil extracts. It utilized 4 different treatments replicated 4 times. Treatment 1 is a combination of bees wax and lemongrass oil extract, 2nd treatment consists of bees wax and oregano oil extracts, 3rd is consists of bees wax and combination of lemongrass and oregano oil extracts, and the 4th treatment which is also the control group consists only of pure beeswax. Degree of repellency was measured by counting the mosquitoes that repelled or died every 5 minutes for a period of fifteen minutes when placed inside an aquarium with lighted candle repellent.

RESULTS

Findings revealed that candle repellent with combination of both lemongrass and oregano oil extracts are more effective repellent than candles with lemongrass oil or oregano oil extract only. Also, that in 15 minutes, 100% of the mosquitoes inside the experiment aquarium repelled with candle repellent consists of the combination of lemongrass and oregano oil extracts; and the degrees of repellency of the 4 treatments studied are significantly different among each other whether in 5, 10, and 15 minute-experiment.

DISCUSSIONS

From the results, the hypothesis that there is no significant difference on the degree of repellency against mosquito between and among the four treatments is partly upheld, while lemongrass and oregano extracts did not differ significantly, but, compared with combination and control, the difference is significant. The study encourages planting of lemongrass and oregano plants in school and in backyards of every residence, also be used as inputs in the development of mosquito repellent using oregano, lemongrass or combination of said oil extracts as possible business opportunity and results to product development which can be extended to community and considered as possible extension of school's services.

KEYWORDS: repellent, treatments, bees wax candles, degree of repellency

SUBMISSION ID: R04A-CABUYA-0024

**The Utilization of Jackfruit (*Artocarpus heterophyllus* Lam.) Peelings
and Rice (*Oryza sativa*) Bran and Husk in the Production of
Particleboards**

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Abstract

INTRODUCTION

The utilization of agricultural wastes to create a product that can generate profit has been a challenge to many environmental researchers. Jackfruit peelings and rice bran and husk particleboard is therefore considered to be a suitable product to manufacture as it is often used in establishments and institutions such as schools, offices, and even at home.

METHODS

This study looked at the significant difference between the moisture content, thickness swelling, water absorption capacity, pull-out load, modulus of rupture, and variation in proportions of jackfruit peelings and rice bran and husk in the production of particleboards. A total of five (5) particleboards with varying proportions of jackfruit peelings and rice bran and husk has been produced and tested, with accordance to ASTM International standard procedures.

RESULTS

The tests revealed that particleboards A-1, B-1, and C gained favorable results in terms of their mechanical attributes. One - Way Analysis of Variance (ANOVA) has been primarily used to statistically analyze the testing results of the particleboards. The results of ANOVA computation revealed that the computed value of 88.65 is higher than the tabular values with .05 and .01 level of significance of 2.87 and 4.43 respectively.

DISCUSSIONS

From the tests conducted, the conclusion that the amount of jackfruit peelings and rice bran and husk are directly related to the said tests have been drawn. Results of ANOVA has also shown that there is a significant difference between the particleboards produced in terms of their mechanical attributes.

KEYWORDS: agricultural wastes, jackfruit peelings, rice bran and husk, particleboards

SUBMISSION ID: R04A-SANPAB-0045

The Utilization of Malunggay (*Moringa oleifera*) Seeds And Commercial Activated Carbon In Two-stage Water Purification Device

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Abstract

INTRODUCTION

This study focuses on using Malunggay seeds (*Moringa oleifera*) and commercial activated carbon in two-stage water purification device to purify groundwater. The activated carbon was attached to the device.

METHODS

The Malunggay seeds were pounded into fine powder. The collected water samples undergo treatment using the device. Pre-test post-test design was employed in the study. The parameters used are pH level, conductivity, turbidity, dissolved oxygen, ammonium content, iron content and biochemical oxygen demand (BOD).

RESULTS

Before the treatment of the device, the collected water shows a result of 7.66, 1417 $\mu\text{S}/\text{cm}$, 28.1 NTU, 8.6 mg/l, 1.95 ppm, 2.9 ppm, and 8.2 mg/l consecutively. Based on these results, conductivity, turbidity, iron content and BOD did not pass the standards set by Philippine National Standards and WHO Guidelines for Drinking Water Quality. After using the device, the results are as follows: conductivity, 435 $\mu\text{S}/\text{cm}$; turbidity, 5.1 NTU; iron content, 0.032 ppm and BOD, 1.2 mg/l. Based on these results, conductivity, turbidity, iron content and BOD did not pass the standards set by Philippine National Standards and WHO Guidelines for Drinking Water Quality. After using the device, the results are as follows: conductivity, 435 $\mu\text{S}/\text{cm}$; turbidity, 5.1 NTU; iron content, 0.032 ppm and BOD, 1.2 mg/l. Based on these results, conductivity, turbidity, iron content passed the said standards after the application of the device. T-test: Assuming Equal Variances was used to determine the significant difference before and after the treatment of water. The t-stat values in different parameters used are as follows: conductivity, 10.51; turbidity, 18.82; iron content, 446.10 and BOD, 16.81. While the computed t-critical value for all the parameters were computed as 4.30.

DISCUSSIONS

The result shows that there is significant difference before and after the treatment. This indicates that Malunggay seed and commercial activated carbon in two-stage water purification device can be used as ground water purifier.

KEYWORDS: Malunggay seed, Commercial activated carbon, two-stage water purification device, groundwater, water purification

SUBMISSION ID: R04A-CAVITP-1247

The Utilization of Purple Yam (*Dioscorea alata*) and Taro (*Colocasia esculenta*) Peelings Starch as Biopolymer in Producing Biodegradable Films

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Abstract

INTRODUCTION

Due to the occurrence of environmental and health problems caused by nonbiodegradable plastics, bioplastics were introduced which enables manufacturers to produce plastics made from raw materials that will not pollute and harm the environment. In this study, the remaining starch from the peelings of Purple Yam (*Dioscorea alata*) and Taro (*Colocasia esculenta*) that is widely cultivated in the country, was used as biopolymer in producing biodegradable plastic sheets to lessen the pollution and to attain a sustainable environment.

METHODS

The materials such as purple yam and taro peelings were gathered from areas of San Pablo City namely Brgy San Marcos and Brgy. San Cristobal. Other necessary materials such as glycerin, acetic acid, water and measuring cups were provided by the researchers. The gathered peelings were thoroughly washed to remove remaining soil and dirt before obtaining the starch. Three set-ups were produced with a varying ratio of starch and plasticizer used (3;1, 6:1, 9:1) with a constant amount of acetic acid and water used. In the control group, the standard plastic was used. The peeled 2cm-radius sheets had undergone water solubility testing that lasted for 90 mins where the initial and resulting final amount of solvent used were recorded and statistically analyzed using One Way ANOVA.

RESULTS

In the three sets of the water solubility test where a total of 150mL of water was added and the films were submerged for a total of 90 minutes. Set-up C replicates got the highest average percentage of solubility 1.0208% while in the control treatment no changes in the measurement of solvent was observed having a 0% solubility percentage.

DISCUSSIONS

Set up C with 45mL of purple yam and taro peelings starch has the best quality of films produced and had the highest solubility percentage in the solvent and the statistical analysis of the results stated that there is a significant difference between the experimental and control group.

KEYWORDS: purple yam, taro, plastic, biodegradable, solubility

SUBMISSION ID: R04A-SANPAB-0039

The Utilization of Real Life Experiences in Inquiry-Based Science Instruction

Rowena Vijandre

Abstract

INTRODUCTION

The focus of this study was to determine the utilization of real life experiences in inquiry-based science instruction in public secondary schools in Batangas City. This study described the manifestation of students' real life experiences in different areas such as Earth and Space, Life Science, Chemistry, and Physics. This study also included the extent of utilization of inquiry-based learning activities along its phases such as exploration, concept introduction, and concept application. The challenges relative to utilization of real life experiences in inquiry-based science instruction were likewise identified.

METHODS

The descriptive method of research was applied in the study, with the questionnaire as the main data gathering instrument. There were 102 science teachers who served as respondents. Weighted mean and Pearson-r were used for the statistical treatment of gathered data.

RESULTS

Based on the analysis, it was revealed that real life experiences in science areas were moderately manifested by the students. Teachers utilized inquiry-based learning activities along its phases such as exploration, concept introduction, and concept application to a moderate extent. The results also showed significant relationship between the manifestation of real life experiences and the extent of utilization of inquiry-based learning activities. Difficulty in developing appropriate assessment to evaluate learner's inquiry skills and experiences was the greatest challenge encountered by the respondents relative to utilization of real life experiences in inquiry-based science instruction. The proposed learning plan may further maximize the utilization of students' real life experiences in inquiry-based science instruction.

DISCUSSIONS

Based on the findings and conclusions of the study, it was recommended that proposed learning plan may be used to enhance science instruction and the development of an instrument or assessment tool may be undertaken to enhance the utilization of real life experiences in teaching-learning process, and future researchers may conduct similar study focusing on other learning areas.

KEYWORDS: Rowena generoso vijandre

SUBMISSION ID: R04A-BATANC-0143

The Utilization of Sweet Potato Tops (*Ipomoea batatas*) and Red Santan Flower (*Ixora coccinea*) Extracts as Alternative Marker Ink

Pee Jay A. de Guzman, Lorraine T. Artieda, & Ann Lynneth Jane G. Mendoza,
San Pablo City National High School
(Adviser: Renelyn Banasihan)

Abstract

INTRODUCTION

Sweet potato tops and red santan extracts were tested to produce an alternative ink. The researchers used organic materials than to utilize the original components that may harm the users of markers.

METHODS

Sweet potato tops and red santan flowers obtained from San Pablo City, Laguna were extracted by blender method and pounded using a mortar and pestle, respectively. A total of six treatments were prepared with varying concentrations (SP1, SP2, SP3, SP4, RS1, RS2). The formulated setups were dropped in a clean paper using a pipettor and observed the difference of each solution that was produced.

RESULTS

Descriptive analysis was used for studying the data obtained from the experiment, such as the time of drying and the time produced by the setups in order to determine the difference of each. Each setup, (SP1, SP2, SP3, SP4, RS1, RS2) have different time of drying and color retention.

DISCUSSIONS

Treatment SP3 (with 23mL sweet potato tops extract, 3mL 50% ethyl alcohol, and 5 pinches of cornstarch) was recorded the most efficient, based on time it dried up (in a span of 30 minutes and 10 seconds), and its color retention {darker green}.

KEYWORDS: alternative ink, sweet potato tops and red santan extracts

SUBMISSION ID: R04A-SANPAB-0032

**Varying the Period of the Fermentation of Squash (*Cucurbita maxima*)
as Extract Vinegar**

Ronnel John Dinglasan, Trece Martires City National High School

Abstract

INTRODUCTION

This study primarily aimed to determine the effect of varying period of fermentation for squash extract vinegar. It also aimed to determine the sensory properties of vinegar produced and evaluate the significant difference between the produced vinegar out of squash in terms of color, odor, taste, and its pH level.

METHODS

The researchers used experimental design, whereas three identical treatments of vinegar out of squash with manipulated period of fermentation: two months, three months, and four months. After the storing process, the three treatments were evaluated by 30 respondents in terms of its color, odor and taste, also, these treatments were tested in Universal Robina Corporation at FCIE, Langkaan, Dasmariñas, Cavite for the evaluation of their pH level.

RESULTS

Based on the results of the study, vinegar could be produced from the squash by varying period of fermentation having 2 months, 3 months and 4 months. In terms of acidity, all of the produced treatments were safe for all human consumption because based on the pH level it ranges 2-3 evaluated by laboratory testing which indicates that it is safe since the pH value for human consumption is 5-9. The null hypothesis was rejected since the varying period of fermentation has significant effect on the sensory properties of the produced vinegar out of squash.

DISCUSSIONS

The results show that the varying fermentation period of the produced vinegar out of squash has a significant effect for the sensory properties and pH level. Therefore, the results will be a great help to household and farmers for a new source of livelihood. It could also give a fresh idea for researchers to search for other alternative source of vinegar.

KEYWORDS: alternative vinegar, squash

SUBMISSION ID: R04A-CAVTP-0560

**Vermicomposting: The Biodegradation of *Swietenia macrophylla*,
Acacia crassicarpa, *Pterocarpus indicus*, and *Mangifera indica* using
African Night Crawlers (*Eudrilus euginae*)**

Lorenzo C. Dinglasan, Department of Education, Laiya National High School
(Adviser: Criza Jean Sulit)

Abstract

INTRODUCTION

Laiya National High School has several species of trees inside the school campus. However, leaf litter has turned out into waste and second most leading garbage problem after the plastics. Everyday almost 15 sacks of organic wastes are collected from the school ground including the leaves of Mahogany (*Swietenia macrophylla*), Acacia (*Acacia crassicarpa*), Narra (*Pterocarpus indicus*), and Mangga (*Mangifera indica*). On the other hand, because of this major problem, the researchers introduced the vermicomposting by using *Eudrilus euginae* or African Night Crawlers. Biodegradation of leaves can be done within 6 to 8 weeks through the help of these invertebrates.

Vermiculture involves the mass production of earthworms for waste degradation, and composting with 'vermicast' production.

METHODS

The researcher seeks to investigate the project through experimentation and observation in order for them to gain the data they need. This method will be very helpful in finding the result of the study.

RESULTS

Based in the data gathered results done by the researchers, using vermiculture can help to lessen the amount of leaf litter in the school campus. After observing four different set up that contains leaves, legumes, and African Night Crawlers, they found out that the population of *Eudrilus euginae* increased on set-up that contains *Acacia crassicarpa*. Meanwhile, earthworm action enhances natural biodegradation and decomposition of wastes (between 60 to 80 percent under optimum conditions), thus significantly reducing the composting time by several of weeks. Within 5 to 6 weeks, *Acacia crassicarpa* will decompose because of the *Eudrilus euginae*. There are multiple benefits of vermicomposting, first to the environment. It will help to reduce the need for chemical fertilizers and decreasing the amount of wastes in our surrounding. Second, to the organic farmers, it will be a good fertilizer to the soil because vermicomposting improves soil aeration, enriches the soil with micro-organisms and improves nutrient recycling.

DISCUSSIONS

Eudrilus euginae act in the soil as aerators, grinders, crushers, chemical degraders and biologic stimulator. They secrete enzymes, protease, lipases, amylases, cellulases and chitinases which bring about rapid biochemical conservation of the cellulosic and the proteinaceous materials in the variety of organic waste which originate from the leaves of Mahogany (*Swietenia macrophylla*), Acacia (*Acacia crassicarpa*), Narra (*Pterocarpus indicus*), and Mangga (*Mangifera indica*).

KEYWORDS: vermiculture, *Eudrilus euginae*, *Swietenia macrophylla*, *Acacia crassicarpa*, *Pterocarpus indicus*, *Mangifera indica*, vermicast

SUBMISSION ID: R04A-BATANP-1243

Water Hyacinth (*Eichhornia crassipes*), Fingernail Clam (*Sphaerium corneum*), and Water Cabbage (*Pistia stratiotes*): A Natural Approach to Sewage Waste Water Treatment

Sophia Trixia V. Ariola, YES-O
(Adviser: Oliver Guevarra)

Abstract

INTRODUCTION

Pollution has been the dominating environmental problems in our country. Dumping of waste both industrial and domestic have been rampant that leads to water pollution. On the other hand, sewage water treatment plants have been to be ineffective in removing household products and other water pollutants. As a concerned citizen of our country, the researcher tried to make an alternative solution to save our environment particularly the bodies of water. The researcher wants to prove that the Fingernail clam (*Sphaerium corneum*), Water cabbage (*Pistia stratiotes*) and Water hyacinth (*Eichhornia crassipes*) can be used to remove impurities or pollutants in bodies of water. It is a natural approach to sewage treatment wastewater; it serves as a biofilter to our lake because it will avoid a Nitrate and ammonia Levels from sewage treatment wastewater and pollution will be controlled.

METHODS

The Experimental Design consists of experimental and controlled set-up with fifteen pail containers for three trials. Each Trial has five treatments one for the controlled set-up and four for the experimental set-up. The experiment was conducted in three replicates. The containers contain 3L of freshwater sample and placed in the same area. The set-up was done for seven days. The controlled set-up is composed of 3L freshwater samples labeled 1A, 2A, and 3A. Wastewater was taken from Barangay Lumanglipa, Mataasnaakahoy, Batangas and was tested for physical-chemical and bacteriological analysis. The variables were collected and prepared for identification. The data collected were subjected to Student t-test.

RESULTS

Water hyacinth, water cabbage, and fingernail clam were effective in treating wastewater. Based on the result of bacteriological examination of water samples, it was found that the water sample is high in total coliform, fecal coliform, and HPC. This explains that the water pollutants or microorganisms present is at high risks. Moreover, it was found out that the combination of 200 pieces of fingernail clam, 20 pieces of water cabbage and 20 pieces of water hyacinth is the most effective in treating sewage wastewater. After treatment, the results of physical- chemical and bacteriological test decreases.

DISCUSSIONS

It was concluded that the higher the number of variables the greater the possibilities in treating sewage wastewater. The researchers recommend that further study on other parameters should be made in water sample to determine its effectiveness as biofilters.

KEYWORDS: Wastewater Treatment, Water cabbage, Water hyacinth, Fingernail clam

SUBMISSION ID: R04A-BATANP-0103

Wood Vinegar: An Organic Fertilizer from Charcoal-Making for the Growth and Performance of Pechay (*Brassica campestris* L. Sub sp. *Chinensis*)

Rhealyn Falcunit

Abstract

INTRODUCTION

The country at present is still experiencing economic crisis despite the appreciation of Peso against US Dollar. High prices of commodities and cost of living make everyone think of how to make ends meet. Health and environmental problems are also major concern of the society.

With this situation, people are looking for ways to cut down expenses of daily living as well as live a healthy lifestyle. Health conscious individuals prefer food, which are grown organically and pesticides free. However, in order to increase their harvest, farmers tend to use chemical for fertilizer and pesticides. This practice is harmful to health and to the environment. Most households now use charcoal as their fuel source to lessen everyday expenses. The increase in demand calls for increase in production that result to produce more by products in large amount in which may or may not be beneficial to man and to the environment.

METHODS

Wood vinegar was prepared in integration with charcoaling process of 35 kg. of school generating wood waste using a portable kiln steel drum. A total of 3,750 ml wood vinegar and 15 kg. of charcoal were produced.

RESULTS

Results showed that charcoal and diluted wood vinegar application had significantly promoted growth and yield performances of pechay at higher concentration (1:100 and 1:200). Most uniform plants were also observed in treatments with charcoal and wood vinegar. Wood vinegar was diluted and applied as basal before sowing and as soil drench with spraying to treatment plants using 250 ml for each pot at weekly interval. The treatments were 1 part liquefied smoke: 100 part water, 1:200, 1:300, 1:400, 1:500, charcoal alone and compost alone. The data collected were subjected to ANNOVA.

DISCUSSIONS

Charcoal bits and wood vinegar were utilized to affect growth and yield performance of pechay (*Brassica campestris* L. Subsp. *Chinensis*). One set of 48 agricultural plastic pots were filled with pulverized ordinary garden soil. The top soil of each of the 48 plastic pots were incorporated with 250 grams of charcoal bits garden soil only for the 12 control pots. Liquefied smoke can be produced in integration with charcoal making process using waste biomass materials.

KEYWORDS: Charcoal, wood vinegar, agriculture, fertilizer, biomass and growth

SUBMISSION ID: R04A-TANAUA-0072

**Work Immersion Among ABM Grade 12 Senior High School Students of
the Anselmo A. Sandoval Memorial National High School**

Marife Rodriguez, Anselmo A. Sandoval Memorial National High School,
Mabini

Abstract

INTRODUCTION

Quality and excellence of learning is of utmost importance in the field of education. One of the goals of the K to 12 Basic Education Program is to develop in learners the competencies, work ethics, and values relevant to pursuing further education and/or joining the world of work. To achieve greater congruence between basic education and the nation's development targets, Work Immersion, a required subject has been incorporated into the curriculum. This subject will provide learners with opportunities such as to become familiar with the work place; for employment simulation; and to apply their competencies in areas of specialization/applied subjects in authentic work environments.

Through Work Immersion, the students are exposed to and become familiar with work the environment related to their field of specialization to enhance their competence. Specifically, the students are able to enhance their technical knowledge and skills, enrich their skills in communications and human relations, and develop good work habits, attitudes, appreciation, and respect for work and co-workers.

METHODS

Descriptive type use in this action research with the questionnaires as the main instrument in gathering data which would answer the problem posed in this study. It was distributed, collected, tallied and interpreted to come up with the desired output. The study involved thirty- five Grade 12 ABM learners from Anselmo A. Sandoval Memorial National High School (AASMNHS). Furthermore, the study revealed the readiness of students and impact of work immersion to them.

RESULTS

A SHS student has to undergo work immersion in a business organization or establishment with duties related to their field of specialization. Through this, the students are exposed to and were able to be familiarized with the working environment and learned well the typical protocols and procedures in a company.

Immersionists gained relevant and practical industrial skills under the guidance of experts and workers; appreciated the importance and application of the principles and theories taught in the classroom; enhanced their technical knowledge and skills; and prepared them to meet the needs and challenges of employment, entrepreneurship, or higher education after graduation.

DISCUSSIONS

Senior high school focal person should orient well the learners who'll undergo work immersion. Work immersion teachers may assess learners before deploying them to the workplace. Learners are recommended to ask their teachers' help on things they need to do before, during and after the immersion. Students who'll undergo immersion should be mentally, physically and emotionally prepared in order to perform and discharge the tasks given to them with the highest degree of efficiency.

KEYWORDS: work immersion, focal person

SUBMISSION ID: R04A-BATANP-1240

**Work Immersion Among ABM Grade 12 Senior High School Students of
the Anselmo A. Sandoval Memorial National High School**

Marife Rodriguez, Anselmo A. Sandoval Memorial National High School,
Mabini

Abstract

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KEYWORDS: work immersion, focal person

SUBMISSION ID: R04A-BATANP-1240

BIOMEDICAL ENGINEERING

**The Anti-thrombotic Property of Cayenne Pepper (*Capsicum annuum*)
Extract in Type O+ Human Blood Coagulation**

Jesse Daluddung, Trece Martires City Senior High School

Abstract

INTRODUCTION

Blood clotting is necessary to prevent excessive bleeding when a blood vessel is damaged. However, not all blood clot is good for the body. Severe trauma patients with an injury that has the potential to cause long-term disability or death with blood type O had a death rate of 28%, compared to a rate of 11% in patients with other blood types (Takayama, 2018). Therefore, the researchers decided to conduct a study using cayenne pepper (*Capsicum annuum*) extract to test if it has anti-thrombotic property that can be an alternative and cost efficient anti-coagulant drugs.

METHODS

This study utilized an experimental design seeking the effectiveness of cayenne pepper extract as an anticoagulation agent on type O+ human blood sample, through assigning different volumes of the extract such as 0.10 mL, 0.20mL and 0.30 mL. EDTA and distilled water were the positive and negative controlled treatments, respectively. These treatments were used to determine if the cayenne pepper extract can prolonged the coagulation of the human blood sample, considering the Clotting Time.

RESULTS

In analyzing the effective volume of cayenne pepper extract in type O human blood sample, T1 which has 0.10 mL of extract, yielded a mean score of 2.49, T2 with 0.20 mL of extract has a mean score of 3.49, and T3 which has 0.30 mL of extract has a mean score of 4.15 was rated to be the most effective volume of the cayenne pepper extract considering the prolonged time for the blood to clot.

In determining the relationship between the volume of the extract and the coagulation time (mean) using Pearson r correlation, the value obtained was 0.0993 which means that the relationship between the variables is strong linear relationship. The relationship is positive since as the variable increases, the other one also increases.

For the testing of anti-thrombotic property of cayenne pepper extract in terms of different volumes, using the one-way ANOVA test, a P-value of 0.0000010913 was obtained which means that there is a significant difference in the anticoagulant activities of the plant extract, EDTA, and distilled water as positive and negative controls, respectively, on type O human blood sample.

DISCUSSIONS

The study showed that the higher the volume of the cayenne pepper extract, the more effective it is as an anticoagulant agent in type O+ human blood sample. Therefore, the researchers concluded that cayenne pepper (*Capsicum annuum*) extract exhibits anti-thrombotic activity and is effective in preventing blood clotting.

KEYWORDS: anti-thrombotic, cayenne pepper extract, coagulation

SUBMISSION ID: R04A-CAVITP-0762

Banana (*Musa acuminata*) Pseudostem Fiber and Okra (*Abelmoschus esculentus*) Mucilage as an Alternative Surgical Suture

Marivie Magana, Grace Julianne Medina, & Pauleen Duran, Laguna Senior High School

Abstract

INTRODUCTION

Surgical sutures play an essential role in the field of medicine. The two main types are non-absorbable sutures and absorbable sutures. Non-absorbable sutures are more commonly used, but the problem is that these are non-biodegradable and can cause additional waste. The latter are also used but not that much due to its way of production; these are made up of catgut, which are from small intestines of cattle, sheep or goats. Despite how good the qualities of the commercial products nowadays, no one can put out of sight that most of them have already harmed animals. The pursuit to develop a non-absorbable, cruelty-free and inexpensive suture urged the researchers to create a suture with these characteristics with the use of banana pseudostem fiber and okra extract.

METHODS

Raw materials were collected ; the fibers were then separated from the stalk through scraping after washing it thoroughly. After that, the fibers collected were once again washed with distilled water and were air dried for a day. To make the actual suture, three strands were twisted and brushed with okra mucilage to make the twist firm. Okra mucilage was produced by boiling okra until it thickens. It will be filtered using a fine strainer. Okra mucilage served as the binder of strands and for the sterilization of the suture.

RESULTS

Result showed from the previous research that the suture made from banana fibers was comparable to the commercial surgical suture when it comes to breaking force. Commercial product suture is 18.55 N while the suture made from banana fiber and okra extract is 13.77 N. When it comes to average elongation at break commercial product is 17.4% and the banana fiber and okra extract is 2.3%. The absorbability and sterility of the surgical sutures was comparable to banana stalk as both of them have exhibited the same healing duration. With the use of commercial product, the wound healed faster than with the use of banana stalk, but both healed in 6 days. There's no need to use another process for sterilization because okra mucilage has an anti-bacterial property so as the extract was being applied to the suture for binding, the sterilization also takes place.

DISCUSSIONS

The cruelty-free produced suture was able to close a wound just like the commercially produced one. The production cost of this suture is low compared to the commonly used sutures. With the results, banana stalk and okra mucilage can be an alternative surgical suture comparable to the commercial suture according to their quality.

KEYWORDS: surgical suture, mucilage, pseudostem

SUBMISSION ID: R04A-LAGUNA-0020

The Cultivation of Oyster Mushroom Using Various Growing Media

Arabella Jayne Pelle, Department of Education

Abstract

INTRODUCTION

Mushroom production has been practiced as an industry in the Philippines. Oyster mushroom is one of the most popular due to its simple, low cost production technology and high biological efficiency. Fortunately, agricultural wastes and residues are available everywhere without costs. Coconut sawdust like other agro-waste contains cellulose, hemicellulose and lignin, which are good in mushroom production. Other agricultural wastes which also contain the substances needed for oyster mushroom cultivation are banana leaves, coconut husk, and coffee silver skin. The aim of this work is to evaluate the potential for utilization of banana leaves, coconut husk, and coffee silver skin, in association with coconut sawdust, for the cultivation of the oyster mushroom.

METHODS

The coconut sawdust, banana leaves, coconut husk, and coffee silver skin were decomposed for a week. After one week, the materials were submerged in water for 24 hours. The water contents of the substrates were removed by squeezing. After water removal, the substrates were placed in the growing bags. The growing bags were then pasteurized for 60 minutes using a steamer. After pasteurization, the growing bags were left to cool, removed from the steamer and transferred into the growing room. the growing bags were opened, and a spoonful of spawn were placed inside the bags, while spawned were slightly mixed. The growing bags were arranged inside the growing room.

RESULTS

In terms of germination period, Treatment 3 was the most effective. In terms of mass and number of oyster mushroom, Treatment 1 was the most effective.

DISCUSSIONS

The use of the different growing media has effects on the growth of oyster mushroom.

The use of sawdust and coconut husk with the proportion of 75% and 25%, respectively shortened the number of days of emergence of the oyster mushroom.

The use of 100% sawdust as growing media in the oyster mushroom cultivation results in highest production of oyster mushroom.

KEYWORDS: cultivation, oyster mushroom, various growing media

SUBMISSION ID: R04A-CAVTP-1672

An Evaluation of *Apium graveolens L. (Celery)* Extract as a Potential Platelet Anti-Coagulator

Vince Atalin, Denille Kezia Pangilinan, & Justine Kurt Tampis, Bucal National High School

Abstract

INTRODUCTION

Celery leaves known primarily as a throwaway top to an already underappreciated vegetable are so often discarded, but it has many significant medicinal value, it is used to treat joint pain, gout, hysteria, and etc. Celery stem has a presence of arginine an amino acid that expand the blood vessels, and the whole plants contain flavonoid. It has been reported that some flavonoids possess anti platelets aggregation effect.

METHODS

With the aim to relief the people suffering from cardiovascular disease such narrowing the arteries, caused by over clotting of platelets that can block the passageways of blood that may lead to heart attack or stroke, this research study will evaluate the potential of *Apium graveolens L.* celery leaves extract as anti-coagulator.

RESULTS

Through the use of spectrophotometer, the aggregation of platelets in different concentration was measured by light transmission. Crude extract of celery was gathered through air drying and grounding, and soaking in ethanol for 48 hours. The mixture was put through double broiler to evaporate the ethanol, Extracted celery with different concentration (100%, 75%, 50% and 25%)NSS as diluent, was added by 100 micro liter of platelets and serve as the experimental set up, which was compared to positive control with 5 mg of aspirin and negative control having only the platelets. aggregation was measured.

DISCUSSIONS

After subjecting the solution into the spectrophotometer, the values of the mean absorbance were collected. It showed that using 100% mean value is 24.23 Au, 75% mean is 33.47 Au, 50% is 26.7 Au, 25% is 33.3 Au, and positive control mean is 25.3. The higher the transmittance, lower absorbance, the lower the degree of aggregation.

After testing and comparing the results, the positive control, aspirin, significantly showed that it is better as anti-coagulant, compared to the extracted celery leaves, however the pure extract of celery leaves differ significantly as anti-coagulant compared to the diluted treatments. Among the treatment the higher absorbance of light is the aspirin, followed by the 100 percent extract, so it shows that the higher the light absorbance, the higher concentration of the compound dissolved in a given solvent.

KEYWORDS: Evaluation, *Apium graveolens*, Potential Platelet

SUBMISSION ID: R04A-CAVITP-1638

**The Weakness of Grade 9 Students in Numeracy Skills at the Governor
Feliciano Leviste Memorial National High School**

Krischelle Tan, Department of Education

Abstract

INTRODUCTION

Teachers carefully choose strategies to help meet the needs of students and the objectives they are to learn. There are numerous models of teaching to suit different purposes. But still, students remain weak in numeracy skills. As observed by the researcher, everything will turn into a serious problem if these weaknesses will not be addressed. For that, it is the purpose of the researcher to study the numeracy skills of Grade 9 students and provide alternative ways to develop and improve the skills.

METHODS

The researcher used the descriptive method of research to attain the purpose of the study. Questionnaires were utilized to gather empirical data for the study on the extent of numeracy skills being displayed by Grade 9 students. The questionnaire had two parts; the first part concerned the extent of numeracy skills being displayed by Grade 9 students as regards to problem solving, analysis and creativity. There were five items for each skill. The second part was composed of factors that affected to the development of students in numeracy skills such as attitude, environment and study habits.

RESULTS

Students can be described as beginner, developing, proficient and highly proficient based on the percent of accuracy that they achieved. Students have low level of numeracy since it was least extent displayed in their problem-solving skills, analysis skills and creativity skills. Attitudes of the students often affect the skills of students; however, the environment and study habit sometimes affect them. Attitude of the students affected primarily the numeracy skills of students. The proposed enhancement activities as an output of the study aimed to help learners improve their numeracy skills and teachers in leading them to be high proficient learners.

DISCUSSIONS

The results demonstrate that there was a great problem that occurred in developing numeracy skills because of the attitudes of students. Mathematics teachers should provide a remediation program to lessen the problems caused by the attitudes, environment and study habits of the students.

KEYWORDS: improve skills, questionnaire, low numeracy

SUBMISSION ID: R04A-BATANP-1514

BIOTECHNOLOGY & BIOMOLECULAR SCIENCES

Activated Charcoal Powder Out of Coconut Shell

Catherine Mojica, Tagaytay City Science National High School

Abstract

INTRODUCTION

Coconut shell is widely used in industry, farming, family and environmental protection including petrochemical, food and many other applications. Activated carbon can be made from different carbon-contained materials like wood, sawdust, coal, charcoal, coconut shell and sugar cane pulp.

Activated charcoal is a fine, odorless, black powder often used in emergency rooms to treat overdoses. Many people suffer because of drinking non advisable substance that results to poisoning and overdose. Activated charcoal works by trapping toxins and chemicals in the gut, preventing the absorption of chemicals and toxins. With these activated charcoal serves as alternative poison controller and a universal antidote.

METHODS

The respondents were seventy (50) Junior High School teachers in Tagaytay City Science National High School. Descriptive survey approach was used. Questionnaire and interview guides were utilized in order to gather data.

RESULTS

It had been, therefore, concluded that the Activated Charcoal Powder out of coconut shell served as alternative medicine of person experiencing poisoning.

DISCUSSIONS

The results of the study imply that Activated Charcoal Powder out of Coconut Shell can be used as an anti-poison treatment or to treat drug overdoses. Moreover, it can be used as alternative from commercially antidote for poisoning.

KEYWORDS: Activated charcoal, coconut shell, antidote, poisoning

SUBMISSION ID: R04A-CAVITP-1409

The Anti-Angiogenic Property of *Andropogon nardus* L. (Citronella) Extracts on Chorioallantoic Membrane of *Anas luzonica* (Philippine Duck) Eggs

Marvelyn Abad, Verlyn Denise Angeles, & Marielle Jeciel, Cavite National Science High School

Abstract

INTRODUCTION

Angiogenesis, or the formation of new blood vessels, is a hallmark of cancer. It plays a key role in tumor growth and metastasis of cancer since blood vessels provide nutrition to sustain the growing tumor. Hence, the inhibition of angiogenesis can provide an important preventive approach in cancer (Abdolmaleki et al., 2016).

A way to prevent the growth of tumors due to the formation and growth of blood vessels is called anti-angiogenesis. The study evaluated the anti-angiogenic activity of *Andropogon nardus* L. (citronella) leaves using CAM assay and particularly investigated the specific concentration/s (mg/ mL) of *A. nardus* leaf extracts that will exhibit anti-angiogenic activity on the CAM Assay of duck embryo.

METHODS

A. nardus leaves were gathered and air-dried for two weeks. Later on, it was powdered and soaked in ethanol for 48 hours. It was then subjected into rotary evaporation for crude extraction and freeze drying to evaporate water present in the extract. The eggs were classified into 5 set-ups with 2 replicates per trial. The crude extracts underwent serial dilution that were classified as follows: treatment 1 (25 mg/mL of plant extract), treatment 2 (12.5 mg/mL of plant extract), treatment 3 (6.5 mg/mL of plant extract), treatment 4 (25 mg/mL methotrexate), and treatment 5 (1 mL distilled water). After the administration of treatments in the CAM assay, it was quantified through counting the number of blood vessels using WimCAM tool by Wimasys Image Analysis.

RESULTS

Results showed that the negative control had 86.67 as overall mean number of collaterals and 38.33 for the positive control. The overall mean number of collaterals of Treatment 1, Treatment 2, and Treatment 3 were 60.83, 60.33 and 31.8, respectively. It was observed that the lowest concentration of the plant extract had the lowest mean while the highest concentration had the highest. In comparison with the negative control and various treatments, it showed that the former had the highest mean while T3 had the lowest mean. Meanwhile, T1 acquired the highest mean and T3 had the lowest mean in the comparison with the positive control and various treatments. Thus, Treatment 3 (6.5 mg/mL of *A. nardus* extract) possess an anti-angiogenic property comparable to all other treatments.

DISCUSSIONS

The study showed that Treatment 3 (6.5 mg/mL) of *A. nardus* leaf extract can be a potential anti-angiogenic agent because of its comparable effect with the 25mg/mL Methotrexate, a drug known to possess anti-angiogenic property.

KEYWORDS: anti-angiogenic, rotary evaporation, serial dilution, collaterals

SUBMISSION ID: R04A-CAVITP-0362

Bioethanol Production from *Allamanda cathartica*

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Abstract

INTRODUCTION

Ethanol, commonly known as ethyl alcohol is widely used not only in the Philippines, but also in other countries. It is an intoxicating agent in fermented and distilled liquors, it is used pure or denatured in solvents or medicines, it can also be found in colognes and cleaning agents and lastly it is proposed as a renewable clean-burning additive to gasoline. But store-bought ethanol are now expensive, so the researchers have thought of a way to lessen the burden that commercial ethanol bring by means of creating an alternative to ethanol that is cheaper and environment friendly.

Yellow bell flowers are ornamental flowers that are abundant in the Philippines. It is used to treat a number of conditions including jaundice, malaria and constipation. With this uses the researchers sought for a way to investigate other benefits of the yellow bell flower. Because of its high sugar content yellow bell flower was also used in the study.

METHODS

The researchers used three set ups: Set up A- fermented in two weeks , Set up B- fermented in three weeks, and Set up C- fermented in four weeks. The procedures involved were collecting, cleaning of yellow bell, extracting, boiling, application of yeast fermentation and distillation. The amount of yellow bell flowers, amount of yeast, and boiling point were kept constant, only the time of fermentation varies among the set ups. Certain factors were observed while the experiment was ongoing.

RESULTS

The researchers observed the effectiveness, odor, color, flammability, and physical appearance of the product. At the end of the experiment, results were analyzed statistically which proved that Set up B which was fermented in two weeks was the most effective in terms of odor, color, flammability and physical appearance among the other set ups. It had been, therefore, concluded by the researchers that the Set up B which was fermented in two weeks was the most effective among the other set ups.

DISCUSSIONS

After making this product, the researchers found out that they can make a cheap alternative to ethanol using yellow bell flowers. The results showed that bioethanol produced from yellow bell flowers is effective in terms of odor, color, physical appearance and flammability and its contents are pure biodegradable. it is also proved to be cheaper and more effective compared to commercial ones

KEYWORDS: Yellow bell flowers, ethanol, effectiveness, extract, biodegradable

SUBMISSION ID: R04A-CAVTP-1382

Effectiveness of Lanzones (*Lansium domesticum*) Peelings as an Ingredient in Making Bioethanol

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Abstract

INTRODUCTION

As time passes by, fossil fuel has been already depleting and cause environmental problems. Thus, by producing bioethanol from sugar containing feedstock such as fruit waste can help mitigate this problem. According to Solidum, lanzones (*Lansium domesticum*) peelings contains a relative amount of sugar with 1.64 g/mol which is significant for producing bioethanol. However, there are no studies have explored and tested lanzones peelings. Therefore, this study aimed to fill in the gap by testing the effectiveness of lanzones peelings as an ingredient for bioethanol production.

METHODS

A quantitative type of research was used; specifically, an experimental design which involves the fermentation and distillation of lanzones peelings to produce bioethanol. The amount used was controlled by having 200g of lanzones peelings, 1g urea, 500ml distilled water, 20g yeast and 50g sucrose. The produced bioethanol was observed physically, and two parameters such as fire duration and color were assessed; and compared to standard ethanol.

RESULTS

In assessing the bioethanol produced from lanzones peelings in terms of fire duration, it showed that the mean score of the bioethanol is 2.53 which interpreted to have lowest fire duration. Moreover, in comparing bioethanol from standard ethanol in terms of fire duration, independent t -test was used with a critical value of 2.13, where a t-value of 0.02137 was obtained which means that there is no significant difference between the bioethanol produced from lanzones peelings and standard ethanol in terms of fire duration.

While, in observing the bioethanol based on its color, it was rated to have a mean score of 2.7 which interpreted to have a clear color. Thus, by using independent t-test with a critical value of 1.73; a t-value of 0.6512 was obtained which means that there is no significant difference between the bioethanol produced from lanzones peelings and standard ethanol in terms of color.

DISCUSSIONS

Hence, this study found out that bioethanol from lanzones peelings and standard ethanol shown no significant difference. This proved that lanzones (*Lansium domesticum*) peeling is effective in producing bioethanol.

KEYWORDS: bioethanol, lanzones peelings, fire duration

SUBMISSION ID: R04A-CAVITP-0890

**The Efficacy of an Aquaponics System in the Production of Pechay
(*Brassica rapa subsp. Chinensis*) Plants**

Aleksie Alvaran, Department of Education

Abstract

INTRODUCTION

The Philippines is an agricultural country with a land area of 30 million hectares, 47% of which is agricultural land is located in urban areas, but its productivity has been reduced for almost 22% in the past five years due to natural disasters and lack of support from the government. To address this concern, concerned citizens must think of other way of producing crops such as the aquaponics system of crop production. It is the combination of hydroponics system, the method of growing plants on water based solution and aquaculture, or rearing of aquatic animals for food. Due to this, researchers are motivated to produce pechay plant using aquaponics system.

METHODS

The following materials were prepared for the study: reservoir, submersible pumps, pechay seedlings, cups, styropor, fishes, and river stones. In preparing the systems, the materials were gathered, followed by the construction of it. First, two containers for each set up were provided and a styropor with five holes above it was placed together with the cups with river stones and seedling. The two containers must be connected to the fish aquarium through a hose. As the water from the aquarium rose up through the submersible pump, it would be filtered through the river stones, and then would flow back to the aquarium.

RESULTS

These are the results obtained in the study based on the experiment. In terms of number of leaves and height of plant Treatment 3 is the most effective. Therefore Treatment 0 and Treatment 3 have a significant difference. Treatment 0 and Treatment 1 have no significant difference so as Treatments 0 and 2. Treatments 1 and 2 have no significant difference as well as Treatment 1 and Treatment 3. Finally, Treatments 2 and 3 as also no difference.

DISCUSSIONS

The researchers conclude that there is a significant difference between the growths of pechay plant using aquaponics system with varying number of fish in terms of number of leaves and height of the plant between Treatment 0 and Treatment 3. The result proves that the treatment with higher number of tilapia is more effective than the others.

KEYWORDS: Aquaponics system, Pechay plant, Agriculture

SUBMISSION ID: R04A-CAVITP-1671

An Evaluation of *Artocarpus heterophyllus* Seed Flour for its Utilization in Noodle Production

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Abstract

INTRODUCTION

The study promotes the idea of utilizing the jackfruit seeds as raw materials in making seed flour and its corporation as an ingredient in noodle making. It was conducted to augment the national campaign for the production of food substitutes. The utilization of thrown away seeds, jackfruit seeds particularly, is an answer to the growing demand for food sources in the light of the rapid increasing population and increasing cost of commodities.

METHODS

This study used experimental setup to evaluate the utilization of jackfruit seeds flour to produce noodles. The experiment was composed of three treatments arranged in Complete Random Block Design (CRBD). Jackfruit seeds flour combinations were made at the ratio of 30:60;45:60; and 60:60. The data were categorized, summarized and analyzed statistically using percentage mean, weighted mean and analysis of variance (ANNOVA).

RESULTS

The results revealed sample A having the overall acceptability of 3.65 which is descriptively rated as very good; sample B, 2.65 as good; and sample C, 2.75 as good. Sample A is the most acceptable noodle sample and was found to be prepared noodle in which chicken broth tastes best. All trials within and between the ranges of variables vary that much based on the sensory analysis of the respondents, thus, jackfruit seeds noodles is acceptable.

DISCUSSIONS

Based on the analysis done, noodle production from jackfruit seeds is possible in Sample A with the highest acceptability standards for texture, color, and odor. Further test for acceptability of the noodles should be observed in lesser and greater concentration to achieve the perfect taste of a noodle.

KEYWORDS: *Artocarpus heterophyllus*, Jackfruit seeds flour, Substitutes, Noodle production

SUBMISSION ID: R04A-CAVTP-0767

Fermented Fish Entrails and Used Diaper Gel as a Culture Medium of the Tomato Plant (*Solanum lycopersicum*)

Christian Stephen Miguel Marquez, Pedro Guevara Memorial National High School

Abstract

INTRODUCTION

The battle of human to safeguard his existence enables him to develop his state of living, but the cost of his actions drastically changes his environment today. Pollution, inadequate solid waste disposal, excessive flooding in urban areas, and even loss of fertile land to cultivate crops are results of urbanization and modernization. The Philippines is a small country with a large population. Urbanization brought agricultural lands to be converted into commercial lands. Hence, the opportunity to grow crops in urban areas is becoming smaller.

METHODS

The study aimed to evaluate the difference of growth of tomato plants plant in terms of height, number of leaves and wet mass in varying concentration of fermented fish entrails and culture media. Based from the data gathered on the growth of tomato plants, the results were interpreted using statistical tool such as Mean, Standard Deviation, One-Way Analysis of Variance, and Tukey Kramer's Procedure.

RESULTS

The mean level of growth in terms of height grown under five treatments, revealed that; tomato plants grown in soil containing 0.11% of fermented fish entrails had the highest mean as compared among the other treatments. Furthermore, statistical analysis showed that the five treatments had different average height, which means that tomato plants in each treatment had grown differently. The mean levels of the number of leaves in all treatments had a standard deviation of 0.20. This indicates that the mean values of all the treatments were close to each other, suggesting that the percentage of fermented fish entrails and culture media being the soil or diaper gel has relatively low effect on the number of leaves of tomato plants.

DISCUSSIONS

The mean level of growth in terms of height grown under five treatments, revealed that; tomato plants grown in soil containing 0.11% of fermented fish entrails had the highest mean as compared among the other treatments. It was followed by the tomato plant grown on soil containing 2.87% FFE. Similarly, the tomato plants grown on 0.11% FFE and diaper gel is slightly lower to the aforementioned treatments. On the contrary, tomato plants planted on 2.87% concentration of fermented fish entrails and the control set-up had the least among the other treatments.

KEYWORDS: Fermented fish entrails, Diaper Gel and Tomato plant

SUBMISSION ID: R04A-LAGUNA-0083

The Genetic Distances of Tank Goby (*Glossogobius sp.*) through a Mitochondrial DNA Sequencing: Its Implication to Conservation

Pauline Piana, Looc Integrated School

Abstract

INTRODUCTION

The Philippines is rich in aquatic resources, as it is surrounded by water, it is a home to numerous native and endemic marine and freshwater fish species (Manalang and Diaz, 2017). Since, fish is the most important source of human food; It is not just significant for human consumption but are also economically significant to the society.

So, in order to protect and conserve the aquatic life, the Bureau of Fisheries and Aquatic Resources (BFAR) issued Fisheries Administrative Order 233-1 in 2010 echoes RA 9147 or the wildlife Resources Conservation and Protection Act of 2001 which mandates "the State to conserve the country's wildlife resources and their habitats for sustainability." (BFAR, 2012).

METHODS

The methods used in this study are: Extraction of DNA Mitochondrion Gene from *Glossogobius sp.* tissues using Agarose Gel Electrophoresis (AGE). Kingfisher cell and tissue (Lane LP2.2-LP29.29) and CTAB method (LP12.12-LP13.13) were used as primers. Hence, AGE was run on a 1.2% agarose gel in 100V for 40mins with DNA marker 1kb plus ladder (Invitrogen). Genes were amplified by PCR, components that include genomic DNA, cytochrome B primers (forward and reverse), Taq buffer, DNA polymerase, and dNTP mix. Cycling parameters on 94°C 10 mins; 35 cycles of 94°C 30 secs, 50°C 45 secs, 72°C 45 secs; 72°C 10 mins; hold at 4°C thermal cycler. PCR products are viable for sequencing. It was followed by Cycle Sequencing where the random incorporation of fluorescently labelled chain terminator ddNTPs; components include amplicons, primers, and ABI BigDye® Terminator v3.1 Cycle Sequencing Kit. Capillary electrophoresis on the ABI 3730xl DNA Analyzer using a 50cm 96-capillary array, POP7™ Polymer, and 3730xl Data Collection Software v3.1. Base calling on the Sequencing Analysis Software v5.4. Lastly, they were aligned using the L-INS-i algorithm implemented in the tool MAFFT.

RESULTS

Based from the data gathered it was found out that in terms of tree-based diversity the mean value of Lake Pandin is 0.03550131 while Laguna Lake is 0.0373526. Comparatively, this only implies that they are almost the same not only in terms of genetic distance but also in its divergent.

DISCUSSIONS

The results demonstrated that the tank goby must be conserved through translocation and establishment of its population that would enhance its habitat condition. Thus, educating and enhancing awareness of the local government with the community are strongly recommended.

KEYWORDS: genetic distance, amplification, DNA sequencing, conservation, mitochondria

SUBMISSION ID: R04A-CALAMB-0302

Harm Reduction: A Quantitative Research on Eliminating *Escherichia coli* Using SODIS with Varying Elevations

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Abstract

INTRODUCTION

Department of Health (2010) stated that water is one of the most important substances on earth. Today, a primary concern of many communities in developing countries involves obtaining clean drinking water (Acre, 2008). Despite several efforts in preventing waterborne diseases, according to Walkerton (2010) dreadful outbreaks still occur like having *E. coli* on drinking water. Even though there are minor setbacks, Adeboye (2014) stated that Solar Disinfection was one of the methods in eliminating *E. coli*.

METHODS

This study used a quantitative type of research that employed an experimental design. This also involved manipulation of different elevations of Solar Disinfection (SODIS) such as 0m, 2m and 4m surrounded by an aluminum foil from the ground level. The controlled treatment was 3m without aluminum foil. These treatments were subjected into 6 hours of solar radiation and assessed based on the parameters bacterial population and lag time from the New Nouveau Brunswick (NNB).

RESULTS

In determining the most effective elevation of SODIS in terms of their bacterial population and lag time, T1 which is placed at the ground level or 0 meter, T2, which is placed 2 meters high, Lastly, T3, which is placed 4 meters high, The controlled treatment, which was 3m, have the same results. They were all rated as moderated that yielded a mean score of 2. Based on the 5-point Likert scale, all treatments have the same weighted means. Thus, there is no difference in SODIS with varying elevations when eliminating *E. coli* bacteria.

DISCUSSIONS

In evaluating the most effective treatment in varying elevations of SODIS in terms of population count and lag time using the One- Way ANOVA test, a P-value of 0.0674130 was obtained which means that there is no significant difference on the varying elevations of SODIS.

Therefore, this study found out that there is no leverage in terms of varying elevations of SODIS from the ground level. However, the results found out that it is moderated which indicates that it consistently achieves and often exceeds expected performance level. Thus, this study proved that SODIS (Solar Disinfection) is effective in Eliminating *E. coli* bacteria.

KEYWORDS: eliminating, *Escherichia coli*, solar disinfection

SUBMISSION ID: R04A-CAVITP-1031

**An Optimal Enrichment of The Basal Diet with Marine Algae
(*Ascophyllum nodosum*) Improves the Production Performance of
Broilers**

Paul Alva Racimo, Department of Education

Abstract

INTRODUCTION

Agriculture is the only access to have a sufficient food to supply the growing population and deprivation. It is important to pay attention not only the country's balance of trade but the security and health of its population as well. To address these concerns, the researcher decided to investigate the efficiency of the developed product of marine algae specifically *Ascophyllum nodosum* as an optimal dietary enrichment to improve the production performance of broilers.

METHODS

The experimental research design used the Latin Square Design. Three hundred twenty (320) mixed-sex day-old broiler chicks were used and assigned randomly to four treatment groups with four replicates of twenty (20) birds. The broilers were reared for 35 days of feeding trail and housed in cages and offered appropriate commercial feeds with the addition of 0% (Control-A), 0.25% (B), 2% (C), and 5% (D) pulverized *A. nodosum*.

RESULTS

Feeding marine algae specifically *A. nodosum* as dietary supplement was remarkably efficient as an optimal enrichment diet to enhance the broiler production performance. Based on the gathered results, there were no significant differences in the mean values for Total Weight Gain and Average Daily Gain at 95% confidence level. However, there was a significant difference in the mean values for the Total Feed Intake, with the control group having the highest mean at 4232.01. The lowest feed intake was observed among birds given 0.25% algae in their diet. Significant difference ($P < 0.001$) was also noted in the Feed Conversion Ratio, where, birds fed with control diet had higher mean value compared to treatment groups. No significant difference was noted in terms of mortality rate. Likewise, no significant difference in all mean values of the carcass weights. This indicates that the percent yield for internal organs and head and feet of broilers fed with varying levels of marine algae are not statistically different with control group ($P > 0.05$).

DISCUSSIONS

Indeed, marine algae inclusion was found to yield the most pronounced effects on TFI, FCR, dressing revenue and enterprise analysis. However, *A. nodosum* did not influence on the TWG, ADG, mortality and carcass weights. Therefore, dietary marine algae could be utilized in broiler diet up to 0.25%, without any adverse effects on the performance and in enterprise analysis. Furthermore, the nutrient content of *A. nodosum* manifested to complete the insufficiencies in feeds.

KEYWORDS: broiler, *Ascophyllum nodosum*, production performance, dietary treatments, dietary feed supplement

SUBMISSION ID: R04A-CALAMB-0245

The Production of Biodegradable Plastic from Biga (*Alocasia macrorrhizos*) Tuber Starch

Lore Grace Masiad, Keziah Joy Gallarde, & Clieza Mae Remas, Students

Abstract

INTRODUCTION

Each year, about 500 billion plastic bags are utilized globally. The improvement of short-lived biodegradable plastic is realized as a major objective and so the usage of starch as a natural, raw material for degradable thermoplastics is seen as an important goal (Karimi et al., 2014). The increase in the productivity of agricultural products caused an increase in the deposition of "Biga" tubers wastes in the locality of Glan. This can be considered as bio-waste products of the industry. Aside from utilizing "biga" as chips, no other products were made out of biga tubers. From the aforementioned issues above, the researchers aimed to investigate the potential of biga (*Alocasia macrorrhizos*) tubers starch as biodegradable plastic. In addition, it aimed to compare significant differences between biga bio plastic and the commercially produced plastic in terms of flammability, biodegradability, and tensile strength.

METHODS

The researchers collected biga (*Alocasia macrorrhizos*) tuber in one of the researchers' backyard where it is found available. The biga (*Alocasia macrorrhizos*) tuber was then peeled and washed off with distilled water. It was then subjected for starch production. After starch was obtained from the biga (*Alocasia macrorrhizos*) tuber, the samples underwent flammability test, tensile strength, and biodegradability test.

RESULTS

For the flammability testing, it obtained a mean average of 130.66s. While for the biodegradability test it obtained 1.03g as the mean average of the change in mass. These results were subjected to t - test to find out if there is a significant difference between the commercial bio plastics and the biodegradable plastics from biga (*Alocasia macrorrhizos*) tuber. The result of t - test indicates that there is a significant difference because the P is lesser than ($P < 0.05$). However, for the tensile strength testing, it obtained a p - value of 0.37 which is greater than 0.05. Result indicates that it has no significant difference between the commercial one when results were analyzed using t - test.

DISCUSSIONS

(*Alocasia macrorrhizos*) tuber starch has high potentials in terms of these two tests associated to the commercial bio plastics. Nevertheless, tensile strength test being conducted obtained no significant difference between the experimental and the control group. Still, biga (*Alocasia macrorrhizos*) tuber starch may be a potential material for biodegradable plastics. Because of the limitations being set in this study, this research urges future researchers to test for the resistivity to check for the electrical resistance potentials of biga (*Alocasia macrorrhizos*) tuber starch. Thus, it is recommended to conduct clarity test for the samples also. Practicability test should be conducted to compare its practicality with that of commercial biodegradable plastics. Lastly, development processes to produce plastic bags from biga (*Alocasia macrorrhizos*) tuber starch should be studied.

KEYWORDS: Biodegradable plastic, Biga Tuber, Glan - Padidu National High School, Starch

SUBMISSION ID: R012-SARANG-0003

The Production of Pyrolytic Oil from Rice (*Oryza sativa*) Husk as an Alternative Wood Preservative

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Senior High School

Abstract

INTRODUCTION

This study entitled "Production of Pyrolytic Oil from Rice (*Oryza sativa*) Husk as Wood Preservative" was conducted to determine whether using pyrolyzed oil from rice husk is effective in preserving wood to minimize excessive cutting down of trees due to furniture production. The effectiveness was measured in terms of the weight of the wood after being exposed to termites.

METHODS

The major component needed for the experiment was rice husk. To perform the pyrolysis process, the researchers built an improvised oil refinery using a tin can, a burner, a glass/collecting container, and a copper tube. The researchers used three (3) common types of wood namely palochina, coco lumber, and wood lumber in the said study. These woods were dried to remove the contained moisture in each. Initial measurement of the weight of the woods took place. The produced pyrolytic oil was then applied to the designated wood using an applicator. The treated set-up and controlled set-up were placed in glass containers where it was exposed to termites (*Macrotermes gilvus*). Two weeks were allotted for the observation. The data was gathered by measuring the weight of the treated woods and comparing it to the control set-up.

RESULTS

The researchers compared the initial and final weight of the woods and discovered that there was a significant difference between the measurement. The weight of the woods in the control set-up were not affected. The weight of the palochina was decreased by 22 grams, coco lumber by 35 grams, and wood lumber by 13 grams. The researchers performed the t-test and acquired a value of 3.6539702568 that implies that using the pyrolytic oil from rice husk is effective as an alternative wood preservative.

DISCUSSIONS

Since the computed or calculated t is larger than t critical ($t_{\text{calc}} > t_{\text{critical}}$), it is proven that using the pyrolytic oil from rice husk is effective in preserving the wood from being attacked by termites. The researchers recommend building a bigger oil production chamber to produce a bigger amount of oil, using multiple species of termites, and performing other tests to validate the data.

KEYWORDS: rice husk, wood preservative, termites

SUBMISSION ID: R04A-LAGUNA-0024

**Saba Banana (*Musa acuminata x balbisiana*) Peels as an Additive to
Potato Dextrose Agar for Fungi Mycelium Growing**

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(Adviser: Virgilio Daracan, Jr.)

Abstract

INTRODUCTION

Many culture medias have developed due to various needs of varying microorganism. It continued to improve throughout times. The researchers devised a way to make a new kind of culture media by adding an additive from saba banana. The researchers want to study the effects of additives to normal culture medias.

METHODS

Start by preparing the materials. Then a mixture of equal amounts of water and saba banana peels were blended. Then we prepared home-made PDA and mixed it with the banana peels that were puréed to make 3 experimental groups and 1 control. Then it was transferred to a sterile container and put in the autoclave. Then it is ready for the inoculation phase. To test the capability of the additive to PDA, the researchers decided to cultivate a mushroom culture of the *Pleurotus florida* specie. The researchers got the tissue of the said mushroom and inserted it to the sample. After inoculation, it is stored in a cool environment and left to grow for three weeks.

RESULTS

The results show that addition of the Saba banana peels has an effect on the physical properties, and to the effectiveness of the culture media. Only 2 of the experimental groups have managed to solidify as normal culture media would. The results of the experiment were obtained by getting the mycelial running rate of the culture.

DISCUSSIONS

As a conclusion, the most optimal quantity of Saba banana additive to PDA is in the ratio of 50-50. Although the group with 30 ml banana mixture and 10 ml PDA yields faster effects, the researchers also took into consideration the physical properties of the obtained culture media. The research showed that adding saba banana peels into PDA increases mycelia growth rate from two months to a span of two to three weeks.

KEYWORDS: Saba, Potato Dextrose Agar, Fungi Mycelium

SUBMISSION ID: R04A-LAGUNA-0062

Sprouting Coconut: A Breakthrough in Extracting and Maximizing Fatty Acids from Coconut

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(Adviser: Cristal Alaiza Flor Pesado)

Abstract

INTRODUCTION

Finding the best way to extract and maximize the important nutrients in coconut could be a breakthrough. Coconuts are known for its high fatty acid content, yet these fatty acids are concentrated through tedious processes in making Virgin Coconut Oil (VCO). This study aims to assess the fatty acids from the sprouted coconut and compare the properties of these fatty acids to VCO and coconut without sprout. This was conducted to address if, and to prove that, there is a significant difference in the amount of fatty acids in the naturally-occurring substance in sprouting coconuts, or "Kwamog" in Visayan language, compared to Virgin Coconut Oil and coconut without sprout.

METHODS

Sprouted coconuts were collected from Barobo, Surigao del Sur, Philippines. These were selected based on the length of the sprout for the two treatments used in the study such as: Treatment 1- six (6) inches and Treatment 2-twelve (12) inches. Six and twelve inches sprouted coconut have little water and no water inside the kernels, respectively. Four hundred (400) grams of meat from sprouted coconut was collected from each treatment then placed in a glass container and refrigerated at 4oC. The analyses of fatty acids were conducted by the Food Development Centre of the NFA using the method stated in the book of "AOAC INTERNATIONAL 20TH Edition, 2016, Vol. 1 & 2. Determination of significant difference was done through Analysis of Variance (ANOVA).

RESULTS

Results showed higher contents of fatty acids extracted from sprouted coconut compared to VCO and coconut without sprout. The contents of fatty acids such as Lauric, Capric, Caprylic, Myristic, Palmitic, saturated fatty acids and medium-chain fatty acids from sprouted coconut significantly differed from the fatty acid contents in VCO and coconut without sprout.

DISCUSSIONS

This shows the sprouting of coconut enhances the amount of fatty acids and that it could be considered a method of extracting fatty acids from coconut. The increased contents of fatty acids extracted from sprouting coconut could be a breakthrough in the extraction of these important compounds from coconut for various medicinal applications. Thus, these should be maximized during its extraction process and that sprouting of coconut would be the answer since coconut oil is one of the few foods that can be classified as a "superfood" . Its unique combination of fatty acids can have positive effects on your health. These include fat loss, better brain function, etc. (Gunnars, 2018).

KEYWORDS: sprouting coconut, virgin coconut oil, fatty acids

SUBMISSION ID: R013-SURSUR-0014

The Anthelmintic Activity of Papaya (*Carica papaya*) Seed Extract Against Gastrointestinal Worms

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(Adviser: Virgilio Daracan, Jr.)

Abstract

INTRODUCTION

The World Health Organization (WHO) latest estimates indicates that more than 880 million children are in need of treatment for intestinal worms. These parasites also cause serious economic losses in livestock farming. Standard synthetic drugs have always been considered the most effective way of controlling infections caused by the worms, but the truth is that these drugs are expensive, often unavailable and some even show side effects unlike the organic ones (anthelmintic) that are cost effective and doesn't cause any significant damage to the host. In view of this, an attempt has been made to study the potency of *Carica papaya*. The researchers aim to know and show the anthelmintic activity of papaya seed extract.

METHODS

The researchers mixed the air-dried black papaya seeds with ethanol, water and Hydrochloric acid to make the solution. Aqueous ethanol solutions of papaya seed extracts with different concentrations (25%, 50% and 100%) were prepared. The extract was made using classical maceration wherein the solution is to be shook for consecutive days and has the solvent: solid ratio of 4:1. There were six groups of earthworms, consisting of three worms each group. The extract was dropped to the worms using a dropper and the time it took to kill the worms were recorded.

RESULTS

The extract showed great potency even at low concentrations. It took shorter time than the reference conventional drug which is the one that is commonly used. Specifically, the 25% extract killed the first worm in approximately 2.383 and the other in 2.667 minutes, while the 50% extract took 2.2 and 3.933 minutes to kill both worms and finally, the 100% extract only took 1.85 minutes to kill the first and 1.85 to kill the second worms.

DISCUSSIONS

Based on the observations done in the study, the papaya (*Carica papaya*) seed extract indicated anthelmintic properties. It paralyzed and killed the worms quick. Also, in just a few minutes, the extract showed its potential as the better anthelmintic than the standard drugs. Results also showed that there is a significant difference between the times it takes to kill the worms. The concentrated extract revealed the best anthelmintic activity. But notwithstanding, the 25% and 50% solutions are all effective in eliminating intestinal parasites or worms.

KEYWORDS: Gastrointestinal worms, Anthelmintic, Papaya, Papaya seed extract

SUBMISSION ID: R04A-LAGUNA-0073

**The Phosphorus Release Through Rice Bran Decomposition of the
Lowland Rice and Vegetable Soil in Santa Cruz, Laguna Classified as
Alipit Series**

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Abstract

INTRODUCTION

With the growing population there is a need to increase food production especially in terms of rice which is the staple food in the Philippines. Of the major contribution of rice biomass to plant growing is organic matter which is rice and rice bran. Both of which has an initial negative effect on organic matter decomposition due to its high carbon nitrogen ratio that renders the immobilization of nitrogen. This study aims to initially collect data that will show the contribution of organic matter decomposition of rice bran to improvement of phosphorus of soils grown to lowland rice and vegetables in Sta. Cruz, Laguna.

METHODS

Rice bran was mixed with the soil for treatment 4-6, the treatment 1 served as the control and treatment 2 and 3 had inorganic fertilizer added a week before obtaining the most recent sample. They were transferred to pots, each containing 10 kg of soil. It took almost 2 ½ months to know the decomposition of rice bran and its phosphate release. After that, the researchers used two testing - qualitative and quantitative for better analysis. The testing on the soil samples obtained on the middle of the decomposition period were tested on the soil test kit to measure if there was already decomposition and phosphate release occurring. Soil samples taken as a basis and the most recent samples were submitted to the Analytical Services Laboratory of the Division of Soil Science, Agricultural Systems Institute, College of Agriculture and Food Science, UPLB for phosphorus determination.

RESULTS

The qualitative results showed that the treatments with rice bran had gradual increase in phosphorus as the application of rice bran increases. The quantitative results showed that there is 15% and 21% increase in amount of phosphorus when rice bran amount were added at 100% and 150% higher than the control. There is also 9% increase in 50% rice bran application.

DISCUSSIONS

Results showed that increasing the amount of rice bran applied produces increasing phosphorus content of the soil. Applying 50% rice bran computed based on the inorganic chemical fertilizer requirement gave an increase of phosphorus content by 9% compared with the control (9.58 vs. 8.73 ppm). Accordingly, 15% and 21% increase in amount of phosphorus was computed when rice bran amount were added at 100% and 150% higher than the control, respectively.

KEYWORDS: rice bran, phosphorus release, decomposition, soil, immobilization

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BUILT ENVIRONMENT

A Three-Way Integrated Aquaponics System (Producer, Consumer and Filter Feeder)

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Abstract

INTRODUCTION

Aquaponics has been defined as the combined culture of fish and plants in recirculating systems. It refers to any system that combines aquaculture (raising aquatic animals such as fish) with hydroponics (the soil-less growing of plants) in a symbiotic environment. The fish waste provides an organic food source for the plants, and the plants naturally filter the water for the fish. The purpose of this research is to innovate the idea of Aquaponics in a unique, cheaper and helpful way. This project has three main organism in the aquarium: the producer (plant), consumer (fish) and the filter feeder (ghost shrimp).

Importance of this project is that it can contribute to energy and land conservation and help country's agricultural sector. Researchers chose this topic because their main goal is to innovate the idea of Aquaponics by adding another organism (ghost shrimp) as the filter feeder that promotes nutrient cycling.

METHODS

The processes are: Collection of Fish, Plant, Filter Feeder (Ghost Shrimp), Innovation of the Aquarium, Combination of Organism and lastly Nutrient Cycling. There is comparison between normal aquarium and an Aquaponics system aquarium. Data gathered were the comparison of the lifespan of fishes and ghost shrimp. Plant growth were also recorded. Researchers used t-test to prove that there is a significant effect in using Three-Way Integrated Aquaponics System on the growth of organisms.

RESULTS

The researchers found out that the improvised symbiotic environment expands the life span of the organism longer than that of the ordinary aquarium set-up. Fishes and the filter feeder grew and developed in the Three-Way Integrated Aquaponics System; acquiring increase in their weight and plants also grew. They also found out that having more water in a set-up makes the organisms alive and moving. They concluded that using underground water is more efficient in extending the life span of the organisms than using faucet water.

DISCUSSIONS

Food and oxygen produced by the plants are enough to feed the organisms in the aquarium (improvised symbiotic environment). There is a significant influence on the standardized nutrient cycling of producer, to secondary consumer and to filter feeder in the improvised symbiotic environment. Therefore, the researchers concluded that there is a significant effect in using Three-Way Integrated Aquaponics System-Producer, Consumer and Filter Feeder to the growth and development of the organisms involved in the improvised symbiotic environment.

KEYWORDS: Aquaponics, Nutrient Cycling, Symbiotic Environment, Aquaculture

SUBMISSION ID: R04A-LAGUNA-0021

BUSINESS

**Be the Best, Stay Purchase: Investigating Customer Loyalty Towards
the Business Strategies of Grocery Store Owners in Poblacion 2, Laurel,
Batangas**

Maryjoy Sierra, Student

Abstract

INTRODUCTION

Increasing number of highly competitive grocery store owners emerge time to time. For this, they have to apply ways or strategies on how to gain the loyalty of their customers. It is for their business to have an edge over other competitors. It would be a great way in achieving desired profit yet serve customers' satisfaction as well as the success of their business venture.

METHODS

Researcher used Descriptive Quantitative Method as it gave comprehensive data needed to what is being investigated. Using quota sampling method, respondents who were the selected customers of grocery store owners in Poblacion 2, Laurel, Batangas were chosen. Researcher followed the procedure of data collection and sought an approval addressed to the Principal of Placido T. Amo Senior High School and to the Barangay Captain of Poblacion 2, Laurel, Batangas where the study conducted. The result taken through self-made questionnaire.

RESULTS

Affordable Price topped as the number one quality of a product looked by the customers. Cleanliness of the area and grocery store build near the marketplace are the strategies considered by the customers where they usually purchase the products. "Be the best, Stay Purchase", Business Strategies Training and Seminar (BSTS) is a proposed action in order to enhance the business strategy of the grocery store owners.

DISCUSSIONS

The customers must be aware of what their chosen grocery store could give them most especially the grocery store owners for them to improve and track those qualities that they don't have and to take an action as soon as possible. Customers must keep on looking qualities of a grocery store for their satisfaction. The grocery store owners should become more competitive in order to keep the loyalty of their customers. It is for them to maintain, improve and develop more strategies based on the customers' preferences that reveals from the study.

KEYWORDS: Customer Loyalty, Business Strategy, Grocery Store

SUBMISSION ID: R04A-BATANP-0652

Before and After: A Story of Challenge and Success of Business Tycoons in Donsol

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Abstract

INTRODUCTION

People are now living in an era of constant change for the near future: change is the new normal. Preparing for and embracing that change by investing in the right kind of advice is the best way to meet these challenges ahead on. Having such challenges might become a hindrance for the new businessmen and women who is new to the business world and wants to start a business. But with great determination and perseverance those challenges might just be a lesson to everyone who wants to start a business or a company. To achieve success is to face hardships along the way. Instead of running away from the problem, embrace it to overcome obstacles.

METHODS

The study dealt on the Before and After: A story of challenges and success of business tycoons in Donsol. This study utilized 10 Business owners/tycoons as respondents. This study used descriptive-survey to know the story of the business tycoons behind their success. The researchers used a structured questionnaire to gather the profile of the respondents. The idea behind this method was to study and understand what and how the tycoons here in Donsol survived the challenges and struggles of starting, maintaining a business.

RESULTS

The study further related that most of the business tycoons in Donsol encountered customer service, it is the challenges that they always encountered. Tycoon's treats well those customers but some of the customers are snobbier and also, they are not approachable. The study found that determination is the characteristic that be possessed by those business owners, a quality that makes you continue trying to do or achieve something that is difficult. The results also showed that being hard working and having a great perseverance can help other tycoons/ business owners that wants to start a business be successful too. Lastly, improving connection with the client/customers is one of the activities to achieve one's business.

DISCUSSIONS

Based on the findings, a business man/woman should possess these characteristics to improve their ability to be a business tycoon. Studies confirm that as a business tycoon, seventy percent (70%) determination and forty percent (40%) critical thinker should be followed. The findings of these current encourage future researchers to conduct a symposium regarding the steps of starting a business and maintaining their business.

KEYWORDS: Success, Tycoons, Challenges

SUBMISSION ID: R005-SORSOP-0006

Bio Kettle (Fuel for Ease and an Uplifting Life)

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Abstract

INTRODUCTION

Philippines has been experiencing difficulties in terms of the source of fuel to sustain households and industries. Fortunately, many researchers and even entrepreneurs have been proposing alternative form for this energy, which is the Biodiesel. However, Biodiesel demands for extensive and costly production. Equipment and Machinery for the process need a spacious place. Though, it is considered as recycled fuel it is still impossible to produce it in an ordinary household. With that circumstance, the young entrepreneur planned a project that can really be useful for the production of Biodiesel. The design and development of portable kettle for the production of biodiesel is a proposed project that aimed to give ease to consumers in terms of its supply. This product was named by the entrepreneur, "Bio Kettle- Fuel for ease and uplifting life" . Indeed, this product is very timely, and it can help not just the household but also the environment for it will produce an eco-friendly fuel.

METHODS

Instead of using heavy machine to make this alternative fuel, the equipment which was simple and cost-effective was created by the entrepreneur. The design was inspired by a kettle, since its function is to boil water. Meanwhile, this proposed work was intended to produce a biodiesel through the process of boiling the used oil. A prototype was used for this product which included the parts namely: Reactor, Methanol Tank, Control Panel, Structural Support and Condenser.

RESULTS

The product produced biodiesel through the use of vegetable oils, animal fats and even used cooking oils. These ingredients underwent processes inside the kettle. It was also found out that this kettle is portable since it is easy to carry or move around. With the use of prototype, the entrepreneur was able to determine that this Bio Kettle is indeed effective for the production of bio diesel.

DISCUSSIONS

The result indicated the effectiveness of the Bio kettle. Meanwhile, this product had still showed the need for improvements. Not everyone can afford it since it is costly. Also, some are not interested or not aware with the product and its capacity to produce fuel. To cope up with these points, the entrepreneur will inculcate the importance and uses of Biodiesel. Withal, the entrepreneur will use different types of promotions to encourage the customers to avail the product. She will also emphasize that despite its high cost, it will surely be useful in their daily lives in the long run.

KEYWORDS: biofuel

SUBMISSION ID: R04A-BATANP-1941

Bookkeeping as a Tool for Monitoring the Performance and Growth of a Business: A Survey

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Abstract

INTRODUCTION

Bookkeeping has been a great help for businesses. Addressing challenges in financial management and monitoring performance was made possible. Recording of financial transactions including purchases, sales, receipts, and payments became easier. This study focused on this aspect of bookkeeping in businesses specifically on how it contributes to business success.

METHODS

This study employed the qualitative method of research supplemented by statistical analysis of the survey data. This descriptive- analytic design was study applied in this study. Survey questionnaire was facilitated. Data were triangulated, analyzed and interpreted. Simple Focus Group Discussion was also facilitated.

RESULTS

The study revealed that most of the business found in locality of Donsol apply bookkeeping in their operations mainly to aid them in handling their finances and address the possible problems that may arise due to mishandling of financial resources including instability of business too much debt, insufficiency in working capital and business failure. The study found that businesses in Donsol make use of bookkeeping for the purpose of organizing past and present records, keeping track of their income and expenditure and aid them in budgeting. The results also showed that bookkeeping allows businesses to determining their priority and dealing with decent. Businesses saw the importance of bookkeeping through its function both the internal and external users wherein the effective use of bookkeeping avoid scrambled records and paper works. Allowing them to know if their business in losing or gaining money, which in turn will help them in making decisions for future operations of the business.

DISCUSSIONS

Bookkeeping played an important role in operating a business. Whether small, medium or large scale, consistent business reporting and monitoring is a necessity. Accurate bookkeeping is crucial to business for this matter as it gives a clear picture. Of their income and expenses making them aware of their current financial positions and should be practiced by business in the municipality. The data from this study will help them plan and set goals on achieving growth, sustainability and success. Business owners should explore how bookkeeping strategies will help to sustain business growth and apply these to their operations. Businesses should improve the methods of bookkeeping they already use and craft a more suitable method to ensure that their main goal will be attained, business success.

KEYWORDS: Bookkeeping, Sustainability, Success

SUBMISSION ID: R005-SORSOP-0003

The Budgeting Practices of Working Mothers of Majada In

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Abstract

INTRODUCTION

Nowadays, prices of commodities have risen, perhaps consumers are also struggling to budget their money in their homes. In this study we explored the different practices, challenges that are being encountered by working mothers in budgeting, and probed on solution that they take to overcome those challenges.

METHODS

Qualitative research was used, and case study research design was implemented. The type of case study that was used is the multiple or collective which purposefully selects multiple cases to show different perspectives on the issue. The researchers used semi - structured interview to gather data from the respondents. The study was implemented at Majada In, Canlubang, Calamba City and choose five (5) working mothers as a respondents. And the data was analyzed following the coding procedures.

RESULTS

As a result, the major practices of the working mothers in budgeting are the following: they estimate their monthly cost to divide their salary. The major challenges that working mothers encounter in budgeting is that sometimes they experience a lack of money to budget and experience unexpected expenses like in school, illnesses and calamities. The major solution that working mothers take to overcome those challenges is to be thrifty like prioritize what is needed and reduce unnecessary expenditures.

DISCUSSIONS

The results conclude that in every family, they have their own ways of budgeting their money. Perhaps, the important is that family budgeting helps to know where the money actually goes. Spell out the realities and consequences of these, some experience -lack of money, unexpected expenses, calamities and illnesses. But the most important is that within the family, they tend to help each other to meet their every salary to their expenditures.

KEYWORDS: working mothers, budgeting, expenses

SUBMISSION ID: R04A-CALAMB-0064

The Business Operations of Water Refilling Stations in the Province of Cavite

Elias Prieto, Jr.

Abstract

INTRODUCTION

This research assesses the effectiveness of the business operations of water refilling stations in the province of Cavite.

METHODS

Questionnaires were given to two sets of respondents: company-respondents and customer-respondents. Frequency/Percentage Distributions, Weighted Mean and ANOVA were utilized.

RESULTS

Operations of water refilling stations were very effective in terms of production, marketing and operation management when grouped by number of years of existence, number of employees and capitalization. Marketing operations were effective when grouped by number of years as customer of these stations and also when grouped by most frequently purchased type of water package and frequency of purchase.

DISCUSSIONS

There were significant differences in the company-respondents' assessment on the effectiveness of their business operations when grouped by capitalization in terms of production, marketing, finance, human resource management and operation management while no significant differences were observed when grouped by number of years in existence in terms of the business strategy aspects. Significant differences in the company-respondents' assessment were observed when grouped by number of employees in terms of human resource management while no significant differences were noticed when grouped in terms of production, marketing, finance and operation management.

KEYWORDS: marketing operations, business operations, water refilling stations

SUBMISSION ID: NCR1-PARANA-0000

Business Strategies Employed by Turo-Turo Owners in the Municipality of Diffun, Quirino

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Abstract

INTRODUCTION

Turo-turo is a local eatery selling and serving viands with wooden benches. This firm is also considered as fast food restaurant because it serves cooked food, all you need to do is to choose and pay for it. The carinderia was considered as a respite of travelers having originated as a quick food service in busy crossroads. Today, turo-turo have evolved according to the needs of Filipinos; there are now variations including the travelling carinderia, the high-class carinderia and carinderias in food courts. This endeavor has the intention to describe the profitability-based business strategies used by selected turo-turo owners in the municipality of Diffun, Quirino.

METHODS

A combination of quantitative-qualitative method of gathering data was employed in this research. Questionnaires were given first to the respondents, after which, they were collected and verified and validated through an in-depth interview to the respondents. The result was then tabulated and computed to determine their impact on the problem.

RESULTS

Business owners of carinderias believed that in marketing strategies, promotion of attractive food is a best strategy to employ. Production management strategies are fully attained. They agreed that food management like planning for healthy food control must be applied and management on clean and quality but affordable and reasonable food servings. They believed that good services to the customers is one important factor in the business. Creating good relationship among customers and business personnel are the ingredients of a profitable business. They must consider hiring personnel with good qualities and are knowledgeable on the business and with good communication skills.

DISCUSSIONS

The result demonstrates the business strategies and evaluation of turo-turo owners in the municipality of Diffun, Quirino. Strategies on marketing, production management, customer services and personnel management services are fully attained by the owners as surfaced in this study. Effective application of these strategies would mean longer and profitable business venture. Relative to this, preparedness and knowledge in food business are of great importance in the business.

KEYWORDS: business strategies, carinderia

SUBMISSION ID: R002-QUIRIN-0074

A Comparative Study of the Marketing Strategies of Competing Food Stalls in Cavite City as a Basis for a Proposed Marketing Strategy Enhancement

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Abstract

INTRODUCTION

The number of food stalls has been increasing during the past years. Food stalls offer almost the same variety of products; therefore, direct competition exists between them. The only thing that keeps them different from each other is their marketing mix strategies, thus, making it one of the most important factors to be considered in business. However, many business owners still lack knowledge in implementing effective marketing mix strategies. Thus, this study determined and compared the marketing mix strategies of food stall owners in terms of service, product, place, price, and promotion applied by competing food stalls in Cavite City as a basis for a proposed marketing strategy enhancement.

METHODS

This research is quantitative in nature. The researchers used purposive sampling in selecting the respondents. This study utilized the non-experimental, descriptive comparative design. A total of five food stalls owners at Muralla, Cavite City was interviewed about the background of the business and was given a survey questionnaire about the marketing mix strategies implemented.

RESULTS

The following were the results of the study: in terms of service, four of the strategies were applied most of the time, however, actions for service uniqueness were applied sometimes; in terms of strategies concerning the products, actions were applied most of the time; in terms of place, actions were applied most of time except for stall designing which was done rarely by stall owners; in terms of price, having a reasonable price was done most of the time, promos were offered rarely, and competitor-based approach in pricing was never done by owners; in terms of promotion, offering of freebies was done sometimes, attending local affairs was done rarely, however, establishing a name, connecting with customers through social media, and providing advertisements were never done by the stall owners. Using One-way Anova, there were significant differences between the marketing mix strategies implemented by the competing food stalls located at Muralla, Cavite City.

DISCUSSIONS

This study proposed a set of strategies in order to enhance the marketing strategies of food stalls in terms of service, product, place, price, and promotion. On the same hand, the proposed marketing enhancement strategies focused on promotional areas as based on the overall findings of data, actions concerning promotions were rarely applied. Hence, the findings of this study were the basis of the proposed marketing strategies enhancement.

KEYWORDS: Marketing strategies, food stalls, business

SUBMISSION ID: R04A-CAVITC-0026

**The Contribution of Successful Entrepreneurs in the Bakeshop Industry
of Kawit, Cavite: Students' Perspective**

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Abstract

INTRODUCTION

Entrepreneurship is as simple as creating opportunities for oneself to provide opportunities for others. It is not just to develop what is existing but also an entrepreneur is taking risk to offer something good.

METHODS

Successful entrepreneurs in the Bakeshop Industry have good contributions in the improvement of the people's standard of living in Kawit, Cavite. We, the researchers, conducted a research to gather information about the contributions of successful entrepreneurs in the bakeshop industry of the said place.

RESULTS

The researchers gathered the data by using descriptive research design where 10 selected participants participated and answered the 10-item questionnaire prepared by the researchers. The sampling technique used was simple random sampling to give an equal chance to the respondents who participated in the conduct of the said study.

DISCUSSIONS

The data gathered by the researchers stated that a successful entrepreneur in the bakeshop industry gives a higher income in Kawit, Cavite; it also helps its people to find a good job and gives huge opportunities and knowledge for those who want to build up their own business.

It is visible from the result that successful entrepreneurs contributed a lot for the betterment of the people who are living in the municipality of Kawit. This is one of the solutions to aid the scarcity of jobs because it will give the people more opportunity to be employed and to put up their own business like a bakeshop. With this, the place will become more progressive if there are many entrepreneurs.

KEYWORDS: entrepreneur, entrepreneurship, opportunity

SUBMISSION ID: R04A-CAVITP-1581

Customers Satisfaction of Takoyum-Oh! Food House in Cavite City

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Abstract

INTRODUCTION

Customers are very significant as the foundation of the business' success. Entrepreneurs aims to satisfy the changing needs and wants of the customers. It can be either from innovating and improving the business' product or services. This study aimed to determine the customer's satisfaction of Takoyum-Oh! food house in Cavite City. Specifically, in determining the perceptions of customers in the services in terms of: Product, Place, Price, Promotion, and People.

METHODS

Non-experimental descriptive design was used in this study. The data gathered is from the survey questionnaire that was made by the researchers and given to the customers through personal and online survey. This study applied purposive sampling where researchers selected respondents in subjective manner; the customers of Takoyum-Oh! food house in Cavite City.

RESULTS

It was concluded that there no significant relationship between the respondent's profile on the satisfaction and no significant difference in the assessments of the respondents when grouped according to profile. Based on the results of the study, it was found out that customers are very satisfied in terms of product, price and people of Takoyum-Oh! food house. On the other hand, customers are only satisfied in terms of place and promotion. Small correlation was found out to the significant relationship of the assessments to the respondent's profile on the satisfaction. There is also significant differences in the sex, age, civil status and daily allowance when grouped according to profile.

DISCUSSIONS

The results indicate that Takoyum-Oh! is excellent in terms of product and services. Respondents are very satisfied in 3 out of 5 of Marketing mix 5ps; product, price and people. While two aspects of 5ps, place and promotion should be improved by the management that results to being satisfied by customers. The satisfaction of the customers reflects in the significant relationship in the assessments to the respondent's profile which has small correlation. And lastly, this study found out the significant differences in the demographic profile of the respondents.

KEYWORDS: customer satisfaction, food house, business

SUBMISSION ID: R04A-CAVITC-0027

**The Effect of YouTube Product Reviews to the Buying Preferences of
Accountancy, Business and Management Students of the Cavite
National High School-Senior High School**

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(Adviser: Dr. Ferdinand Callueng)

Abstract

INTRODUCTION

In electronic commerce, shopping sites allowed their customers to post their ratings, comments and suggestions about a product/service they had purchased. As social media change the way we communicate, these also help marketers easily communicate with their customers especially with their complaints and one of the social medias that had a great impact is the YouTube which became a platform for product review videos coming from various vloggers. These reviews help the consumers identify their buying preference on a certain product depending on the information they generated from the videos that they watched in the YouTube.

METHODS

Descriptive research design was used in this study. Using a systematic approach, we conducted a survey to Accountancy, Business and Management (ABM) students of Cavite National High School-Senior High School. Eighty-one (81) students responded to a set of structured survey questionnaires with data collected through quantitative analysis of the effect of YouTube product review to their buying preference.

RESULTS

Students who participated in the research assessed the input of the interpersonal and intrapersonal effect of YouTube product review as to small extent of effect in their buying preference after getting some information they generated in the product review. The significant relationship of the respondents' profile to the input of YouTube product review resulted to a small correlation in their age, grade level, sex, device they used in watching the product review and the time they consumed of watching it. The result also showed that there was no significant difference when the respondents are grouped according to their age and grade level, but the result showed that there was a significant relationship when respondents are grouped according to their sex, device they used in watching and the time they consumed.

DISCUSSIONS

The result showed that product reviews from YouTube was effective in some students especially for female who watched in their mobile phones. It also showed in the study of Anwar et.al. (2013), that there is a positive effect on consumer attitudes toward product content which other users generate on YouTube. The design of this study was descriptive where we only observe the natural phenomenon, other researchers may be able to have different result if they will be using other research design especially with different context. The result of this study may help marketers for a proposed product advertising enhancement.

KEYWORDS: social media, online selling, YouTube

SUBMISSION ID: R04A-CAVITC-0017

**Enhancing Knowledge on the Business Plans of Grade 12 SHS Students
of the Canda NHS Through the Integrated Module on
Entrepreneurship for SHS Students**

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NHS

Abstract

INTRODUCTION

Business Plan for SHS students is very indispensable. This is one of the highlights that is very relevant to study in Entrepreneurship subject. An integrated module on Entrepreneurship for SHS Students made by an author, Lumanta (2018) will be a great help in order to enhance their knowledge on business plan. Lack of knowledge in business is one of the reasons why most of the people in the Philippines experience poverty, high risk and depression.

METHODS

The researcher used quasi-experimental method. To complete this research, there was a pre-assessment validated by the expert. Unfortunately, the scores were very low, at these time the researcher was integrating a module which would appropriate to their needs in order to enhance their knowledge on business plan. Then, after that, there was a post-assessment to check if there was changed on their knowledge on business plan. Meanwhile, the respondents were composed of HUMMS (21) and TVL-CSS (28) who are all Grade 12 SHS students of Canda NHS. The researcher is also the subject teacher in Entrepreneurship of the said students. The reason why it became easy in conducting the study. Furthermore, research was started from June 2018 and end last October 2018.

RESULTS

Results shown that there was a great changes between the pre-test and post-test. Grade 12-HUMMS (Leadership) with 21 respondents had a total no. of correct answers of 103 or 38% with a weighted arithmetic mean of 49.04. After they used an integrated module on entrepreneurship, they got 170 or 62% total no. of correct answers with a weighted arithmetic mean of 80.95. On the other hand, the Grade 12-CSS (Innovativeness) with 28 respondents had 137 or 36% on their pre-test with a weighted mean of 48.92 while in post-test had 242 or 64% with a weighted arithmetic mean of 86.42. The over-all total of the two (2) tracks with 49 respondents got 240 or 37% total no. of corrects answers while 412 or 63% on their post-test with a weighted arithmetic mean of 84.08.

DISCUSSIONS

Findings revealed that the integrated module on entrepreneurship made by an author, Lumanta (2018) had a huge impact for Grade 12 students of Canda NHS which served as guide on how to have a deeper analysis on making a business plan. This is related to the findings and discussion of Mucet (2017) that business plan simulation prove to be effective factor after they have gained, and increased their knowledge, skill and confident level to understanding, the business will be easily set up.

KEYWORDS: business plan, entrepreneurship, module

SUBMISSION ID: R04A-QUEZON-0011

Eustress or Distress : The Lived Experiences of Accountancy, Business and Management (ABM) Students of the Palo Alto Integrated School in Taking the Accounting Subject for the First Time

Ethelyn Catamio, CODEB & Emmanuel Renz Catamio, SSG

Abstract

INTRODUCTION

The burden of the Filipino students was even stretched to a greater extent when the K to 12 Program was implemented in 2011 that aims to enhance learners' basic skills, produce more competent citizens, and prepare graduates for lifelong learning and employment by adding two more years of Senior High School (SHS). In these two years, students will be immersed to advanced areas of studies and actual work. And, for those in the Accountancy Business, and Management (ABM) strand, it is quite interesting as to how students would cope with the demands of one subject that is included in the strand - the accounting subject.

METHODS

In this hermetic phenomenological study, the researcher explore the lived experiences of fifteen senior high school students (Accountancy, Business and Management strand) of Palo Alto Integrated School by answering the central and sub-questions through interview with the participants. This study designed as descriptive qualitative research.

RESULTS

The participants generally had a positive perception and expectation towards the accounting subject at first, despite of the difficulty. They view it as a number-crunching subject, full of computations, and more on finance. The researchers found out that they find the subject as beneficial and somewhat thrilling, though bland. Somehow the participants pointed out that the professors plays a vital role on how the arduous subject becomes enjoyable.

DISCUSSIONS

The participants have a positive mindset towards coping up with the demands of the accounting subject. They have an excellent coping mechanism, view heavy school works positively, perceive the subject as helpful to their tertiary level preparedness, and seeks for the help of their friends.

KEYWORDS: K-12, accountancy, business and management (ABM), accounting, senior high school

SUBMISSION ID: R04A-CALAMB-0179

**Evaluating the Awareness of Sales Ladies on Customer Service
Etiquettes in Relation to the Customer Satisfaction in Me & City
Shoppers Mall and Lucky Seven General Merchandise at Balayan,
Batangas**

Merry Joy del Rosario, delrosariomerryjoy@gmail.com

Abstract

INTRODUCTION

In every business, there are different customer service etiquettes which are needed to be followed by the sales ladies and there is also the customer satisfaction which has an important role in the continuous growth of the business. This study was conducted to evaluate the relationship between the awareness of sale ladies and customer satisfaction of Me & City and Lucky Seven, to determine the customer service etiquettes of sales ladies and to know the effects of the sales ladies' awareness to customer satisfaction.

METHODS

Correlational and descriptive research designs were used to attain the purpose of the study. Moreover, purposive and quota sampling were used in selecting the thirty-six (36) respondents involved in the study. Then, Five-point Likert Scale was used for the questionnaires in order to gather data. For computing the T-Test of Independent Sample Means, the researchers decided to use the Social Science Statistic (SSS) and the Pearson Product Moment Correlation for testing the relationship between the two variables.

RESULTS

Results of this study indicated that the customer service etiquettes of the salesladies of Me & City And Lucky Seven are aware of are being respectful, honest, work with customers with the most cheerful and pleasant disposition, communicate and assist customers well in any possible way, give answers to customer's questions related to the product that they are charged to sell, effectively resolve the customers' problem and remain at all times. The researchers found out that the p-value was 0.451112 with an interpretation of not significant since $p > 0.05$ and $p > 0.10$. The Pearson " r " value was 0.92 in Me & City and 0.85 in Lucky Seven with an interpretation of both strong positive correlation therefore the null hypothesis was rejected.

DISCUSSIONS

The results indicated that there was a significant relationship between the awareness of salesladies and customer satisfaction in Me & City and Lucky Seven and there was no significant difference between the awareness of salesladies of Me & City and Lucky Seven on customer service etiquettes. Thus, the management should further enhance the awareness of their salesladies on customer service etiquettes and they may conduct trainings or seminars.

KEYWORDS: customer service etiquettes, customer satisfaction, awareness, sales ladies, customers

SUBMISSION ID: R04A-BATANP-0734

Giant Taro (*Alocasia macrorrhiza*) Paper Production as a Response to the Deforestation Issue in the Philippines

Jan Isabelle Barlis , CFA-Barcelona Academy
(Adviser: Maria Cequena)

Abstract

INTRODUCTION

Despite the increase in the use of technology to aid students and professionals in taking notes and in recoding, paper remains to be an important tool or material. The scarcity of materials for paper making as a result of deforestation is recognized in this research. Thus, the motivation to explore other possible raw materials as main component for paper production has been undertaken. Giant taro (*Alocasia macrorrhiza*), a non- edible plant that is widely available and left unnoticed in backyards is the primary component utilized for this research.

METHODS

An experimental research method was applied. The homemade taro paper was subjected to Tensile test to determine its strength and durability. Ink receptivity test was applied to measure the taro paper's capability of applying ink on it. Water absorbency rate was also tested.

RESULTS

Tensile test results show that the Taro paper can hold weights ranging from 5g - 85g. Results of the Ink Receptivity Test show 78% of trials produced consistent print quality, 100% of the trials of printing on Taro paper revealed no ink blots, and regarding ink penetration, 94% show quality ink absorption.

DISCUSSIONS

This research has proven that Giant taro is an effective alternative raw material for paper making. On the business aspect of this research, a business plan was prepared which encompasses the marketing, organization, and financial projections. This research has clearly shown that the business of producing and marketing the taro paper has a great potential for success.

KEYWORDS: giant taro, paper production, deforestation

SUBMISSION ID: NCR1-QUEZON-0004

**The Hair Salon and Barbershop Preferences of Selected Accountancy,
Business and Management Students of Cavite National High School-
Senior High School**

Veronica Balite

(Adviser: Dr. Ferdinand Callueng)

Abstract

INTRODUCTION

Trimming hair is one of the most common things to do in our daily lives to look good and presentable. In Cavite City, there are many hair salon and barber shop businesses but differ in many aspects. In terms of the quality of the services, pricing, place where it is located and the way of promoting their businesses. This study was conducted to determine the relationship of the preferences of the Accountancy Business and Management students in choosing hair salon and barbershop in Cavite City.

METHODS

The researchers used the descriptive - correlational method in this study. Selection of the respondents were done by purposive sampling in which one hundred twenty (120) or 36% out of 332 ABM students were involved in the study. An interview and survey questionnaires were administered to gather the necessary data.

RESULTS

Accountancy Business and Management students who participated in the study were measured their preference in choosing hair salon and barbershop. Results showed that there was slight correlation between respondent's preferences in choosing hair salon/barber shop to their demographic profile: sex, age and grade level. Also, results showed that there was a significant difference in the assessment of the respondents when grouped according to their profile. That is the reason why the researchers came up with a proposed marketing strategy to improve the service quality of every hair salon and barbershop not only in Cavity City, but also, in the other places.

DISCUSSIONS

The researchers offered several recommendations at the end of the study, foremost among them is the integration of the proposed marketing strategy to the existing hair salon and barbershop in Cavite City and for future studies to include more variables and greater number of respondents to be more reliable and to show clearly the relationship and significant of each variables.

KEYWORDS: ABM, Hair grooming, awareness

SUBMISSION ID: R04A-CAVITC-0018

Kakanin or Tuhog-Tuhog: A Marketable Business in Barangay Santiago 1 and 2, San Pablo City

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(Adviser: Norayda Dimaculangan)

Abstract

INTRODUCTION

Barangay Santiago is a far-flung area away from the city proper. Indeed, life is very simple and is spared from lucrative business opportunities. In this note, the researchers would like to introduce a food business, where they will not only enjoy but also earn. Hence, this study is focused on the marketability of Kakanin or Tuhog-tuhog in Barangay Santiago 1 and 2, San Pablo City.

METHODS

Ethnographic Research was used wherein it focused on a single setting - Barangay Santiago 1 and 2. The researchers used Likert- Scale Questionnaire, Rank-Order Scale Questionnaire, observations and interviews to gather data from the 18 storeowners and 362 customers of Kakanin and Tuhog-tuhog. Two Sampling Method was used Purposive Sampling Method for the Kakanin and/or Tuhog-tuhog Storeowners and Simple Random Sampling, for the customers, through Slovin's Formula. Measures of Central Tendencies were employed to analyze the data gathered and standard deviation to measure the spread of the scores.

RESULTS

Majority of the storeowner and customer-respondents are female (77.78% & 51.10% respectively). Most of the storeowners belonged to age bracket (55.56%) between 39 and above, while the customers (31.22%) between 15 - 20 years old. This business exists in Barangay Santiago 1 and 2 within 7 - 10 years, giving them an (61.11%) average daily income of Php 700 and above, with 51- and above daily customers. A mean ($\bar{x}$) of 4.64 denotes that kakanin and tuhog-tuhog business is marketable as indicated by income. This is further supported by a standard deviation of 0.57, which means that the data gathered are closely knitted to the mean, a proof of a consistent data. On the other hand, the cost of factor inputs are a factor to its marketability ($\bar{x}$ =4.72; SD=0.36).

DISCUSSIONS

Based from the findings of the study, female are more inclined to kakanin and tuhog-tuhog business, because they are more patient and more involved in activities which will give them economic benefits. The average daily income of Php 700-and above earned from this street food business proved marketability, in fact, a study claimed by Cohen, that street food business generates a high volume of sales and a high level of employment.

Data showed that kakanin and tuhog-tuhog business are marketable as indicated by low cost of factor inputs, high demand for the product as reflected on the customers' tastes and preferences, and high average daily income.

KEYWORDS: kakanin or tuhog-tuhog; marketability; cost of factor inputs; demand and customer's preferences; income

SUBMISSION ID: R04A-SANPAB-0015

KWENTA ng K.I.T.A.: An Accounting Solutions for Sari Sari Store Owners in Pantay Matanda, Tanauan City, Batangas

Jimabelle D. Quinto, Pantay Integrated High School
(Adviser: Kristine Ann I. Carandang)

Abstract

INTRODUCTION

One of the main causes of failures among small and micro enterprises is the inability of owners to keep track of their gains and losses. This is due to the entrepreneurs' lack of knowledge about financial planning and documentation (De Beers & Myers, 2014). Financial reports are certified tools that enable proprietors to make key decisions regarding the operations of their business. However, small store owners find financial reports cumbersome and go on with their operations without the use of these tools. Hence, they make business decisions without valid and reliable basis. In this study, a simple accounting process, including a tool, was introduced to selected sari-sari store owners of Brgy. Pantay Matanda, Tanauan City.

METHODS

A descriptive research design was used. Researchers assessed the prior knowledge of 59 sari-sari store owners in preparing financial statements particularly the income statement using a questionnaire. Afterwards, introduction of simple accounting process in determining income, dubbed as Kaalaman, Isulat, Tuusin, at Alamin (K.I.T.A.) was introduced to selected sari-sari store owners. The respondents were asked to adapt the process for one month. Monitoring was done by the researchers to check the accuracy of the financial data. A focus group discussion was done for the respondents' evaluation.

RESULTS

Respondents find the adaptation of K.I.T.A. as easy, practical and effective. Through K.I.T.A., respondents were able to determine their daily, weekly and monthly net income. Respondents were able to prevent unnecessary costs in order to have greater profit. Through this tool, sari-sari store owners were able to ascertain the results of operation during the period that helps the respondents to make proper financial decisions, planning and managing their finances.

DISCUSSIONS

The results highlight the importance of financial monitoring, planning and documentation in order to ensure the profitability of any business enterprise. Empowering sari-sari store owners in these business decisions will guarantee not only their success but that of the community where they belong.

KEYWORDS: Small and Medium Enterprise, Financial Planning, Entrepreneurship

SUBMISSION ID: R04A-TANAUA-0115

Marketing Strategies Employed by the Vegetable Vendors in the Public Market of Diffun

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(Adviser: Jaybert Cabanero)

Abstract

INTRODUCTION

Marketing strategies have a great role in business, which makes the business becomes competitive. It is used always in decision making in all phases of the business. It is also vital in solving problems encountered in the business cycle. This paper tends to identify the strategies used by the vegetable vendors in all the phases of the business operation.

METHODS

Quali-quant method of gathering data was used in this research. The researchers made use of questionnaires answered by the respondents after which data were collected and validated through an in-depth interview to further get some clarifications and explanations from the respondents.

RESULTS

Almost all vendors believed that before starting a business, always have a plan particularly of putting enough capital on it. They also believed that while running the business, they must learn all the means of maintaining a good customer relationship and always keep in mind the condition of their goods. Honesty is one, best aspect to be observed among the vendors particularly on giving back changes. Sometimes we have to consider the fact that business has its ups and downs, but the vendors always thought of the goodness of the business and not to lose hope instead put a lot more of efforts for it. Strategies on selling and running the business come along the way and can be learned. Customer relationship must be observed always. Wearing a smile always is one better way in gaining customers' trust. Product insufficiency often comes hand and hand with problems on competition. But the vendors always believe of best strategies to handle this like being always positive, giving of discounts or offering lower prices, maintaining the freshness of the vegetables and wearing good looks and gestures. And in coping up with inevitable circumstances like typhoons or floods often come for sure but thanks to the weather station because they can adjust to that situation.

DISCUSSIONS

The result provides information on how to run a business on vegetable vending and how this should be maintained in order not to result into a mess and waste of money. It demands capital, positive attitude towards the business, gaining trust and practicing honesty in all aspects in the business and giving all efforts towards its improvement as necessary in order to grow in the vegetable business. Nonetheless, the researcher found vegetable vending in the public market as perfect model for a healthy business. This suggests conduct of another research in the future.

KEYWORDS: marketing strategies, vegetable vending

SUBMISSION ID: R002-QUIRIN-0069

Online Entrepreneurs' Profile and Their 2018 Income: A Correlational Study

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(Adviser: Ma. Alona Dimaculangan)

Abstract

INTRODUCTION

Successful entrepreneurs are courageous enough to face risks and challenges, willing enough to persevere until their success is achieved and are eager to learn and explore new things. Many possessed the ability to sense and seize business opportunities. The prevalence of internet today results to increase in number of entrepreneurs especially the online entrepreneurs or people who do online-based business. Just like any other businesses, the amount of income of every online entrepreneur is uncertain, sometimes immense and other times not.

METHODS

This study used descriptive correlational research design, and researcher-made survey questionnaire with highly structured multiple choice questions in a form of checklist in gathering the data. Apparently, the participants of the study were chosen through the use of stratified random sampling, and to interpret and analyzed the data, weighted mean and Pearson Product Moment Correlation (PPMC) were the statistical treatments used.

RESULTS

Based on the gathered data, the correlation coefficient (r) equals to 0.521 indicated a strong relationship between the two variables and revealed that there is significant correlation between online entrepreneurs' age and their 2018 income. Accordingly, the p value = 0.000 indicated that there is a significant relationship between online entrepreneurs' profile specifically the age and their 2018 income.

DISCUSSIONS

The result of this study proves that the online entrepreneurs' age is one of the determinants of their income. Subsequently, their experience also plays crucial role on how to deal with their costumers' demands, concerns, and feedbacks. Learning from their it makes them more adept in the field of entrepreneurship.

KEYWORDS: online business, online entrepreneurs, online selling, entrepreneurs' profile

SUBMISSION ID: R04A-BATANP-2019

**Online Shopping vs. Traditional Shopping Among Selected Students of
Cavite National High School - SHS AY 2018-2019**

Maria Rosette Alialy
(Adviser: Dr. Ruel S. Arcon)

Abstract

INTRODUCTION

Every time we open our social media account, we always see advertisement from online shops. This made us to think of: there must be market for online shops; there must be reasons why there are people who prefer online shopping over traditional shopping; and how do online shopping compare with traditional shopping. From these ideas, we decided to make a research compare online shopping with traditional shopping.

METHODS

A mixed method of both qualitative and quantitative research will be used. The study will have as respondents 70 senior high school students at Cavite national high school senior high school both from the academic and technical-vocational tracks. The data will be obtained by using a questionnaire that was validated. The study was conducted at Cavite national high school senior high school department on November 2018. Interpretation and analysis of data followed.

RESULTS

Online shopping and traditional shopping were compared based on the following. Criteria: product selection and availability; prices; customer service; warranty and security. After presenting, interpreting and analyzing the data, the respondents prefer traditional shopping over online shopping.

DISCUSSIONS

Online shopping is a very promising business because of the technological trend at the moment. Owner of online shops should consider the following so that can be with further or over traditional shopping: to innovate and improve their marketing strategies; they should improve the security of the customers in order for them to trust online shops; make the prices more competitive to consider inclusion of shipping fee; there should be more product to select from and assured its availability; make your customer service more punctual in the example responses should be immediate; make the warranty more customer friendly to include a more comprehends warranty; and make the terms and condition of your service friendlier to the customer.

KEYWORDS: Online Shopping, business

SUBMISSION ID: R04A-CAVITC-0022

Overcoming Challenges in the World of Business in Selected Large Enterprises in the Municipality of Donsol

John Christian Trinanes, Student-SHS

(Adviser: Julius Caesar Averilla)

Abstract

INTRODUCTION

Challenges that are new and difficult requires great effort and determination. Overcoming challenges in one business is not easy especially when someone starting his/her business. Business is about not only studying individuals, communities, and organizations; it involves assessing their needs and problems, as well as generating solutions. It provides an increased understanding of mutual dependence though business system as people becoming increasingly dependent on others. Business is all about money and all about partnership. Entrepreneurs play a key role in any economy. These people have a skills and initiative necessary to anticipate current and future needs and bring good new ideas to market. This research determined on how the owners of large enterprises overcome the obstacles that their business faced.

METHODS

The study used descriptive method. It utilized survey questionnaire for data gathering. Simple statistical treatment were used such as frequency count, percentage, weighted mean and rank. The data were triangulated, analyzed and interpreted.

RESULTS

The existing practices in Overcoming Challenges in the World of Business on Selected Large Enterprises at Municipality of Donsol were identified such as the demographic profile of the respondents in terms of age, sex, gender, educational attainment and marital status. Then the selected respondents answered the survey questionnaire that was given by the researcher. In question number one what are the challenges that business owners faced? Most of them answered having a business competitors and the second questions is, how they can overcome the challenges when it comes to business? Majority of them answered they just want to give their best, never surrender and having a determination. The third question is, have you ever experience bankruptcy? Majority of respondents were not yet experience a bankruptcy. The fourth question is, did you ever experience bankruptcy? Most of the respondents were not expecting that their business is going to a bankruptcy. The last question was, as a business owner what ae your strategies to have a successful business? Majority of the respondents answered having a positive mind to be successful business owners.

DISCUSSIONS

Based on the findings, there is ten respondents were female and male. Majority of them were graduated in college and already married. Their business have long been for years and still they are successful and were not yet experience bankruptcy. To be a successful business owner it is important to have a enough or prior knowledge on how to run a business properly and do not come up to a bankruptcy.

KEYWORDS: challenges, entrepreneurs, large enterprises

SUBMISSION ID: R005-SORSOP-0008

Preparations Made by Businessmen on the Effects of Climate Change (Batangas City)

Nina Katherina Blanca & Danzel Ronquillo, Department of Education

Abstract

INTRODUCTION

Businesses are very significant because these serve as a form of an economic activity. Climate change has a great impact to businessmen. There are things that needs to be considered and preparation to be able to cope with the different effects of climate change. The study shows relativity of this scientific phenomenon on to business. The climate change has a big impact to the society and specifically to business. The purpose of this study is to determine the preparation made by the businessmen on the effects of climate change and assess the importance of having preparation on the effects of climate change.

METHODS

The data were obtained through the researchers-made questionnaire and general weighted average of the preparedness of the businessmen in different climate change scenarios and how they give importance on the preparations made by the businessmen on the effects of climate change. The information gathered were tabulated and computed to identify and evaluate the preparation made by businessmen on the effects of climate change and also to propose a plan of action on how to improve it.

RESULTS

Based on the findings of the study, the following conclusions were drawn: The businessmen in Batangas City are prepared on the different kinds of climate scenario particularly on extreme rainfall and the businessmen gave importance on the preparation made by businessmen on the effects of climate change particularly on the proper dissemination of information to the employees.

DISCUSSIONS

The researchers recommend that the businessmen should always be informed and ready on the different scenarios and effects of climate change that may occur, in putting up business, businessmen should consider the location, businessmen may be encouraged to have an agreement to insurance company and emergency kit should be intact.

KEYWORDS: business , climate change, problems

SUBMISSION ID: R04A-BATANC-0036

**Readiness in the Implementation of Senior High School Program as
Perceived by the Teachers and Students of Accountancy, Business, and
Management of the Tagaytay City Science National High School**

Vic Anthony Crucillo, SEAMEO Innotech Alumni Association

Abstract

INTRODUCTION

Senior High School, as part of the K to 12 Basic Curriculum, was developed in line with the curriculum of the Commission of Higher Education (CHED), the governing body for college and university education in the Philippines. Just like other institutions operating at its early stage that are encountering difficulties in different aspects of its operation, Tagaytay City Science National High School also experienced problems such as shortages of classrooms, insufficiency of learning materials, unconducive learning environment and the like. These difficulties become the basis of conducting this study. The researcher wants to determine how ready was the implementation of the program during its first two years.

METHODS

This study employed the descriptive method using the survey approach as its research design. Both primary and secondary sources of data were used in this study. This study focused on the different perceptions about the readiness of the implementation of the program for the school year 2016 - 2017 and 2017 - 2018. Statistical methods such as Likert Rating Scale, Weighted Mean, Frequency Count and Percentage, and Paired T-test were used to analyze the data to ensure validity and reliability of the results.

RESULTS

Majority of the perception of the teachers in relation to the implementation of the senior high school program were found to be ready in terms of policies and guidelines, ready in terms of providing the needed building, facilities, and equipment, ready in terms of providing the necessary learning materials, and very ready in terms of giving support to the programs and activities of the department. Perception of the ABM students in relation to the implementation of the senior high school program were found ready in terms of policies and guidelines, moderately ready in terms of building, facilities, and equipment, ready in terms of learning materials, and ready in terms of programs and activities.

DISCUSSIONS

The result shows the need for sufficient allocation of budget from the National Government to the Department of Education to provide the needed facilities and equipment in all primary and secondary schools to ensure the delivery of quality instructions. The teachers as the facilitator of learning may think of different approaches and strategies relevant for the teaching-learning process to counteract the barriers and loopholes in the educational system.

KEYWORDS: Readiness, Perception, Teachers

SUBMISSION ID: R04A-CAVITP-0917

Rose (*Rosa rubiginosa*) Petal Extract: A Natural Gulaman Extender

Lorielyn Guzman, TCSNHS

Abstract

INTRODUCTION

In our present time in which there is an abundant production of rose, everyone must be creative and open-minded on how to use this flower not just as decoration but also as a delicious dessert for everyone. The researcher had found out that rose petals could be eaten and could be transformed into something delicious dessert. The research project entitled "Rose (*Rosa rubiginosa*) Petal Extract: A natural Gulaman Extender" can make a big contribution in making rose more popular not just in decoration and romantic purposes but also for our country's economic growth, development and purposes.

METHODS

The researcher used the Descriptive Comparative Design under the non- experimental design and questionnaires using a five point rating scale (5-Strongly Agree, 4-Agree, 3-Uncertain, 2- Disagree, 1- Strongly Disagree). Through this type of research design, the researchers are able to compare the taste and effectivity of Gulaman extender which is obtained from rose petals. The product was conducted at Tolentino West, Tagaytay City. The respondents to the study were 30 persons from Tolentino West and 20 students from Tagaytay City science National High School.

RESULTS

The solubility of the sample was tested using water and water with gulaman powder as its solvent. The result of this test showed positive results. The researcher also tested the physical properties of the Gulaman Extender its odor and clarity. The result showed that all the physical properties were agreeable. The researcher used a five point rating scale to test the effectiveness of the product. The null hypothesis is rejected and therefore, the alternative hypothesis is accepted. Based on the result of the study, Gulaman Extender was produced from rose petal extracts.

DISCUSSIONS

Results showed that the gulaman extender has some properties of a gulaman and rose petals are capable of producing gulaman extender. The rose used by the researcher was cheaper and safe because the materials used were found at home or even at the market. Through this study, citizens will be aware that rose petals can contribute a lot in pastries and dessert making. The researcher planned for a follow-up studies on other flowers that can be an effective raw materials to produce gulaman extender. Hopefully, this study will eventually help in business men, vendors and in our country's economic growth.

KEYWORDS: rose petal

SUBMISSION ID: R04A-CAVITP-0733

The Secrets of Business: A Key for Successful Business Managers

Arman Melgar, Student-SHS
(Adviser: Julius Caesar Averilla)

Abstract

INTRODUCTION

Achieving success! All of us want success. They know the secrets of success. Success comes by hard work and perseverance if you want to success you must know the value of time. Time is gold. Lost time means a lost opportunity. The punctuality and economy of time lead to success and happiness. Action is the foundation key to all success. By Pablo Picasso. Successful people are always asked what the key to their success is, and their success generally stem from determination. However, action is the foundational key to all success. According to well-known professors William Pride, Robert Hughes and Jack Kapoor, business is the organized effort of individuals to produce and sell, for a profit, the goods and services that satisfy society's needs.

METHODS

This study used descriptive method to descriptive on how to be successful business managers. The main goal of descriptive method is to describe and analyze the data and the strategy of business owners. The research method course focuses on analyzing and solving in a systematic way. Descriptive statistical tools were also applied in data analysis, data collective through questionnaire.

RESULTS

The secrets of being successful businessman and businesswoman as perceived by the successful business ownerships were identified. The secrets being successful business were having good accommodation for customer, to have a good business in terms of decision making and strategy were having asking opinion of other and good accommodation for customer. overcoming the challenges in facing failure in business were keep strong and pray to God and also being successful when it comes to business were having have an ability and skills to manage business. A proposed action plan to have a successful business, to those have business should attend the seminar and work shop to give new ideas and new strategy to use the business for being successful.

DISCUSSIONS

Based on the findings all of the respondents believed that in starting a business you must have a strong determination, confidence, and also have faith in God. Studies affirmed that it is important that when you plan to build a business you should have a knowledge if you want to be a successful one. The findings of this current want to give enough knowledge about business to future researcher.

KEYWORDS: business, stories, success

SUBMISSION ID: R005-SORSOP-0009

Solid Perfume Out of Sampaguita Essential Oil

Anita Erni, Tagaytay City Science National High School

Abstract

INTRODUCTION

The study aims to determine the effectiveness of sampaguita as a component in making a solid perfume. It was conducted at Tagaytay City Science National High School from October to February 2016-2017.

METHODS

The study made used of voting scale of yes, no or maybe to determine the product if it is effective or not. Based on the way of information was collected, synthesized in this study, the descriptive quantitative and experimentation design was employed. The researchers are conducting a study about the solid perfume out of sampaguita essential to help people to save their money in buying an expensive perfume.

RESULTS

Based on the finding of the researchers the solid perfume out of sampaguita essential oil can help people to save their money.

The respondent had experienced the difficulty on self-paced approach. It was seconded by working hard parallel to learner schedule of studying as shown. The researcher choose this study to make their knowledge be more helpful to their lives and to others.

DISCUSSIONS

The study was entitled "Solid Perfume out of Sampaguita Essential oil". It was conducted at Tagaytay City Science National High School from October to February 2016-2017. Through this research project, the researcher aim to contribute in saving money to the people who couldn't afford to buy expensive perfume.

KEYWORDS: jasmine sambac, essential oil, beeswax, sampaguita essential oil

SUBMISSION ID: R04A-CAVTP-1172

Stories of Success Among Business Owners in the Municipality of Donsol

Alyza Warde, Student-SHS
(Adviser: Julius Caesar Averilla)

Abstract

INTRODUCTION

Business is an organization or economic system where goods and services are exchange for one another or for money. Every business requires some form of investment and enough customers to whom its output can be sold on a consistent basis in order to make a profit. This research determined the Stories of Success among Business Owners in the municipality of Donsol wherein the respondents of the study owned the following business establishments: hard wares, Enterprises, Merchandising, Stores and Food chains businesses.

METHODS

The study made used of voting scale of yes, no or maybe to determine the product if it is effective or not. This used descriptive survey method, participants answer question through a survey data connection, such as questionnaire or interview. This method is used for knowing their story or experience on how to be a successful in managing their business or how to run a business, and to have faced struggles to know everything associated in handling a productive business. Simple focus group discuss was also facilitated to verify the data gathered.

RESULTS

Findings were (1) Out of fifteen respondents female were nine with a percentage of sixty percent while male were six with a percentage of forty percent. In terms of ranks female were rank one while male rank two. Female have the highest number of business owners who will succeed. (2) Out of fifteen respondents they had a different number of ages. And the findings of respondents were not too old. (3) Out of fifteen respondents high school graduate were two with a percentage of thirteen percent while the college graduate were thirteen with a percentage of eighty percent. In terms of ranks, high school graduate were rank two while college graduate were rank one and elementary graduate were third rank. Most of the respondents were graduated in college. (4) Sari-sari store has the highest type of business that we gathered in the municipality of Donsol.

DISCUSSIONS

Based on the fore mentioned findings and conclusions were drawn, the following recommendation were made. (1) The researchers recommended to have an interviews, sharing ideas about business strategies and planning to know the stories of success among the business owners. (2) The researchers recommend attending seminars for them to share knowledge on how to be successful one. (3) The researchers strongly recommended, to give a symposium just like sharing story about how you lived your life until you succeed, to inspire those dreams to improve what they have to.

KEYWORDS: businees, management, finances

SUBMISSION ID: R005-SORSOP-0007

**SWOT and PEST: Effective Management Tools in Increasing the
Income Rate of Small Scale Businesses in Rosario, Cavite**

Marco Lim, Student

Abstract

INTRODUCTION

Many entrepreneur nowadays disregards important matters in the business, thus, a large number of entrepreneurs, specially the small ones, suddenly closed the business immediately. With that, many entrepreneurs will not gain enough profit to sustain everyday needs. The study made innovations that will help small entrepreneurs not just to survive but to gain profit leading to become successful in the field of business.

METHODS

This study used Pre-Experimental Quantitative-Descriptive method using T-test for dependent samples of data utilizing the one- group, pretest-posttest design. The chosen participants were 40 entrepreneurs from 20 barangays in Rosario, Cavite who were identified according to the given proportionate representation of the subject. Data were collected through the use of entrepreneur's handbook and workbook that was divided into six parts: pre-test and initial income rate, definition and ways to conduct SWOT and PEST, making of own SWOT and PEST, action section, posttest and ending income rate, and daily income and expense. The said study was measured the effectiveness of the intervention within three weeks through standard deviation and mean of initial and ending income rate.

RESULTS

The entrepreneurs' utilization of handbook provided the positive results to the variables of the study where it suggests rejecting the null hypothesis and accepts the alternative one. It also suggests that there is significant difference on the listed initial and ending income rate of the entrepreneurs that used entrepreneurs' handbook and workbook as intervention program for increasing income rate, thus, said intervention program highly affected and improved the income of the said entrepreneurs.

DISCUSSIONS

The results helped the entrepreneurs to search for the factors that affects the business to fails easily and appropriately used those factors in order to overcome the arising problems within the business.

KEYWORDS: SWOT & PEST, Small Scale Business, Descriptive, Pre-Experimental, Entrepreneurs, Cavite

SUBMISSION ID: R04A-CAVTP-0566

The Talipapa Business as a Marketing Option for Agricultural Crops

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Abstract

INTRODUCTION

Agriculture is a major source of income in the province of Quirino. Diffun as one of its municipalities known as capital of vegetables producer in the province. Variety of vegetables plantation can be found in some barangays of the municipality. Farmers in the municipality are classified into different distinct groups as to the size of plantation. In any of the classification of farming engaged by farmers they face challenges in their marketing process as prices of vegetables are indefinite. Thus, this paper has the intention to look into other marketing option other than to the usual marketing process they engaged into.

METHODS

The study was done through a qualitative approach. The researcher utilized case study. To be able to get the necessary information, an in depth interview was conducted. Undertakings of the study include also data collection and analysis grounded in observation.

RESULTS

Majority of the talipapa (small merchant) owners are all farmers. Mostly of them owned farm, a plantation of vegetables. They did not have actually the intention of starting the business. It only happened that this is the only option they can used to market their vegetables to gain profitable return of investment from farming during the time when vegetables are in low price in the public markets. Rather than spending transportation of the yields to public markets they opted to create a small merchant business in their own places. Talipapa engagement is one viable source of stable source of income for farmers or even entrepreneurs who find it as opportunity from their places. This usually is a trend among entrepreneurs with low source of operating capital. Further, it is a fact that low income earners are the customers of talipapa operations. The talipapa as observed is a hub for low income groups with low purchasing power. And these are of benefit to the low income groups or small entrepreneurs. In fact, testimonies of talipapa owners are evident for its adoption. Majority of them started from small operating capital until it becomes a substantial business that can offer numerous classifications of goods needed by people.

DISCUSSIONS

The result of the study shows that talipapa business is highly recommended among small entrepreneurs. It is highly recommended to people who are living in the barrio or compound most especially when their houses were built along street. Talipapa business is also found helpful to farmers as this business may serve as their option to market their yields.

KEYWORDS: talipapa, marketing, agriculture

SUBMISSION ID: R002-QUIRIN-0064

The Advantage of Business Ownership on the Socio-Economic Status of Entrepreneurs in Poblacion San Juan, Batangas

Shiella May Ilao, San Juan Senior High School

Abstract

INTRODUCTION

Family income is a basis of socio-economic status. Being rich or poor can be caused by how active and efficient a family is in generating income. Aside from being an employee, having an own business is one of the best choices when talking about earning an income. Regarding that, either having their own small business or work for a salary are the main source of income for the people of Poblacion, San Juan, Batangas. This research tends to know the edge of having small business over working as an employee when talking about their status in the economy through family income.

METHODS

The study used the descriptive method of research to know the advantages of business ownership towards socio-economic status. Thirty respondents were chosen among the entrepreneurs from Poblacion, San Juan, Batangas through random sampling.

RESULTS

This research showed that the majority of the business owners or more than half of the respondents belong to lower middle income with $\hat{a}, \pm 15000 - \hat{a}, \pm 30\ 000$ monthly income. There were also entrepreneurs who belong to middle class ($\hat{a}, \pm 31000 - 80000$), upper middle income and rich. Only two out of the 30 respondents belongs to poor who have less than $\hat{a}, \pm 10000$ monthly income. It can also be inferred in the research that having an own business is an advantage, not only in terms of financial rewards but also on their lifestyle. Being the business owner gave them more freedom as their boss himself/herself, therefore, they can control their own time and decisions about their work. Moreover, majority of the respondents strongly agreed that having an own business can help a lot of people through providing work and is also one of their advantage.

DISCUSSIONS

Based on the results, business ownership could truly help in achieving the desired socio-economic status. Therefore, business owners should make their business more successful to gain higher income and also to continue helping other people. They should know how to use their income properly, and set aside the personal expenses from business expenditures. Completing every responsibility of their own and having plans and strategies could also be helpful.

KEYWORDS: Business, entrepreneurs, ownership, socio-economic status

SUBMISSION ID: R04A-BATANP-0763

The Change in Education in the Philippines, Including the System in Education: The K to 12 Program Under the Department of Education (DepEd) and the Expansion of the Basic Educational Cycle

Stephany Arceo, Francin Sese, & Aron Anthony Bungay, PCHS Students
(Adviser: Alma Tan)

Abstract

INTRODUCTION

This paper describes a study about the relevance of the K12 Program in choosing the Technical Vocational Livelihood Track and determining factors in choosing a future career. The study was undertaken among grade 11 students of PCHS (San Simon) Inc. The result of the study will reveal findings that will help improve decisions of students and gain information in pursuing TVL-related courses. As student-researchers, the study will influence SHS in choosing a career or course of the students in college to help the students in choosing a right course for them that is suited to their capabilities.

METHODS

The paper will use the descriptive method of study. The researchers made use of quantitative research and descriptive research method. According to Williams (2007), quantitative research refers to the process of analyzing, collecting, writing, and interpreting the results of the study. The descriptive method of research, on the other hand, involves asking a set of questions to a large group of people or institutions whose responses will be tabulated later on.

RESULTS

Based on the findings of the study, the following recommendations are given such as institutions or school should choose or find an industry partner that can give each student a quality work immersion learning so that the students can choose a right or better choice of career in college. Thus, SHS focal person, Career guidance and industry partners should improve their programs in to give the students proper background. Further studies can be conducted on the developed school program for innovation such as entrepreneurial activities and technical vocational community activities.

DISCUSSIONS

The change in education in the Philippines including the system in education which is the K to 12 program under the Department of Education (DepEd) which is the expansion of the basic educational cycle to ten to twelve years in comparison with other globally competitive countries' educational system as the main education agenda of the Aquino's administration. Today's system has developed from traditional to contemporary which caters the need for the globally competitive learners through the K-12 Program.

The K to 12 program in the Philippines was enacted into law on May 15, 2013 through Republic Act 10533, otherwise known as the Enhanced Basic Education Act of 2013 (EBEA). K-12 implementation provides two years of specialized upper secondary education and students may choose a specialization based on aptitude, interests, and school capacity. The choice of career track will define the content of the subjects a student will take in Grades 11 and 12. Each student in Senior High School can choose among three tracks: Academic; Technical-Vocational-Livelihood; and Sports and Arts and will take core applied subjects and specialized subjects. The challenge is transcends in the decision of the learners to choose career specialization that will enable the students use their full potential.

This study aims to determine the factors on what are the reasons why they choose the TVL strands. In this generation, students are easily influenced by different factors and decide without any consideration. Thus, researchers want to test and to know what are the factors that affect the students in choosing a Technical Vocational Track in Pampanga Central High School (San Simon) Inc.

The change in education in the Philippines including the system in education which is the K to 12 program under the Department of Education (DepEd) which is the expansion of the basic educational cycle to ten to twelve years in comparison with other.

KEYWORDS: Business, entrepreneurs, ownership, socio-economic status

SUBMISSION ID: R003-PAMPAN-0001

**The Feasibility Study of Setting Up a Computer Shop in the Town of
Pooc, City of Santa Rosa, Laguna, Philippines 4026**

Jennilyn de Guzman

Abstract

INTRODUCTION

An internet café, or most commonly known as computer rental shop, is a place where one can use a computer with Internet access, most for a fee, usually per hour or minute. These types of establishments are very common in the country. Rental internet shops started out in the late 1990's as all shops a center in which computers are networked in order to play all games. Internet connection then was dial-up and relatively expensive therefore only a few shops offered internet service.

METHODS

This study aims to establish an Internet Café business. This study will be based on management, marketing, technically, socio- economic, and financial aspect of the business. Managers and owners will be covered as part of the respondents. They are students of different schools who are near the proposed location the schools that will be covered are Tarlac State University, College of the Holy Spirit Ecumenical Christian College and other internet users within the vicinity.

RESULTS

The potential and the size of the possible target market.

The location of the study where it will be accessible.

The marketing strategy, technical, and operational requisites needed in the business.

DISCUSSIONS

The capital requirement and financial feasibility of the proposed business venture.

The contribution of the computer shop to the community.

KEYWORDS: business organization, owner, management

SUBMISSION ID: R04A-CABUYA-0049

The Relationship Between the Marketing Strategies and Sales of Red Ribbon and Goldilocks at Balayan Public Market: An Evaluation

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Abstract

INTRODUCTION

Marketing strategies are one of the key factors that help the business boost their sales. These strategies also introduce the business to its market. The researchers came to the idea of evaluating the marketing strategies of the two dominating and popular bakeshops in Balayan, the Red Ribbon and the Goldilocks, knowing how marketing strategies affects the sales, determining the significant relationship of marketing strategies and sales of Red Ribbon and of Goldilocks.

METHODS

It is a quantitative research with a descriptive and correlational method of research design. Questionnaire method of data collection was used in this study to obtain primary and personal data. The researchers made use of Five-point Likert Scale method wherein the respondents were asked to rate if they were agreeing or not in the given statements written in the questionnaire. Non-Probability Sampling was used in evaluating the relationship marketing strategies and sales of the businesses specifically the Purposive or Judgmental type of this sampling technique and the respondents were the managers and his/her subordinate workers of Red Ribbon and Goldilocks. T-Test of Independent Sample Means was also used in the study and Pearson and Product Moment Correlation for the relationship of the two variables.

RESULTS

The study showed that the Red Ribbon and Goldilocks were practicing various marketing strategies and those strategies were helping them in introducing their products to the market, attracting customers and increasing their sales. The researchers found out that the p- value was 0.63 with an interpretation of not significant and Pearson "r" value of 0.63 in Red Ribbon and 0.75 in Goldilocks with an interpretation of both moderate positive correlation.

DISCUSSIONS

Therefore, the researchers found out that the marketing strategies practiced by the Red Ribbon had no significant relationship with the marketing strategies used by Goldilocks and there was a significant relationship between the marketing strategies and sales of Red Ribbon and of Goldilocks. Thus, both Red Ribbon and Goldilocks may add and make more creative and innovative marketing strategies that can surely give a positive effect for their sales, profitability, growth and success.

KEYWORDS: Marketing strategies, sales, increase

SUBMISSION ID: R04A-BATANP-0732

The Sustainability of Micro Enterprises in the Municipality of Diffun

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(Adviser: Jaybert Cabanero)

Abstract

INTRODUCTION

Sustainability of micro enterprises in the world of business has a great contribution on the development of the community and for the employment growth. The micro enterprises consist of continuous innovation in the face of surmounting economic, environmental and social challenges and require corporate flexibility to thrive and survive. This paper tends to identify the key success factors used by the micro enterprises in sustaining their business for a long period of time.

METHODS

Quali-quantitative method of gathering data was used in this research. The researchers made use of questionnaires answered by the respondents after which data were collected and validated through an in-depth interview to further get some clarifications and explanations from the respondents.

RESULTS

The owner of micro enterprises believed that before starting a business, they always have a plan particularly of citing a strategic location. It is really hard to put up a business because of some interventions like government policies, proper marketing skills and also the capability of a businessman to operate a business. Strategic location of the business is one of the strategies to get the customers and to patronize their products. In some cases, reason why small businesses cannot sustain their business is because of high rental in their market place. Building trust to customers is one aspect to be observed among the owners particularly in giving them the exact orders. Customer relationship must be observed always. In a business there are a lot of competitors that is why business owners must have the different strategies in order to compete with their competitors and in order to sustain their business. Profitability is the most important factor in determining the survival of micro enterprises, as lack of capital or financial resources pose a major obstacle to business development.

DISCUSSIONS

The result of this study shows that to sustain micro enterprises and make business progressive it demands key success factors like profitability, passion for business, engagement to stakeholders, flexibility, and innovation. Strategic location and market profiling are two of the major important variables in determining potential success. It has a good and dire consequence to business profitability, growth and survival. The micro enterprises can be sustainable in the long run through the presence of certain practices that are found in all surviving and successful enterprises. This suggests conduct of another research in the future.

KEYWORDS: sustainability, micro enterprises

SUBMISSION ID: R002-QUIRIN-0065

Understanding the Business Model of Kapwa Greens Enterprise and its Role in Social Development

Nenita Directo, Majayjay District Personnel Association, Ma. Tatiana Amat, Dolores Development Cooperative, Jericho Kua, Toyota San Pablo, Inc., & Jean Tanalega, STI Education Services Group, Inc.

Abstract

INTRODUCTION

In the last decade or so, there has been a growing interest in an area that Entrepreneurship is generally characterized as the exploitation of an opportunity in order to create value. There has been an unexpected wave of growth in social entrepreneurship globally (Bornstein, 2004). This growth is followed by a number of researches in the field. Academic research has been mainly focused on defining what social entrepreneurship is, what it does and does not have in common with commercial entrepreneurial activity (Nicholls, 2006).

METHODS

This research is conducted on Kapwa Greens Enterprise, a social enterprise in the Philippines and is directed to understand its business model. Primary data is collected from interviews with the people managing the enterprise as well as with the community it serves. Secondary data comes from books, articles, journals and websites. The data are analyzed with grounded theory method. By completing the Business Model Canvas, the objective of this research is to understand business model of Kapwa Greens Enterprise as a means of fulfilling its social mission and ensuring sustainability. Description of the impact of the enterprise had been provided. Business models are designed and executed in specific environments.

RESULTS

Kapwa Greens' Tsaa Laya production started at the Calauan Resettlement Community, a resettlement site for the victims of typhoon Ondoy. It established a tea-making plant at Calauan Resettlement Community and produced Tsaa Laya. They initially worked with the support of the community leaders and caretakers, the Don Bosco Fathers and the Ayala Foundation. Together, they transformed 3 housing units into a tea plant. As opposed to other enterprises starting up in the area where they provide jobs are provided to the people by hiring them, Kapwa Greens introduced partnerships with the community members. They offered, not only jobs, but a livelihood where the community feel ownership of the enterprise.

DISCUSSIONS

It is important to take note that in developing a good understanding of the organization's environment will help conceive a stronger and more competitive business models. Kapwa Greens made significant contributions to the lives of its community partners, the "nanays." The impact may not yet be quantitatively significant, but it can be said that it is qualitatively significant to the people it implored, to their families and immediate community.

KEYWORDS: business model, greens enterprise, social development

SUBMISSION ID: R04A-LAGUNA-0258

Understanding the Business Model of Kapwa Greens Enterprise and its Role in Social Development

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KEYWORDS: business model, greens enterprise, social development

SUBMISSION ID: R04A-LAGUNA-0258

BUSINESS ADMINISTRATION

**Awareness of Islamic Business Standards and Problems Encountered by
Muslim Entrepreneurs in Batangas City**

Audrey Mayele Kay B. Balmes, Hannah Jo Marie C. Cabatay, John Christopher
E. Dela Cruz, May Angelu G. Beloso, & Shaughn Hendrix Gabriello B. Arceo
(Adviser: Lander Joseph Ilagan)

Abstract

INTRODUCTION

in Batangas City, Muslim entrepreneurs in both publicly and privately owned market spaces continue to flourish. They compete with local entrepreneurs for customer loyalty and sales. In this study, the researchers intend to assess the Muslim entrepreneurs' awareness of Islamic Business Standards and the problems they encounter in conducting business.

METHODS

Descriptive study was used. Self-made questionnaire validated by a technical expert was administered to respondents who were selected through convenience sampling. Data were analyzed using descriptive statistics.

RESULTS

Results show the Muslim entrepreneurs' knowledge in Islamic Business Standards and the problems they encounter in conducting business. Faithfulness to the teachings of the Quran serve as a guide in managing their businesses as Islam encourages Muslim Entrepreneurs to actively participate in the trade and investment industry. However, because of the Moro problem, racism is experienced by most.

DISCUSSIONS

Results indicate that expansion of Muslim business opportunities is governed by Islam and its teachings. Stereotypes affect the local citizens' receptiveness to their business. Nevertheless, economic opportunities and business policies make them thrive in the city.

KEYWORDS: Islam, entrepreneur, business standards

SUBMISSION ID: R04A-BATANC-0460

Building and Maintaining Good Leadership within an Organization

Ma. Niña Papa

Abstract

INTRODUCTION

Leadership is a function of one's educational background, value system, direct and vicarious experiences, and personality. It is determined by certain individual personality traits, social traits and significant physical characteristics. Like other business enterprise, jewelry shops have set objectives for them to be successful. Cea's Jewelry Shop aims to maximize their profits and sales. They also want to be the fastest growing industry in the country by offering high quality products at affordable prices.

METHODS

The proponent of the study used a qualitative descriptive design to analyze the relationship between the business owner and the employees. Participants' perspectives were examined using structured interview questions. A ten-item survey questionnaire was given to the owner. The results support that good leadership matters in an organization.

RESULTS

As a result, it is better to understand the leadership style of a business owner on certain tasks and duties. Leadership needs planning, coordination, cooperation, and team work. When an entrepreneur does not have these characteristics, the business may not be successful. It also shows that in making decisions, the owner should always consider the decision of their subordinates. Once they have a decision to be made, the business owner asks help from them and respects their decisions. They always help each other even in the simplest things for the sake of the business. Treating employees and colleagues as family members were factors that contributed to good relationships within the organization.

DISCUSSIONS

Leadership is a characteristic that every entrepreneur has. This would help them to manage their business as well as their subordinates. It helps the leader to connect with employees within the organization. Leadership needs planning, coordination, cooperation, and team work among its members. When an entrepreneur does not have these characteristics, the business may not be successful.

KEYWORDS: Leadership, empathy, responsible, cooperation, respect, success, business environment.

SUBMISSION ID: R04A-CAVTP-1037

Comparative Analysis "on Sales Strategies on Microbusiness"

Yvette Cape, Researcher, RMDC
(Adviser: Noel Natividad)

Abstract

INTRODUCTION

Businessmen have their own strategies. Success depends upon how effective and efficient the strategies of business owners are. The researchers were motivated to conduct this study to find out the result of the comparative analysis of sales strategies on micro business. The purpose of this study is to determine the strategies employed by the businessmen. Specifically, it answered the following questions: (1) What are the strategies in marketing products? (2) What are the challenges encountered in product selling? (3) How do businessmen maintain profit for selling products? (4) Is the profit enough for daily expenses?

METHODS

The researchers used a descriptive qualitative method focused on the opinions, experiences and answers from the participants' perspective. This method includes observation, questionnaire, and interview. The data were gathered through interviews with six selected businessmen as participants of this study. The recorded interview was carefully transcribed word for word. Transcription serves as the basis of study conclusions and findings. Themes were patterned across data sets that were important to the description of phenomena.

RESULTS

The answers of the respondents on the question above, and select significant statements from the respondents, were used by the researchers to come up with the following themes: Theme 1 is focused on the business strategies that are performed by the businessmen and businesswomen; Theme 2 highlights the customers satisfaction on the product; Theme 3 is all about the challenges that the businessmen and businesswomen encountered; Theme 4 is concentrated on the benefits that the businessmen and businesswomen gain from their business.

DISCUSSIONS

As Accountancy and Business Management (ABM) students, it is important to know the different strategies of businessmen and businesswomen that can be applied to future businesses. Future entrepreneurs can adopt their ideas in order to build a business. Unity is one way to achieve targeted goals that this study needs. In completing this study, the researchers encountered different strategies of businessmen and businesswomen on micro business. The participants of this study gives inspiration on how to manage micro businesses.

KEYWORDS: sales, strategies, micro business

SUBMISSION ID: R04A-STAROS-0008

**Customer's Rating: Effective Marketing Strategies of Small Businesses
in Maddela, Quirino-Public Market**

Marian Kate Barcebal, Department of Education
(Adviser: Shaila Tanglod)

Abstract

INTRODUCTION

Thousands of small businesses start every year but a significant number of them fail by the first year of their operation or earlier while majority shut down before their second year. Small businesses in Maddela are increasing rapidly. With that, the researchers' topmost priority is to fill the gap in understanding the marketing strategies of small business entrepreneurs that help them last in the industry. The purpose of this study is to provide information about imperative marketing strategies.

METHODS

The researchers used descriptive research design. Data were collected using a questionnaire composed of 10 questions focused on service quality, marketing strategy and store environment. 50 owners of small scale businesses around Maddela, Quirino were identified and randomly selected. The researchers identified their sex and civil status (single or married) in identifying significance.

RESULTS

The highlights of the study are as follows: (1) majority of the respondents were female (70%). There are more married (66%) respondents than their single (34%) counterparts; (2) there is no significant difference on the marketing strategies of small businesses when grouped according to sex with a (.972) p-value which is greater than the level of significance at 0.05; (3) there is no significant difference on the marketing strategies of small businesses when grouped according to civil status. With a p-value equal to 0.68 that is greater than the level of significance at 0.05

DISCUSSIONS

The result shows that sex and civil status were not factors in the increasing closure of these small businesses. Hence, the great importance of the strategies of these entrepreneurs on small scale business prevails as these are the most crucial and effective way of running a business. These imperative strategies are worth adapting to address the created demands of the public through globalization and technological advancement.

KEYWORDS: Marketing Strategies, Small Business, Entrepreneurs

SUBMISSION ID: R002-QUIRIN-0057

**Dimension of Service Quality of ASA Philippines Foundation, inc.
Microfinance institution: An Assessment**

Bendalyn Landicho, Batangas State University

Abstract

INTRODUCTION

Microfinance institution or MFI is widely acknowledged today as a tool for assisting people in alleviating their poor condition. Microfinance is the practice of providing credit, insurance, savings, and other financial services to very poor clients who are unable to avail of such services from traditional banks and insurance companies. Microfinance gives them the tools to start small businesses and generate income, in order to move up the economic ladder and become self-sufficient. Service quality is determined by what the customers perceive. With this, the researcher opted to conduct this study to assess the service quality of ASA Philippines Foundation, inc.

METHODS

To meet the purpose, the descriptive method was utilized in the study. The researcher conducted library research for research literature as well as browsing the internet. A standardized SERVQUAL questionnaire was distributed to ASA clients of 5,890 who availed the MFI services- loans in particular. All the collected data were tallied, interpreted, and analyzed through percentage and weighted mean.

RESULTS

Most of the respondents are female, ages 35 - 44 years of age, belonging to family with 6-8 members, married, able to finish their secondary level of education, and a micro-entrepreneur. All assessments considered on service quality of MFIs using its dimensions are indicative of differences or negative gap scores implying that the expectations are not met by these MFIs in delivering quality service to their clients. As to customer satisfaction, understanding the responsibility and liability of a member is essential. Reliability, responsiveness and empathy are significant to customer satisfaction. Customer satisfaction has a positive effect on an organization's profitability. The more customers are satisfied with products or services offered, the more successful the business is. Customer satisfaction leads to repeat purchase, brand loyalty, and positive word-of-mouth marketing.

DISCUSSIONS

The ASA Philippine Foundation, inc., shall look into the process of how clients make their expectation and perception as this can be a subject to strategies. There is a great need to strengthen and observe the selected policy, especially on transactions concerning the purchase of products and services to avoid more problems.

KEYWORDS: Microfinance, MFI, Service Quality, Poverty, ASA Phils.

SUBMISSION ID: R04A-BATANC-0270

Employer's Expectation in Job Performance of MBA Graduates in Selected Companies in Batangas City

Nelvin Valles, SHS-Teacher II & Joyce Anne S.Valles, SHS-Teacher

Abstract

INTRODUCTION

Today, education is important in gaining respect as much as attaining success in life. The purpose of this paper is to determine the breach between the employer's expectations and the performance of MBA graduates. The educational institution and banking sector was chosen for this study. This paper also focuses on the current expectations of employers towards MBA graduates.

METHODS

Descriptive research design was used to determine the employer's expected job performance of MBA graduates in select companies in Batangas City.

RESULTS

The findings indicated that the null hypothesis of no significant difference in the expectations in MBA graduates among different group of respondents is accepted. This means that the two groups of respondents have the same level of expectation for MBA graduates. This only implies that the expectation for MBA graduates as to attitude is affected by their position in the company, while the expectation of the employers for the skills of MBA graduates depends on the age and position of the employers as well as their knowledge.

DISCUSSIONS

The conclusion recommends that MBA graduates may have more focus in the knowledge aspects. Knowledge is a very important factor to the employers in the banking sector and educational institution when it comes to recruitment. They hired not only those people who have good attitude and competency but also those who are qualified because of their knowledge. The universities who produce MBA graduates may seek new teaching methodologies and develop more programs to enhance the competency of their graduates aligned with the KSA approach.

KEYWORDS:

SUBMISSION ID: R04A-BATANC-0229

Employer's Expectation in Job Performance of MBA Graduates in Selected Companies in Batangas City

Nelvin Valles, SHS-Teacher II

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INTRODUCTION

Today, education is merely important in gaining the respect as much as attaining success in life. The purpose of this paper is to determine the breach between the employer's expectations and the performance of MBA graduates. The educational institution and banking sector was chosen for this study. This paper also focuses the current expectations of employers towards the MBA graduates.

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DISCUSSIONS

The conclusion leads to recommendation that MBA graduates may have more focus to the knowledge aspects. Knowledge is very important factor to the employers in the banking sector and educational institution when it comes to recruitment. They hired not only those people who have good attitude and competency but also those who are qualified because of their knowledge. The universities who produce MBA graduates may seek new teaching methodologies and develop more programs to enhance the competency of their graduates aligned with the KSA approach.

KEYWORDS:

SUBMISSION ID: R04A-BATANC-0246

Factors Affecting Career Choices Among Grade 11 Students Based on Hexagonal Model of Personality in General Flaviano Yengko Senior High School: Basis for Career Development Plan

Annabelle Bughao, General Flaviano Yengko Senior High School

Abstract

INTRODUCTION

Career selection is one of the biggest decisions of students in pursuing their future. Students must consider many things when choosing a career including Senior High School Track and Strand. Whatever decision they make will have a great impact on their lives.

METHODS

This research used the descriptive design. A Career Profile Portfolio and Hexagonal Model of John Holland Typology of Personality was used to gather the data. The first instrument measured the Grade 11 students' choice of the factors that influenced their career choice, and the last instrument measured the Grade 11 Students' preferences on career types. The data were subjected to statistical analysis, weighted mean, percentage and ANOVA. The Grade 11 students of General Flaviano Yengko Senior High School were the respondents of the study.

RESULTS

Based on the data gathered, it was found that most of the Grade 11 students aged 17 years old, female and belonging to the ABM Strand. The respondents have been classified as social, enterprising and artistic and characterized by the financial sub-factor of the Career Profile Portfolio variable that gives the highest mean of 4.864. The ANOVA result shows that there is no significant difference among Grade 11 students in General Flaviano Yengko Senior High School based on Hexagonal model of John Holland Typology of Personality.

DISCUSSIONS

The result determines the significance of having a RIASEC Test for the students to identify easily which track they belong. The researcher recommends that every institution should have career orientations, psychological examinations, and personality aptitude student's examinations to boost their morals, awareness and attitude, and to create a career center for their Senior High School students to guide them in their future career choice. The guidance counselor/s and professors should guide the students in their career choice and future researchers should continue to gather more data related to this study, and may propose some career intervention plan that can help more Senior High School students.

KEYWORDS: career choice, Hexagonal Model, Career Development Plan

SUBMISSION ID: R04A-IMUSC1-0001

**Group Behavior of Lemery Senior High School Teachers: Basis for
Human Resource Development Program**

Jeffrey Cabral, Lemery Senior High School

Abstract

INTRODUCTION

Lemery Senior High School is just a newly established academic institution, the people within the organization wanted to carve its own organization culture that will be the foundation of how they will perform within. The researcher aimed to assess how the teachers behave within the group. The outcome will be the basis of the proposed Human Resource Development program to intensify the group support system among teachers in Lemery Senior High School that will result in attaining the Department of Education vision and mission.

METHODS

The descriptive method of research was used in the study. The researcher distributed questionnaires to 30 pioneer teachers. It was designed to collect information about the group behaviour of Lemery Senior High School teachers. Furthermore, the researcher used statistical treatments such as frequency, weighted mean and Likert scale to analyze the gathered data.

RESULTS

Considering the demographic profile of the teachers, the study described how teachers behave amidst the four indicators of group behavior; diversity, group role, peer influence and conflict handling styles. The result shows that teachers strongly believe that there is diversity among teachers. Most of them preferred the "encourager" role on a team. They have an exchange influence to co-workers and other peers. They also prefer a problem-solving style of conflict handling. Thus, there is no significant difference between the four indicators of group behaviour of Lemery SHS teachers when grouped to age, civil status, educational attainment, position, employment status and nature of past work. However, there is a significant difference in team roles when group according to sex.

DISCUSSIONS

The result revealed the need for a Human Resource Development program focused on intensifying the group support system of teachers to constantly attain the Department of Education vision and mission. This may be achieved through the inclusion of diversity concepts and discrimination to GAD training, HRD seminar to school heads, team building activities and mentoring system and formation of the grievance committee and open guidance counseling for teachers.

KEYWORDS: diversity, team role, peer-influence, conflict handling styles

SUBMISSION ID: R04A-BATANP-2300

**Kash Towards Entrepreneurship Among Senior High School Students:
Bases for an Entrepreneurial Career Plan**

Annabelle Bughao, General Flaviano Yengko Senior High School

Abstract

INTRODUCTION

Entrepreneurship is very vital in one individual and community as well. It can generate income and employment. Young Entrepreneurs must have knowledge, attitude, skills, and habit for entrepreneurial success. The harmony of knowledge, attitude, and skills leads to competence. The study was undertaken to examine the knowledge, attitude, skills, and habits of senior high school students towards Entrepreneurship using the Purpose Driven Entrepreneurship, their demographic characteristics and to determine the gender influence in the variables that shape entrepreneurial intentions.

METHODS

The researcher used the descriptive design, self-made questionnaire to examine KASH and gender influence on entrepreneurial intentions. The sample size for the study was 117 grade 12 students in General Flaviano Yengko Senior High School. The data were subjected to statistical analysis using weighted mean, frequency percentage distribution

RESULTS

Based on the data gathered, it was found that most of the senior high school students are 18 years old, male and belong to the ABM strand. It was revealed for knowledge that most of the respondents learned to develop a marketing and business plan, for Attitude, it shows that most of the respondents are interested in doing business, while for the skills, most of the respondents have technology and information skills, with regards to the Enterprise Development Skills, and for Habit, most of the respondents agree that they can create products in any materials they have, most of them have an intention to attend Entrepreneurship training and seminars, willing to put up their own business and willing to take risk, surprise people their new and different ideas, prefer to work that requires original thinking.

DISCUSSIONS

Based on the result, researchers recommend that school, teachers, parents, and the government continue to inculcate the entrepreneurial mind to Senior High School students. The Entrepreneurship subject to students is very vital, knowing how to write a Marketing and Business Plan can serve as a tool for their business success in the future. Stakeholders support and contribution on Entrepreneurship is necessary for the young entrepreneurs to be responsible to put up their small business, to the products that they want to offer, to patronize the local business around them and for the future researchers must continue to gather more information and data related to this study. The researchers proposed an Entrepreneurial Development Plan that can help students to understand business and to be prepared in having their own business after Senior High School.

KEYWORDS: knowledge, attitude, skills and habit (KASH), Entrepreneurship

SUBMISSION ID: R04A-IMUSC1-0002

Marketing Strategies of Private Schools in the Province of Cavite

Emelen Verano, Trece Martires City Senior High School

Abstract

INTRODUCTION

This study sought to assess the effectiveness of marketing strategies of the private non-sectarian schools in the province of Cavite.

METHODS

The descriptive method of research utilized a research made-questionnaire and interview. The respondents of the study consisted of 394 grade 9 and grade 10 students from private non-sectarian secondary schools and were identified using the simple random sampling technique. The data gathered were treated using the statistical formulate frequency and percentage, weighted mean, T-test, and Analysis of Variance.

RESULTS

Majority of the respondents were grade 9 (junior high) students with 50.50 percent; 50 percent for both female and male; 28.2 percent belonged to the group with 4 or more number of siblings; 55.3 percent belonged to the group with only 1 sibling attending the same school within the school; 47.5 percent belonged to the group with dual income-earners in the family; and 59.1 percent proximity is near to the school.

The respondents assessed the aspect of Products as "Effective" with a grand mean of 4.09. The respondents' perceptions agreed in terms of product, price, place, and promotion when respondents were grouped by sex, number of siblings, number of siblings attending to the same school within the school year, and number of income-earners in the family in their assessment on the effectiveness of the marketing.

DISCUSSIONS

The results determine the need to further strengthen its ability to become home of board top-notchers and passers that will create a powerful image and reputation. More focus on their promotion particular in Advertising strategy through the use of local radio stations in the province of Cavite to reach out to clients as this medium is affordable and have a wide coverage area.

KEYWORDS: marketing strategies, product, price, place, promotion, private non-sectarian schools, Cavite

SUBMISSION ID: R04A-CAVITP-0610

Microfinance "Sikat Saka" Program of the Landbank of the Philippines

Teresa Denis Dugay-Gregorio

Abstract

INTRODUCTION

Numerous microfinance programs by the Philippine government have been provided to Small Farmers to help augment rice production, income, and for them to become an agri-entrepreneur. Studies have been conducted on the effectiveness of these microfinance programs and still, BSP data showed low compliance with the mandatory Agri-Agra credit under R.A. No. 10000. Hence, the study was conducted to get the concerns of the Small Farmers regarding the microfinance program of the government particularly the "Sikat Saka" Program (SSP), a direct lending facility, and a joint project of Department of Agriculture (DA) and Landbank of the Philippines (LBP).

METHODS

Descriptive design, interview, focus group discussion, and secondary data analysis are the research designs and methods used in the conduct of the study. 1,333 Small farmers from the SSP covered provinces of the Northern and Central Luzon responded to the survey questionnaire prepared by the researcher.

RESULTS

The majority of the respondents recognized that branch or office location, loan documentary requirements, technical assistance, and loan approval were a challenge. The LBP branch or office location is two to three rides away, it will take several hours to reach the LBP office or branch, and the transportation fare costly. The respondents were having difficulty in the preparation of documents and filling-up the loan application since minimum technical assistance was provided. The biggest hindrance to the respondents was the 30-day loan approval which entails going back and forth to the LBP branch or office for follow-ups, and loan release sometimes mismatch the needs of the rice production crop cycle.

DISCUSSIONS

The results manifest the need to ease doing business in the countryside specifically for the Small Farmers. To maintain the viability and sustainability of SSP, enhancement of the Landbank Easy Access Facility (LEAF) as Banking on One Stop Shop (BOSS) is highly recommended to meet clients' needs where transaction initiation to consummation happens.

KEYWORDS: micro finance, loan, sustainability, ease of doing business

SUBMISSION ID: NCR1-MANILA-0002

**Online Billing and Reservation System of La Felicidad Resort, Brgy.
Calumpang Cerca, Indang Cavite**

Cherry Lou Mojica, TMCSHS

Abstract

INTRODUCTION

La Felicidad Resort has been using the manual system in handling its Billing and Reservation. As a result, the resort desk officers encountered problems in most transactions and operations. They found it difficult to track availabilities and produced inconveniences in making reservations. Thus, they had insufficient data storage such as databases that eventually led to data tampering. Recreational establishments such as resorts need to have an efficient system that will store, manage, manipulate their files, and make billing and reservation convenient without sacrificing high-quality service for their valued customer.

METHODS

The methodology used by the proponent in the study is the prototyping model to thoroughly analyze the internet processes of the establishment. To streamline each transaction and process of the resort, the proponent chose the method of interviewing. In the scenario where there is an absence of detailed information regarding the input to the system, the processing needs, and the output requirements, the prototyping in this status or situation may be employed. This model allowed the client to interact and experiment with a working representation of the product.

RESULTS

The proponent concludes that the proposed system is a huge success. The online and reservation system can accept reservations via the internet, in which the customer would see amenities and their respective rates. The system can show the customer's bill along with the breakdown of the resort's charges. To conclude, the system serves its purpose to accept a reservation, calculate accurate bills and minimize human error.

DISCUSSIONS

Generally, the created website promotes the amenities and services of La Felicidad resort. Thus, the website served as a way to be at par with the popular resorts in the region. The database served not only as a repository of information but also helped in updating and retrieving data. Hence, the problem of data security is solved because only an authorized person can access the system.

KEYWORDS: online billing, reservation system, website, prototype model, database

SUBMISSION ID: R04A-CAVITP-0324

Preparation for the Future: Students' Preferred Mode of Savings Between Traditional Saving and Deposit Banking and its Effects to their Basic Financial Literacy

John Vincent T. Matencio, Department of Education

(Adviser: Girlie Domondon)

Abstract

INTRODUCTION

Saving money is an indispensable activity. It is practiced by people from all walks of life. The two most prominent ways are traditional methods and deposit banking. This study aimed to determine which mode of savings do the respondents prefer and its corresponding effects on students' basic financial literacy.

METHODS

This study used a descriptive-quantitative method of research with purposive sampling. The research questionnaires discern the respondents preferred mode of savings, and its corresponding effects to their basic financial literacy. The 119 research respondents were taken from the 11 sections of the Senior High School Department of Tanauan City integrated High School, enrolled in A.Y. 2018-2019. Data were interpreted using a multiple correlation analysis prescribed by the statistician.

RESULTS

It was discovered that the respondents prefer traditional saving over deposit banking, with 75% choosing the former while 25% preferring the latter. Based on multiple correlational analysis, $r_c = 1.741$ at $\hat{I} \pm = 0.05$, it was inferred that the alternative hypothesis is affirmed, stating that the students' choice of mode of savings affects their basic financial literacy. Furthermore, "accessibility" and "feasibility" are the two main reasons for the respondents' choice.

DISCUSSIONS

It is recommended by the researchers that the respondents should know the impact of their preferred mode of savings to the financial aspect of the economy and save intelligently to mutually benefit themselves and the community.

KEYWORDS: traditional saving, deposit banking, financial literacy

SUBMISSION ID: R04A-TANAUA-0043

**Records Management Practices of Administrative Staffs/Office
Frontlines in the Division of Lipa City**

Glenda Sambayan, Homer Mendoza, & Liezel Villanueva, SDO Lipa City

Abstract

INTRODUCTION

The creation and proper management of records are central to the success of any organization. As a publicly funded institution operating in a heavily regulated and highly competitive environment, the division is expected to be compliant and to be accountable to an increasing number of external agencies and bodies, and to the public community it serves. The proponents believe that it is essential to the successful conduct of a complex business to create and retain a complete and accurate record - intellectually, commercially, and administratively. The study aimed to assess the records management practices, investigate the problems and challenges, and identify the benefits derived from records management.

METHODS

Descriptive method was used to determine the records management practices, benefits and challenges among the twenty-four (24) administrative staff/office frontlines in the Division of Lipa City. The participants were randomly selected from the three functional divisions namely the office of the Schools Division Superintendent (OSDS), the School Governance and Operations Division (SGOD) and the Curriculum Implementation Division (CID). The main respondents were the administrative staffs/office frontlines in the said division. It further outlined the benefits and challenges of records management.

RESULTS

The findings revealed that SDO Lipa City was practicing both manually and electronically of storing office documents. The majority revealed that the kinds of records management system being practiced were decentralized, and the frequency of phases the division records pass were in a three-life cycle: monitoring, controlling and retrieving records.

DISCUSSIONS

Most respondents believed that the annual training program is a must to ensure quality service and address the problem in the records management practices to improve efficiency and effectiveness in operation. They also strongly agreed that space saving is a benefit they can get from records management. The majority of the respondents revealed that the challenges associated with records management were having a lack of professionally trained records staff/managers, inadequate resources to facilitate records management practices and insufficient space in the division office.

KEYWORDS: Records management, practices, challenges, benefits

SUBMISSION ID: R04A-LIPAC1-0127

**Risk Management in Private Higher Educational Institutions in Region
IV-A (Calabarzon)**

Erwin Villaverde, PICPA

Abstract

INTRODUCTION

Top management of universities and colleges talk about risk management in large, complex, decentralized organizations as a significant challenge. However, before risks can be effectively managed, the organization must agree on a common definition of risk that is clearly understood by the board, top management, faculty, staff, and students.

METHODS

The researcher used the descriptive method of research using a survey questionnaire as the main instrument of data-gathering. The researcher utilized the random sampling technique to determine the number of respondents from select private colleges and universities in Region IV-A. The researcher secured and asked permission from the President/Director of each college/university.

RESULTS

The respondents agreed on the risk management in private higher educational institutions in terms of strategic, financial, operational, compliance, reputational, property, market, and governance when grouped according to profile.

DISCUSSIONS

Higher education institutions should have fast-cycling risk identification.

Higher education institutions should increase campus risk awareness: Beyond the threshold challenge of identifying and assessing risks, the widely voiced university executive goal of "getting faculty and academic administrators to own risk management" faces many philosophical and practical obstacles.

KEYWORDS: Risk Management, Private Higher Educational institutions, Region IV-A, CALABARZON

SUBMISSION ID: NCR1-MANILA-0004

**Satisfaction Level on Canteen Services of the Senior High School
Students of Maddela Comprehensive High School**

Couly Ann Fae Castillo, Department of Education
(Adviser: Shaila Tanglod)

Abstract

INTRODUCTION

Canteen operation can be considered one of the auxiliary services of the school. It is important to understand student satisfaction of food served in canteens for the Department of Education officials, school administration, and canteen management to improve the operation of such service. Therefore, this study was conducted to measure the level of satisfaction in terms of three factors namely canteen staff services, state of products, and canteen facilities.

METHODS

This study used a descriptive survey research design. It includes answering the questions from the questionnaire administered by the researcher. The survey questionnaire was validated by the School Research Committee. Slovin's formula was used to find out the total number of respondents and stratified random sampling for the number of participants per strand. Likert scale was used to determine the satisfaction level on canteen services and independent t-Test for the significant difference. Frequency, Percentage, Mean and SD was used to analyze the data gathered using the SPSS Student's Version.

RESULTS

The verdict of 270 participants, composed of 50% male and 50% female, on customer satisfaction in terms of canteen staff attitude and customer service, satisfied with Canteen A and very satisfied with Canteen B. in terms of state of products such as taste of food, amount of serving, price and nutritional value, satisfied with Canteen A and very satisfied with Canteen B. Concerning canteen facility such as cleanliness, ambiance, sanitation and location, satisfied with Canteen A and very satisfied with Canteen B. The results show that the respondents consistently rated satisfied with Canteen A and very satisfied with canteen B in three areas of customer satisfaction. It was found out that there was no significant difference in the level of satisfaction according to sex.

DISCUSSIONS

The results show that student satisfaction with school canteen services is influenced by various factors. for school canteens to better serve students, staff should create warm and friendly interaction with students. Management should train staff on customer service. Perceived state of food should also be considered. Thus, management and staff should provide healthy food according to students' taste and price affordability. They should also maintain the quality of canteen facilities.

KEYWORDS: Satisfaction Level, Canteen Services

SUBMISSION ID: R002-QUIRIN-0054

The Effectiveness of Using Localized Instructional Materials in the Performance of Grade Seven Food Technology Students in Amaya School of Home Industries

Barsiliza Creus, RATE (Research Association of Tanza Educators)

Abstract

INTRODUCTION

Localization is a direct response to the traditional design of teaching which is inflexible and irrelevant to the learners' lives. It relates the curriculum of teaching and learning of a specific subject to local conditions or environment. The objective of this study is to establish whether developed localized instructional materials could improve the performance of learners compared to the standard way of teaching.

METHODS

The Slovincs formula and simple random probability were used in getting the sample from the extent of the total population. The variables in the study were the Controlled and Experimental group of learners. Through a pre-test/post-test survey, the researcher compared the results of the learners' performance with and without the intervention of Localized instructional Materials.

RESULTS

Based on the results of the study, it was revealed that there was a big difference between the test scores of the learners during pre-test and post-test. The variance of the learners score during the pre-test shows equality; whereas, post-test shows that learners in the Experimental group got high scores after Localized instructional Materials were used. Survey data identified that there is an increase of 19.54 in the Mean Percentage Score (MPS) of the controlled group while the MPS of the experimental group increased to 32.56 after localization.

DISCUSSIONS

The use of localized instructional materials result in the following:

1. High performance of learners, 2. Significance of lesson to learners' daily living, 3. Lesson content and activities are gathered from the school and community, therefore, easily understood, 4. Improve skills and creativity and 5. As an innovation, it allows to meet the learning needs and could also lead to career growth and development.

KEYWORDS: localization, performance, innovation , competencies

SUBMISSION ID: R04A-CAVITP-0029

The Effects of Modern Accounting information System in the Performance of a Business

Ilyn Costanilla, Talipan National High School
(Adviser: Carmela Ana Reforma)

Abstract

INTRODUCTION

The objective of this study is to have an in-depth analysis on the effect of Accounting information System in the financial performance of a business.

METHODS

This research utilized quantitative descriptive method of research to allow the researchers to gather information, summarize, present and interpret data for clarification and classification.

RESULTS

Based on the findings of the study, it can be concluded that Accounting information System contribute to the efficiency of financial reports that are needed in effective decision making, and it helps to make a fast report on the different financial activities of a business.

DISCUSSIONS

The Accounting information System improves the external and internal information sharing of financial data to the owner and the employers. It helps to avoid mistakes in encoding financial data that will determine the performance of the business as well as reduces the data processing time of financial information that leads to a quick and sound decision making.

KEYWORDS: Accounting information System, Business, Financial Performance, Effects.

SUBMISSION ID: R04A-QUEZON-0140

The Impact of One Town One Product on Business Environment in Selected Areas in Cavite

Annabelle Bughao, General Flaviano Yengko Senior High School

Abstract

INTRODUCTION

The main purpose of the study was to determine the impact of the One Town One Product (OTOP) Program on Business Environment in selected areas in Cavite namely: Amadeo, Alfonso, Indang, General Trias, and Bacoor, Cavite.

METHODS

A self-made questionnaire was the primary tool in achieving the researcher's purpose of the study. It was participated by thirty (30) respondents per area, composed of entrepreneurs, beneficiaries and the local government units (LGU) - with a total of one hundred fifty (150) participants. For the methodology, the study utilized the Frequency-Percentage Distribution, Weighted Mean, and Analysis of Variance (ANOVA).

RESULTS

The result shows the profile of an entrepreneur who avails the program were employed; age between 30-39 years old, married; college graduate and with 1 to 9 years length of service. It also shows that the business profile who avails the program has a distinct business name and product per area. Most of the respondents engaged in merchandising type of business; chose a partnership form of business organization and was established for one (1) to nine (9) years. OTOP program has a high impact in the external environment due to a great contribution to the economic condition in different areas for the reason that it gives employment and generates income; while, in the internal environment, marketing got a high rank because they provided trainings for each entrepreneur, support their product designs, labeling, and product promotions.

DISCUSSIONS

The result signifies the great impact of One Town One Product to the entrepreneurs and economy.

KEYWORDS: One Town One Product (OTOP) Program, Business Environment (internal and External Environment) and Entrepreneur.

SUBMISSION ID: R04A-IMUSC1-0105

The Realities of Being Contractual Worker: A Study About Contractualization

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Bataan

(Adviser: Edessa Flordeliz)

Abstract

INTRODUCTION

A lot of companies in the country, particularly big-time companies who need to keep their incomes and profits high, make contractualization as a framework. Accordingly, this kind of employment deprives employees the security of tenure. In this research, workers' employment journey with limited benefits and period of work was explored, and the effects of contractual employment were also highlighted.

METHODS

This study focuses on the contractual workers' perspective on their work situation. Specifically, the researchers used phenomenology research design. The researchers set criteria for the respondents who will take part in the study. Specifically, the respondents were chosen based on the following: a contractual worker works for any family restaurant located in Balanga City. The interview was held at Balanga City, according to the workplace of the respondent. The researchers then formulated a set of guide questions to be conducted in a semi-structured and in-depth interview that was checked and validated by experts.

RESULTS

According to the results, being a contractual worker is harder compared to other job situations. Although some of the contractual workers interviewed receive benefits, most of them do not receive benefits. Being a contractual worker affects their work performances. They lose interest whenever their contract is days from ending because of the difficulty of finding another stable job.

DISCUSSIONS

The result of the research indicates that contractual workers need a lot of sacrifices and hard work to be a regular employee. There are times that contractual workers do work that is out of their responsibility. Their salary is not proportional to their workload.

KEYWORDS: Contractual worker, benefits, job, regular employee

SUBMISSION ID: 003-BATAAN-0000

Women Entrepreneurs: influential Factors as Basis on Successful Management in Malungon

Hazel Mae E. Booc, Lead Author
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Abstract

INTRODUCTION

Entrepreneurship is an important factor of economic growth, productivity, innovation, and employment. Women are known to have complex decision making, unlike men. Converting ideas into economic opportunities is the critical issue of women entrepreneurs. The issues to be addressed in this study were to identify what types of business that the women entrepreneurs in Malungon commonly build, what challenges they commonly encounter, and what influential factors are practiced that make them successful.

METHODS

The researcher used descriptive research design utilizing percentage and frequency backed up with a qualitative research design. There were fifteen (15) subjects in the study purposely chosen because they were perceived as successful women entrepreneurs by the Municipality of Malungon. The instrument utilized was a structured questionnaire and gathered through personal interaction. Responses were transcribed and themed. Ethical considerations, sending consent letters, and confidentiality of names was done accordingly.

RESULTS

Among the subjects, sixty-three percent (63%) of them were engaged in merchandising, thirty-one percent (31%) were in servicing, and the rest were in manufacturing. The common problem upon the starting of their business is the lack of finance followed by the challenge in taking a business while combining work and family life, and by lack of information. During the run of the business, the common problem of the one-fourth is a large number of competitors, followed by time management, and financial problems. There were four equally influential factors for successful management, these are high self-confidence, honesty, passion, and skills. Having a skillful mind creates ideas that would be very beneficial to the business. Those who display more self-confidence have the highest entrepreneurship rate. Based on the interview, earning money is the major factor that make the women entrepreneurs in Malungon start business.

DISCUSSIONS

Hence, the type of business that the women entrepreneurs are engaged in is merchandising. Many women entrepreneurs want to earn money by selling goods instead of reproducing them. Thus, business capital is one of the main challenges in putting up the business. However, Filipinos are encouraged to have higher self-confidence and love of work or passion for retail to become successful.

KEYWORDS: Business, Malungon, Women entrepreneurs, Successful Business

SUBMISSION ID: R012-SARANG-0045

The Accounting System: A Factor Affecting the Growth of Small Scale Businesses in Rosario, Batangas

Shiela Mae Pradia, Student

(Adviser: Eric Hernandez)

Abstract

INTRODUCTION

Everyone dreams to establish and own a business and to make it successful. On the other hand, extending and prospering its growth depends on the owner's understanding of all issues in small scale businesses. This study was conducted to prove whether or not accounting system is a contributing factor in this phenomenon.

METHODS

A Causal Research Design was used to determine the nature of relationship of the main variables in this research. Under the chosen design, the study focused on the present condition of their selected small scale business in the attempt to explain the cause and effect relationship.

RESULTS

Many respondents who participated in the study perceived that accounting system provides owner the basis of upholding good decision making. Small scale business is significant in the business world because it contributes to the economic growth of nation. In achieving such, regular scheduled seminar or workshop is essential to help and educate small scale businesses to improve their accounting system.

DISCUSSIONS

The results showed that most people involved in businesses adhere to the belief that accounting system plays an important. Following the basic accounting principles is essential in any size of business in stabilizing its span and monitoring the record and financial analysis should be a must to discover new avenues of growth.

KEYWORDS: accounting, small scale businesses

SUBMISSION ID: R04A-BATANP-0262

**Assessment on the Importance of the Credit Card Among Professors of
the Bestlink College of the Philippines**

Mark Jess, Philippines Post Office
(Adviser: Mark Jess Bolano)

Abstract

INTRODUCTION

Credit cards are simply pieces of plastic technology that make it more convenient for people to buy things without carrying enormous amount of cash. Credit card holders owe an astonishing 135 billion pesos! This averages to roughly P20,000 owed per card. Over 15% (or approximately P18 billion) credit card receivables are past overdue. What is more shocking is that this amount is significantly lower than the recorded height of 22.5% back in 2004. This study was conducted to determine and assess the importance of credit card among professors.

METHODS

The researcher used the descriptive method of research. This research had collected data from random earning individuals. The initial process conducted in the research was the distribution of survey forms, (questionnaires), specifically held in to confidentially to extract pertinent information that could be gathered for the purposes forming a hypothesis and establishing a strong basis for a proposition.

RESULTS

This study was conducted to determine and assess the importance of credit card among professors. It aimed to answers 1) the significance of credit cards among professor; This study proves that credit cards are indeed significant to the credit card holders. As to the features of credits cards, the respondents take into consideration the following which are deemed to be of importance to them such as malfunction, lost or stolen, unauthorized use, errors on account statements, Authorizations and processing of transactions, Transaction limit, Fees and charges; and Interest charges. 2.1) Advantages and disadvantages of credit cards; credit card is convenient, quick to borrow, balance transfer, builds credit score and provides low-cost loans. In addition; the respondents of this study says that credit card helps them in cases such; installment basis, cash advance. The following 2.2) disadvantages of the credit card; (a) it can damage his/her credit history; (a) wrong use of credit cards can lead to severe debt and one's bankruptcy. 3.) Implications of using credit cards with regard to spending habits; (a) spending habits have changed from the traditional to extravagant, (b) it made the credit card holders to be in the limelight.

DISCUSSIONS

Anyone who will be using a credit card should be knowledgeable on its rights, privileges and limitations to prevent overcharging that may lead to lawsuits, bad credit history. Every card holder should always be responsible in safeguarding his/her credits cards from theft, stolen personal data and others.

KEYWORDS: It would be extremely helpful to be knowledgeable in terms financial matter

SUBMISSION ID: R005-SORSOC-0003

CHEMICAL ENGINEERING

Challenge Accepted: Improving Vocabulary Instruction to Increase Students' Comprehension and Scientific Literacy

Maria Cristina Rose Pagaduan, Department of Education - Cavite City, Action Research Group

Abstract

INTRODUCTION

Scientific literacy does not only mean that a person can ask, find, or determine answers to questions but that a person can describe, explain, and predict natural phenomena. For students to develop scientific literacy, they need to gain knowledge of science content and practice scientific habits of mind. Thus, the importance of building a strong scientific vocabulary, which goes beyond introducing a list of terms and asking students to define those terms is essential in science education. Moreover, vocabulary instruction does lead to gains in comprehension, but methods and strategies must be appropriate to the reader's age and ability. With the existing classroom problem related to science literacy and science vocabulary, this action research on the improvement of vocabulary instruction to increase science comprehension and literacy was conducted.

METHODS

Experimental research design was used in this study. The data were obtained through the administration of pretest and post-test to the students in the control and experimental group. The result was analyzed by paired-sample t-test to determine the significance of the study.

RESULTS

Students' achievement from the experimental and control group was measured using the twenty-item pretest and post-test. There was a minimal increase in the scores of pretest to post-test of the students in the control group. While a greater increase of scores in the experimental group. The t-test for independent means showed that there is a significant difference between students' academic achievement of the control and experimental group.

DISCUSSIONS

Sixty students in Grade 10 were the respondents, and they were divided into two groups. The experimental group received the variable tests which used the improved vocabulary instruction. Different approaches and strategies were utilized in presenting the science vocabularies to address the diverse needs and interests of the students. While the traditional method was used in the control group. Based on the statistical results, students' academic performance progress when Vocabulary instruction is being improved. These findings also showed that improved instruction develop the critical thinking skills of the students. The development of localized and contextualized Science vocabulary is recommended.

KEYWORDS: comprehension, scientific literacy, vocabulary instruction, methods, strategies

SUBMISSION ID: R04A-CAVITC-0106

Differential Analysis of Vaping and Smoking

Joshua Manuel Acosta, Jerome Alvin Esteban, & Marc Louise Zaldua

Abstract

INTRODUCTION

Cigarette and E-cigarette use has increased in the Philippines leading to active debate in the public health sphere regarding e-cigarette use and regulation. Vape is a relatively new phenomenon that is quickly gaining the interest of many long-time tobacco smokers. E-cigarettes are becoming a preferred alternative for nicotine delivery among many smokers because of their realistic look, feel, and taste compared to traditional cigarettes. Furthermore, many cigarette smokers have turned to vape because e-cigarette vendors have previously marketed their product as a cheaper and safer smokeless alternative to traditional cigarettes, and a possible smoking cessation tool.

METHODS

Two models will be used to represent your lungs. The first model will inhale the smoke of cigarettes, while the other model will inhale smoke from the e-cigarettes. Each model has cotton inside of it. The researchers will use a suction pump to inhale the smoke from cigarettes and e-cigarettes. The smoke was drawn through and around the cotton, catching some, not all, of the chemicals and tar and into the pump and exhaled. The machine was set to smoke each cigarette at the same pace each time. 7 packs of cigarettes total of 140 cigarettes were smoked in one week. The other model will inhale 60-120ml of e-cigarette in one week. The button was held for 4-6 seconds each time. The two models were observed after a week.

RESULTS

The results on the first model (cigarette) are vile, the cotton inside of it became black and the smell of the tar inside the tube that represents the airways is awful. It will surely damage the small air sacs in the smoker's lungs. The second model (e-cigarette), water condensation accumulated in the model over the 7 days. Quitting smoking altogether is the best option but the second best option is to vape. It is safer and healthier to use vape than cigarettes.

DISCUSSIONS

Despite the popularity e-cigarettes have gained worldwide, very little rigorous research has been done regarding the effects these devices have on human health. This article reviews the existing evidence-based literature, dealing with surveys on vaping studies analyzing potential toxins and contaminants in an e-cigarette. Less evidence exists to suggest that e-cigarettes are effective in recovery from nicotine dependence but our study proves that the e-cigarettes are the second best option if you don't want to quit smoking. E-cigarettes are fast becoming a new "tobacco" industry that could reduce the incidence of traditional smoking.

KEYWORDS: e-cigarette

SUBMISSION ID: R04A-CAVITP-1623

Efficacy of Candles Made from Powderized Catnip Leaf (*Nepeta cataria*) as a Natural Mosquito Repellent

Kaye Anne Jade Rom, Marvel Felicity Armesto, & Pauline Tanagras, Bucal
National High School

Abstract

INTRODUCTION

According to the Department of Health, a total of 69,088 dengue cases were reported nationwide from January 1 to July 28, 2018. This is 5% higher compared to the same period last year with a total of 65,879 dengue cases. There were 366 deaths reported from January 1 to July 28, 2018. This is higher compared to the same period last year (355 deaths). Because of this, people are prompted to find ways of controlling the vector. People using advanced technology either use Genetic Control or intelligent Gravitrap. Others use the OL Trap. On the other hand, catnip contains Nepetalactone, an essential oil that gives the plant its characteristic odor and is about ten times more effective at repelling mosquitoes than DEET, the compound used in most commercial insect repellents. For this reason, the researchers investigated the potential of catnip candle as a mosquito repellent.

METHODS

Catnip leaves were washed, sundried, pulverized and set aside at the same time. Paraffin wax was melted and poured into six 50 ml candle molders with a fixed candle wick. These are labeled as T0 R1, T0 R2, T1 R1, T1 R2, T2 R1, and T2 R2. For containers labeled as T1 R1 and T1 R2, 5 g of catnip powder was mixed and left to cool down. From containers labeled T2 R1 and T2 R2, 15 g of catnip powder was used and allowed to cool down. Containers T0 R1 and T0 R2 served as the control, hence, were not mixed with catnip powder. Six 850 mL containers with 10 mosquitoes each were prepared. These containers were also labeled as T0 R1, T0 R2, T1 R1, T1 R2, T2 R1, and T2 R2. Unlit candles with the same label as the containers were put inside the containers with R1 labels. Lit candles with the same label as the containers were put inside containers with R2 labels. The set-ups were observed for 30 minutes.

RESULTS

Results show that the observed number of mosquitoes who died in containers T0 R1, T0 R2 and T0 R3 are 0, 3 and 5 respectively. On the other hand, the number of mosquitoes that died in set-ups T0 R2, T1 R2 and T2 R2 are 2, 7 and 9 respectively.

DISCUSSIONS

Based on the findings of the study, more mosquitoes died in set-ups with lit candles than those with unlit candles. Also, more mosquitoes died in lit set-ups with more catnip powder.

KEYWORDS: candle, mosquito, catnip

SUBMISSION ID: R04A-CAVITP-1566

Health Influences of Petroleum Oils and Gases to the Petron Gasoline Station Workers of Batangas City

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Renmin Andrea Valerio, University of Batangas

Abstract

INTRODUCTION

The rapid consumption of petroleum products produce new jobs which aid in undermining the rate of unemployment all around the globe. Since then, its exposure to the gasoline station employees has been the peak of public controversy that brings the most common key issue; its health influence. Following this study, the researchers discovered that petroleum products contain numerous toxins that trigger the deterioration of the health of citizens. The researchers also uncovered the in-depth conditions with concern to the health influences of Petroleum oils and gases to the Petron Gasoline Station Workers of Batangas City.

METHODS

Through the use of quantitative ex-post facto research design, the researchers were able to identify the effects of gasoline and diesel to the health of the workers of Petron Gasoline Station. With the help of primary sources, the semi-structured questionnaire was produced and distributed to thirty (30) respondents. An action plan was established from the acquired information.

RESULTS

From the acquired results, the Petron Gasoline Station Workers mutually agreed that gasoline had different characteristics that could cause health problems such as its inability to mix with water. Also, it is agreed that diesel tended to ignite spontaneously. With regards to the health influences generated by petroleum oils and gases, asthma was not endured by the workers under respiration. The workers also did not have contact with acne. Going further, under headache, the workers did not suffer from dizziness. The null hypothesis was not rejected thus there were no significant differences among the health influences of petroleum oils and gases to the Petron Gasoline Station Workers.

DISCUSSIONS

The results showed that petroleum oils and gases such as diesel and gasoline did not affect the health of Petron workers in terms of respiration, skin diseases, and headache. Petron Philippines reduced incident/accident levels by maintaining zero level work-related fatalities and instituting programs or controls to eliminate unsafe conditions. From that account, the researchers may perhaps work to produce a better action plan for a bigger assurance for every workers' safety.

KEYWORDS: Petroleum oils, gases, petron gasoline workers, health influences

SUBMISSION ID: R04A-BATANC-0191

Potential Conversion of Plastic Waste to Plastic Floor Tiles

Abstract

INTRODUCTION

The developing issue of plastic waste transfer has brought about the devastation of different parts of the earth and crumbling of unrefined petroleum saves. This study aimed to construct HDPE plastic floor tile from plastic bottle caps and compare its properties to ceramic tile.

METHODS

Collected HDPE plastic bottle caps in the school's campus underwent shredding, melting, and molding. Durability, flexural strength, and water absorption of tiles were tested, and the results were compared to the ceramic tiles. T-test and One-way ANOVA were used methods of statistical analysis in this study.

RESULTS

The results in High-density Polyethylene floor tile showed zero percent water absorption, proving its high resistance to water compared to commercially available ceramic floor tiles which had low water absorption and would deteriorate more quickly when exposed to water for long periods. In terms of the drop test, there was a significant difference between the quality of HDPE plastic tiles and ceramic tiles in terms of tensile and flexural strength. After planning, the tiles examined had a hundred percent accuracy of the tiles with excessive resistance to water absorption. Sturdiness and water absorption exams were carried out to check the first-rate of HDPE tiles.

DISCUSSIONS

The null hypothesis was rejected. This research could help in the reduction of plastic waste through conversion of plastic into decorative HDPE tiles. Furthermore, it is highly recommended that standardized tests for tensile strength and water absorption would be repeated with more trials and conducted by a research institution to ensure a higher accuracy of results. Other tests, including bond strength and moisture expansion, could also be done for better comparison with commercially available tiles.

KEYWORDS: Conversion, Plastic, Waste, Floor, Tiles, Tensile, Flexural, Water Absorption, Recycling

SUBMISSION ID: R04A-CAVITC-0060

Utilization of Scrapped Organic Materials in Generating an Alternative Food Preserver for Fresh Produce

Zavier Ace Javier, Laguna Senior High School

Abstract

INTRODUCTION

The proposal of using organic materials as an active ingredient to replace synthetic chemicals and can affiliate its use and encourage food industries to create a safer method in preserving their product. The idea of using organic material as a key ingredient is a step in dealing with environmental concerns. Reusing these materials to create a by-product can decrease the daily waste that we are producing. Also, delaying the spoiling of food can help in decreasing the rate of food that is being wasted.

METHODS

The production involved the following: (1) Sample collection (Citrus rich, Chlorophyll rich and Antibiotic rich) materials. (2) Sample preparation, and (3) Sample testing. Preparation of materials includes (1) Sanitation using water (2) Drying under the sun, and (3) Pulverization process by using a blender machine. The researcher prepared the preserver by mixing the powder produced with a solvent (water) to create a solution that is applied to the sample (Banana). The researcher used three (3) different sets of testing depending on the concentration of solvent used: (1) 100 ml of water (2) 200 ml of water and (3) 400 ml of water. The researcher used the same amount of solute (5 g) on each set.

RESULTS

The data gathered after the experimentation was organized using a tabular model which is divided into different sections based on the set of samples used. The data proves that using Citrus rich materials is the best option compared to the other two materials. It shows that it increases the life expectancy of the sample by 100% in comparison to the sample's actual life span of 6-7 days. The experimentation was conducted in a closed room with an average room temperature during the day (25 °C) and are not exposed to possible contamination.

DISCUSSIONS

The experimentation proves that the active component present in Citrus-rich materials altered the sample's ability to ripen. Bacterial growth may be the one responsible for the production of ethylene gas. Citrus-rich materials contain citric acid, a natural food preserver. We know in fact that most bacteria and other pathological organisms cannot thrive in an acidic environment. This concludes that the active component present creates a change at the surface of the sample that decreases the growth rate of bacteria that contributes to the production of ethylene gas.

KEYWORDS: organic material, alternative, preserver, fresh produce, scrapped, synthetic

SUBMISSION ID: R04A-LAGUNA-0044

CHEMISTRY

A Comparative Descriptive Research Between Four Commercial Toothpaste Products and Homemade Toothpaste with Orange Juice

John Vhrixz Abadilla, Student

Abstract

INTRODUCTION

Brushing the teeth with toothpaste is a common oral hygiene practice. However, the active ingredients like fluorine and silica present in commercial toothpaste products have been causing severe diseases. This study compared Colgate, Close-up, Hapee, Sensodyne, and homemade toothpaste with orange juice to see if there are significant differences.

METHODS

The post-test design was used in the study and the data were interpreted using One-way Analysis of Variance. The brushing method by HighGate Wood School for whitening capability test were performed with 30 eggs soaked in coffee and soda for four days then brushed with whitening, and non-whitening toothpaste. The set of 10 turns will be recorded until the color of the experimental egg reached the color of control egg. in strengthening test, eggs were coated with non-whitening toothpaste and homemade with orange juice according to Christine K. (2011). The eggs were soaked in natural vinegar and cut vertically after 12 hours. The tests were done once the egg breaks when holding-up enough load (rice).

RESULTS

in whitening toothpaste, there was a significant difference of 0.01949 when exposed in coffee substances while 0.00613 when exposed in soda substances. in non-whitening toothpaste, the results showed a significant difference of 2.3E-05 when exposed to coffee substances while 2.7E-05 when exposed to soda substances. Lastly, there was a significant difference of 8.9E-06 between the homemade toothpaste with orange juice and four commercial toothpaste on strengthening teeth.

DISCUSSIONS

To sum it up, the four common commercial kinds of toothpaste that were Close-up, Colgate, Hapee, and Sensodyne, and the homemade toothpaste with orange juice have significant differences that indicate the effectiveness of all in whitening and strengthening teeth. Homemade toothpaste can be used effectively due to the capability of it to whiten and strengthen together with the commercial toothpaste.

KEYWORDS: Enamel, Homemade Toothpaste, Active ingredients, Oral Hygiene

SUBMISSION ID: R04A-CAVITP-0685

Authentic Performance Tasks in Grade 7 Chemistry

Arrah Khay Soliman, Department of Education

Abstract

INTRODUCTION

The study primarily aimed to develop Authentic Performance Tasks (APTs) in G7-Chemistry. Four Authentic Performance Tasks in G7-Chemistry were developed on topics covering solutions, mixture, elements and compounds, and acids and bases. The APTs include real-life tasks which demonstrate students' understanding of what they have learned.

METHODS

This study employed the developmental method of research. This study developed four different Authentic Performance Tasks for Grade 7 Chemistry. It also employed a pre-experimental method using a single group design to determine the effectiveness of the APT in the attitude of the students. The developed APTs underwent six stages: (1) Design; (2) Module Production Stage; (3) Validation Stage; (4) Revision Stage; (5) Try out Stage; and (6) Data Analysis and interpretation. The modules were validated and tried out at Sta. Clara Parish School, Pasay City. The try out was made only in one section with 48 students from Grade 7 level enrolled in the school year 2014-2015.

RESULTS

Based on the findings of the study the following conclusions were drawn: (1) The APT contains scenarios and activities that replicate or simulate real-world situations. It measures student learning through the application of real-life situation transpiring in their daily life; (2) The developed APTs are found to be acceptable and reliable based on the ratings given by the experts and the students. There was a high degree of agreement among the teachers and student raters as to the content validity of the APTs representing the estimates of reliability with high degree of efficiency and accuracy; (3) The developed APTs were perceived to be effective and suited in developing student knowledge, skill, and work habit; (4) Positive attitude towards science is acquired and learned when students apply their understanding through APTs.

DISCUSSIONS

It is recommended that further studies be conducted with a bigger population, and with other Science subjects at different grade levels. Similar Authentic Performance Task can be developed for different units in Chemistry, different grade levels, and subject areas. The effectiveness of Authentic Performance Task can be further investigated by comparing the use of parallel Performance Task using two groups of respondents.

KEYWORDS: Authentic Performance Task, Solution, Mixtures, Acids and Bases,

SUBMISSION ID: R04A-CAVITP-0229

Bamboo (*Bambusa blumena*) Fiber as an Additive in the Compressive Strength of Asphalt Cement Mixture

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RyanPaolo Toledo, Angelo L. Loyola Senior High School

Abstract

INTRODUCTION

The Philippines is considered rich in timber plants especially bamboo. It is also one of the most important substitutes for the endangered rainforest hardwoods and is one of the most exploited plants on the planet because its cultivation doesn't require too much effort. Pavements may be considered failed when the deformations of its components are sufficiently large to cause an intolerably uneven riding surface or cracking of the surfacing material. Even though those structures can withstand a great amount of pressure made by the vehicles, it could still be strengthened to be able to withstand a greater amount of pressure. Due to its low maintenance cost and versatility, bamboo has numerous applications.

METHODS

Bamboo fiber was extracted manually using a bolo knife from 3-5 years old bamboo, which was gathered from a bamboo plantation in General Mariano Alvarez, Cavite. The extracted bamboo fiber underwent a preservation method called the alkaline method in which the different concentrations of bamboo fiber were soaked in sodium hydroxide for 24 hours. It was then dried and partitions were made by mixing 4%, 8%, and 12% bamboo fiber to the asphalt cement and were replicated three times. After molding the asphalt, the molds were cooled for 24 hours before removal. The experimental group samples were tested to determine if there was a change in the compressive strength and density compared to the control group. This study used the following statistical treatment in analyzing the data: t-Test of unequal variances was used to find the result of the test on the asphalt cement mixture with different bamboo fiber concentrations.

RESULTS

Compressive strength tester is used to determine the compressive strength of the sample mixtures. The average compressive strength and density of asphalt-cement mixture without bamboo fiber are 396.66 pounds per square inch (psi) and 1973.66 kg/m³ respectively. Upon the addition of 4%, 8% and 12% bamboo fiber to the standard mixture, the average compressive strength and density are 293.33 psi and 1911 kg/m³, 296.66 psi and 1929.33 kg/m³, and 263.33 psi and 1872.33 kg/m³ respectively.

DISCUSSIONS

Data analysis showed that there was no significant difference between the asphalt-cement mixture with and without bamboo fiber in terms of compressive strength and density. Therefore, bamboo fiber was not an effective binder in the asphalt-cement mixture.

KEYWORDS: Bamboo, Bamboo Fiber, Asphalt, Compressive strength.

SUBMISSION ID: R04A-CAVITP-1287

Binding Activity of Mucilage from *Opuntia cochenillifera* on Hardness and Disintegration Time of Tablets

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National Science High School

Abstract

INTRODUCTION

A pharmaceutical drug is outlined as a drug employed in health care. An example of this is a tablet. Excipients help streamline and facilitate the absorption of the drug. Using synthetic polymers can have negative effects on worker's health and tablet quality. This study aimed to determine the potential of using *Opuntia cochenillifera* mucilage in making a tablet binder to solve an increase in expenditure for producing synthetic polymers commonly used in tablet binding.

METHODS

After verifying the plant, the mucilage of *Opuntia cochenillifera* was extracted through the ethanolic method. Sixty grams of collected mucilage was freeze-dried which was turned into granules using the wet granulation method. The mucilage and granules were subjected to flowability tests, where tablets were subjected to disintegration time and hardness. Correlation Analysis was used to analyze the data.

RESULTS

The angle of repose of the mucilage and granules were 26.57 degrees and 11.31 degrees respectively. The bulk and tapped density volume for the mucilage and granules were 6.8 ml, 6.55 ml, and 8.4 ml and 8.1 ml. Percent Compressibility index and Hausner's ratio for mucilage and granules were 2.94%, 1.03% and 3.6%, 1.03%. There was a high linear positive relationship (0.8147) between the tablet hardness and the disintegration time of the placebo tablets - the higher the tablet hardness, the longer the disintegration time.

DISCUSSIONS

All of the results of flowability tests exhibited excellent flow character. The tablets produced had passed the disintegration time and hardness test. To sum up, mucilage from *Dilang baka* can be used as a tablet binder.

KEYWORDS: mucilage, tablet, binder, hardness, disintegration time, natural binder, excipient

SUBMISSION ID: R04A-CAVITP-0852

Biodegradable Plastic from Cassava (*Manihot esculenta*) Starch

Hassan Ralp V. Illut, Martina Avina P. Mangune, & Vinz John P. Ramiro,
Student

(Adviser: Jordan Gimao)

Abstract

INTRODUCTION

At present we could see used polyethylene plastic in every corner of the Philippines but one of the common problems observed by the researchers are waste materials such as plastic that causes floods. Because of this, the researchers decided to make a potential bioplastic material as alternative the polyethylene plastics. The study aimed to produce an environment-friendly biodegradable plastic from cassava and determine the difference from the polyethylene plastic.

METHODS

To determine the right combination 3 trials with different cassava starch proportions were prepared from the mixture. P1= 100 g of cassava starch, 200ml water, 15 ml glycerol 15 ml vinegar

P2=150 g of cassava starch, 200ml water, 15 ml glycerol 15 ml vinegar P3=200 g of cassava starch, 200ml water, 15 ml glycerol 15 ml vinegar

Experimental research design was applied utilizing different laboratory tools in gathering the needed data. The physical and chemical characteristic of the bio-plastic with different starch content (100g, 150g, and 200g) were evaluated using different tests to measure biodegradability, tensile strength, water resistance, strong acid resistance, and flammability.

RESULTS

Based on the findings, it can be concluded that, when it comes to biodegradability, bioplastic from cassava starch is more ideal than the Polyethylene plastic since it can be decomposed into soil within 45 days and will not be a source of pollution. The tensile strength of Polyethylene plastic was more ideal.. When it comes to water resistance, findings show that bioplastic from cassava dissolves in water while the Polyethylene plastic exhibited no change. for the strong acid resistance, results show that bioplastic dissolves in HCL while the polyethylene plastic do not exhibit any change. for flammability, the experiment showed that both plastics are flammable but the bioplastic from cassava burned more slowly.

DISCUSSIONS

The biodegradable plastic was produced successfully by mixing, casting and sun drying. The plastic produced from cassava starch had a potential application to be used as food packaging film because it is all-natural, and is not harmful to the environment and any living organism.

KEYWORDS: Bioplastic, Cassava, Polyethylene, Degradable

SUBMISSION ID: R04A-RIZALP-0165

Chelator-Enhanced Phytoextraction of Copper And Zinc By *Impatiens balsamina* L. (Kamantigi)

Corazon Panganiban, Teacher III, Amadeo National High School

Abstract

INTRODUCTION

Heavy metal pollution in soil has become a critical environmental concern due to its potential adverse ecological effects. Phytoextraction is the most common form of phytoremediation that involves the accumulation of heavy metals in the roots and shoots of phytoremediation plants. Naturally occurring chelating agents are more favorable for the phytoextraction of metals due to their nontoxic and biodegradable property. The present study investigated the potential of gallic acid and citric acid in enhancing the phytoextraction of copper and zinc by *Impatiens balsamina* (kamantigi).

METHODS

The growth response of *I. balsamina* to the different concentrations of citric acid and gallic acid (high 30mg/kg; medium 20 mg/kg; and low 10 mg/kg) was determined by measuring the shoot heights. Concentrations of accumulated copper and zinc in the plant parts after 2nd, 4th and 6th week of transplanting were determined using AOAC official method 999.11. Aliquots of the plant and soil solutions were taken from the concentrations of the following heavy metals; copper and zinc using a graphite atomic absorption spectrophotometer.

RESULTS

Copper showed a negative response to a high amount of citric acid causing the shoot heights increment to decline. Shoot heights of plants treated with zinc were abruptly increased in all concentrations of gallic acid and citric acid. The concentrations of accumulated copper in the plants contaminated with gallic acid and citric acid were concentrated in the roots of *I. balsamina*. However, the concentrations of accumulated Zn were highest in the leaves of the plants. The average concentration of the accumulated copper in high concentration (30mg/kg) of citric acid was 714.41 mg.kg- far better than the control with 261.36 mg.kg-. High concentration of citric acid enhanced 362.07% Cu in *I. balsamina*. The use of gallic acid and citric acid in the enhanced phytoextraction of Zn were negligible. The overall research showed that citric acid was a potentially suitable chelator in enhancing the phytoextraction of copper.

DISCUSSIONS

The amount of accumulated copper was beyond the permissible limit in the plant tissues. However, the amount of accumulated zinc was still in the permissible limit for plant tissues. The use of gallic acid and citric acid in the phytoextraction of zinc were negligible which might due to the relatively low concentration of zinc in soil.

KEYWORDS: Heavy metal accumulations, Concentrations, Shoot heights and Transplanting

SUBMISSION ID: R04A-CAVITP-0009

Comparative Study on The Antioxidant Capacity ,Total Phenolic Content And Alcohol Content of Wines From *Musa paradisiaca* (Banana), *Ananas comosus* (Pineapple) And *Carica papaya* (Papaya) Peelings

Leana Faith Villanueva & Ma. Grazielle Panganiban

Abstract

INTRODUCTION

Wine is a supplement to improve blood pressure. Antioxidant nutrients are capable of slowing down the progression of arteriosclerosis while phenolic compounds are known to be cancer chemopreventives. Therefore, this study was conducted to compare the antioxidant capacity, total phenolic content, and alcohol content of wines from the peelings of *Ananas comosus* (Pineapple), *Carica papaya* (Papaya) and *Musa paradisiaca* (Banana).

METHODS

The peelings of *Musa paradisiaca* (banana), *Carica papaya* (papaya), and *Ananas comosus* (pineapple) were subjected to primary and secondary fermentation. The antioxidant capacity was measured using 2,2-diphenyl-2 picrylhydrazyl (DPPH) assay with ascorbic acid as control. Different concentrations of ascorbic acid (20mg/ml, 50mg/ml, and 100 mg/ml) were used to determine the antioxidant capacities of the wines. The total phenolic content was determined using Gallic Acid (0.5, 1, 2, 5 ppm) concentrations as standard. The alcohol content was measured using ATAGO Refractometer.

RESULTS

Wine from the peelings of *M. paradisiaca* (Banana) gained the highest antioxidant capacity (44.40 mg/mL) and the wine from *C. papaya* has the lowest antioxidant capacity (28.72 mg/mL). The antioxidant capacities of the produced wines are far better than ascorbic acid. *C. papaya* wine has the highest total phenolic content (330 μ g GAE/ml), while *A. comosus* wine was the lowest (205 μ g GAE/ml). The alcohol content of the *C. papaya* wine (18.5%) has greater alcohol content than that of *M. paradisiaca* wine (17.83%) and pineapple wine (16.33%). Overall, positive results were observed between the antioxidant capacity, total phenolic content, and alcohol content of the wines from *M. paradisiaca* (Banana) and *A. comosus* (Pineapple), and *C. papaya* (Papaya).

DISCUSSIONS

The antioxidant capacities, total phenolic content, and alcohol content varies among the wines of *M. paradisiaca* (Banana) and *A. comosus* (Pineapple), and *C. papaya* (Papaya) due to the composition of the fruit peelings. These wines had significantly higher antioxidant power compared to ascorbic acid.

KEYWORDS: phenols, assay, fermentation, absorbance, concentration

SUBMISSION ID: R04A-CAVITP-1235

Developing the Problem Solving Skills in Chemistry through the Algorithm Approach

Chona Pangilinan, Teacher II, Palahanan National High School

Abstract

INTRODUCTION

This study aimed to develop the problem-solving skills in Chemistry of the senior high school students using the algorithm approach with the end view of providing drill exercises. It attempted to find out how the algorithm approach is utilized by science teachers in teaching Chemistry.

METHODS

The study made use of experimental design and questionnaire. Participants of the study were from the two sections of Grade 12 STEM strand who were enrolled in General Chemistry 1 during the first semester of the school year 2018-2019 at Palahanan National High School. Participants composed of 18 students in the controlled group, and 17 students in the experimental group, equated according to their previous general weighted average in core and applied science subjects in Grade 11. A total of eight science teachers were also part of the study to determine how the algorithm approach is utilized in teaching Chemistry, and the difficulties they encountered in utilizing the algorithm approach in teaching Chemistry topics. Statistical treatments applied were frequency, percentage, weighted mean and two-tailed test of independence.

RESULTS

Based on the findings, the teachers strongly agreed that the algorithm approach can be utilized by engaging students to procedural approaches in solving stoichiometry related problems, and they often encountered difficulties in utilizing algorithm approach in teaching Chemistry such as one-trial then quit mentality of the students, lack of critical thinking ability, and lack of prior knowledge of the students in Chemistry concepts. Results also revealed an increase in the problem-solving skills of the students from basic to mastery level when exposed to traditional teaching method and from basic to advanced level when exposed to the algorithm approach. Significant differences were observed in the post-test.

DISCUSSIONS

The study recommended that proposed problem-solving exercises integrating algorithm approach may be reviewed and tried in teaching General Chemistry 1 to develop the problem-solving skills of the students. The algorithm approach must also be tried out in other disciplines, and the treatment period should be lengthened. A similar study may also be done focusing on other year levels with concern in developing not only their problem-solving skills but also other skills required by the 21st-century learner.

KEYWORDS: algorithm approach, experimental

SUBMISSION ID: R04A-BATANP-2249

Development of a Prototype Power Bank with the Use of Saline Solution as an Alternative Electrolyte

Lorely Verano, Student

Abstract

INTRODUCTION

Nowadays, the use of power banks are prevalent for its ease of use and easy access. This experimental research aimed to make a power bank with the use of a saline solution as an alternative electrolyte that can be used in emergency situations. Specifically, the research studied the significant difference between the charging rates of the produced prototype saline powered power bank depending on the saline solution concentration.

METHODS

Using a quantitative method, and experimental research design, the produced prototype power bank undergoes test analysis depending on the concentration. 5%, 11% and 20% saline solution were used to determine its physical characteristics in terms of lifespan and capacity, testing the amount of electricity (v). After assessing, the treatments were compared, if there was a difference between the charging rates of the power banks depending on the saline solution concentration.

RESULTS

in assessing the most acceptable saline solution as an alternative electrolyte to use as a power bank, T1 - with 5% saline solution that has an output voltage of 3.54V and charging rate 25% accumulated percentage per hour is the least performing treatment out of all. T2 - with 11% saline solution that has an output voltage of 5.08V and a charging rate of 30% accumulated percentage per hour is the most suitable saline solution while T3 - with 20% saline solution that has an output voltage of 7.46V and a charging of 35% accumulated percentage per hour which is considered as less performing saline solution for having the most output voltage wherein the most acceptable output voltage is 5V in charging smartphones. Testing for the difference of the suitability of the treatments as an alternative electrolyte in terms of output voltage and charging rate using the one-way ANOVA test, P-value of <0.00001 was obtained which means there is a significant difference between the different saline solution.

DISCUSSIONS

Hence, this study concluded that the most suitable saline solution as an alternative electrolyte to use as a power bank has an 11% saline solution and a 5.08V compared to the other treatments. This study proved that saline solution is suitable as an alternative electrolyte to use in a power bank.

KEYWORDS: saline solution, alternative electrolyte, power bank

SUBMISSION ID: R04A-CAVITP-1355

Development of Photovoltaic Cells Based on Kadyos Pod-Synthesized Zinc Oxide Nanoparticles and Natural Dye from Purple Knight and Purple Shamrock Ethanolic Extract

Junel Arellano & Margaux Amiel Salavante, Negros Occidental High School
(Adviser: Russell Gorre)

Abstract

INTRODUCTION

Solar energy is one of the widely used sources of energy in the Philippines through the establishment of industrial photovoltaic plants. Photovoltaic cells have drawn attention as an alternative source of electricity because of their low production cost, ease of fabrication and manipulation, and reasonably high efficiency. Zinc oxide nanoparticles (ZnO NPs) with natural dye are usually tapped in the development of photovoltaic cells.

METHODS

The ZnO NPs were synthesized by mixing and boiling the dried fine Kadyos pod powder in deionized water until the color of the aqueous solution changed from watery to light green. The mixture was then filtered. The filtrate was then mixed with Zinc acetate dehydrate and a few drops of 2.0 M NaOH solution. The synthesized ZnO NPs (white precipitate) was washed with distilled water and ethanol, and dried in a hot air oven at room temperature. Then, the ZnO NPs were then made into a paste and combined with natural dye from Purple Knight and Purple Shamrock and utilized as photovoltaic cell.

RESULTS

in this study, ZnO NPs were successfully synthesized using Kadyos pod extract as capping and reducing agent which was confirmed by UV vis Spectrometer with peak absorbance between 200nm and 300 nm. Scanning Electron Microscope (SEM) showed that the particles were aggregated, irregular in shape and varied in size. DMRT at $0.05\bar{I} \pm$ revealed that the Kadyos pod-assisted synthesized ZnO NPs and natural dye from Purple Shamrock leaves or Purple Knight leaves extract produced a significantly higher current and voltage output than the Zinc oxide with the two aforementioned extracts at varying periods (9:00 am, 12:00 pm and 2 pm).

DISCUSSIONS

Phytochemicals present in Kadyos pods such as alkaloids, flavonoids, tannins, terpenoids, and glycosides may be responsible in the synthesis of ZnO NPs. It was confirmed in this study that the total anthocyanin content and total monomeric anthocyanin pigments of the Purple Shamrock extract is significantly higher than the Purple Knight extract which explains that the former produced a higher current voltage output than the latter when used as materials in the photovoltaic cell. This result could provide valuable inputs in developing a low cost and feasible environment-friendly source of dye-sensitized solar cells (DSSC) which can lessen the problem on power shortage as well as promote sustainable development.

KEYWORDS: photovoltaic cell; Purple Knight; Purple Shamrock; Zinc oxide nanoparticles

SUBMISSION ID: R006-NEGROS-0008

Development of Photovoltaic Cells Based on Kadyos Pod-Synthesized Zinc Oxide Nanoparticles and Natural Dye from Purple Purple Knight and Purple Shamrock Leaves Ethanolic Extract

Junel Arellano & Margaux Amiel Salavante, Student

Abstract

INTRODUCTION

Solar energy is one of the widely used sources of energy in the Philippines through the establishment of industrial photovoltaic plants. Photovoltaic cells have drawn attention as an alternative source of electricity because of their low cost of production, ease of fabrication and manipulation, and reasonably high efficiency. Zinc oxide nanoparticles with natural dye are usually tapped in the development of photovoltaic cell.

METHODS

The ZnO NPs were synthesized by mixing and boiling the dried fine Kadyos pod powder in deionized water until the color of the aqueous solution changes from watery to light green. The mixture was then filtered. The filtrate was then mixed with Zinc acetate dehydrate and few drops of 2.0 M NaOH solution. The synthesized ZnO NPs (white precipitate) was washed with distilled water and ethanol and dried at hot air oven at room temperature. Then, the ZnO NPs were then made into paste and combined with natural dye from Purple Knight and Purple Shamrock and utilized as photovoltaic cell.

RESULTS

in this study, ZnO NPs were successfully synthesized using Kadyos pod extract as capping and reducing agent which was confirmed by UV vis Spectrometer with peak absorbance between 200nm and 300 nm. Scanning Electron Microscope showed that the particles were aggregated, irregular in shape and varied in size. DMRT at $0.051 \pm$ revealed that the Kadyos pod-assisted synthesized ZnO NPs and natural dye from Purple Shamrock leaves or Purple Knight leaves extract produced a significant higher current and voltage output than the Zinc oxide with the two aforementioned extracts at varying time periods (9:00 am, 12:00 pm and 2 pm).

DISCUSSIONS

Phytochemicals present in Kadyos pod may be responsible in the synthesis of ZnO NPs while the anthocyanin from the two plant extracts may explain their ability in generating the photovoltaic cell. It was confirmed in this study that the total anthocyanin content and total monomeric anthocyanin pigments of the Purple Shamrock extract is significantly higher than the Purple Knight extract which explains that the former produced a higher current voltage output than the latter when used as materials in the photovoltaic cell. This result could provide valuable inputs in developing a low cost and feasible environment-friendly source of dye sensitized solar cells which can lessen the problem on power shortage as well as promote sustainable development.

KEYWORDS: Photovoltaic Cell, Purple Knight, Purple Shamrock, Zinc Oxide Nanoparticles

SUBMISSION ID: R006-BACOLO-0000

**Dye Extracted from Boat Lily Plant (*Tradescantia spathacea*) Leaves
and its Application to Jusi Silk Fabric**

Angelito Atienza, Department of Education Laguna

Abstract

INTRODUCTION

Recent researches show that natural dye or pigment is the most important colorant used to change the color of fabric that is widely used in different industries. Mordant acts as a link between the fiber and dyestuff, and these are substances that have an affinity for both textile fibers and dyes. The researcher aimed to develop a new source of natural dye from boat lily plant leaves, since its color appears to be bright purple that is inexpensive and can be applied to a fabric used in different embroidery products.

METHODS

The researcher utilized both the experimental and descriptive method to study the boat lily plant leaves as a source of natural dye. This study was conducted in three different phases, (1) extraction of dye from the leaves of boat lily plant through aqueous method solution, (2) lab test conducted at Philippine Textile Research institute, and (3) selected embroidery proprietors and embroidery dyers in Lumban were given a questionnaire to evaluate the dyed jusi silk fabric in terms of its appearance and market value.

RESULTS

The researcher determined the potential of boat lily plant leaves to be a source of natural dye for jusi silk fabric colorants. The application of dye extracted from the leaves of a boat lily plant was possible and could be used as natural dye based on laboratory test results on Colorfastness to Laundering and Rubbing which was 4.5 out of 5 standard rating scale. The survey on appearance obtained a weighted mean average of 4.56 or Highly Evident for the embroidery proprietor group and 4.41 or Highly Evident for the embroidery dyer group which shows satisfaction on the dye color. The dyed Jusi fabric was rated and evaluated in terms of its market value and obtained a rating of 4.49 or Highly Evident for both groups.

DISCUSSIONS

The Dye Extracted from the Leaves of Boat Lily Plant (*Tradescantia spathacea*) applied to Jusi Silk Fabric shows a vibrant and acceptable color in three different shades depending on the types of mordanting method. The Chemical Test result for Colorfastness to Laundering using the AATCC Test Method 61-2013 and AATCC TM8-2016, Colorfastness to Crocking indicates that there was no significant difference compared to the standard rating scales given by the AATCC in terms quality and market value.

KEYWORDS: Boat Lily Plant, Natural Dye Extraction, Mordanting, Colorfastness

SUBMISSION ID: R04A-LAGUNA-0030

Effectiveness of Polysterene as Alternative Sealant

Ian Gabriel Bagsik, Jerick Belostrino, Karl Michael Ables, & Nicole Montoya,
Munting Ilog NHS
(Adviser: Noel Anciado)

Abstract

INTRODUCTION

There are lots of plastic, paper, cups, and styrofoam that can be recycled. If things will be done correctly, less waste will crop up, new ideas will come up, and new things will be created. This study explored the different techniques to recycle styrofoam and turn it into a useful product.

METHODS

Multiple methods were used in this study. Specifically, Pre-experimental research and comparative designs were used to investigate. The Pre-experimental design could be a cost-effective way to discern whether a potential explanation is worthy of further investigation. Comparative analysis was done between the commercial sealant and the proposed styro-sealant to investigate the level of acceptance by the target users. The researchers gathered data from selected construction workers through the use of a self-made survey questionnaire to test the smell, adhesiveness, and compressibility of the sealant.

RESULTS

The results reveal that the smell of styro-sealant is not approved by the end-users. 46.67% is quite lower than the 73% obtained by the commercial sealant. When adhesiveness was tested, both styro-sealant and commercial sealant obtained a very good rating, 80% and 83 % respectively. Lastly, in terms of compressibility, styro-sealant obtained a higher percentage (63%) than commercial sealant (50%).

DISCUSSIONS

The results show that in terms of smell and adhesiveness, the commercial sealant is more acceptable than the styro-sealant but in terms of compressibility in the breakage of the sealant, styro-sealant is better as perceived by the end-users. The results imply the possibility of using this product; however, further study is needed to improve its smell for health reasons.

KEYWORDS: Polysterene, Sealant, Alternative

SUBMISSION ID: R04A-CAVITC-0036

Eggshell Powder as an Effective Low-Cost Adsorbent for Neutralization of Acidic

Allexa C. Lapidario, Blessing Joy L. Fajiculay, & Caila T. Mananquil
(Adviser: Eduardo L. Quibral Jr.)

Abstract

INTRODUCTION

Water is life; God made it so. in fact, the human body is composed of 72 % water. Acid rain is harmful, and a large amount of eggshells waste are disposed of in landfills annually (N. K. Mondal, 2011). Our school disposes 1.800 eggs per week. This drove us to neutralize acid rain using an adsorbent eggshells powder as environmentally friendly and cost-effective wastewater treatment. Huang, Yuming, 2011 had applied the calcined eggshell treatment of electroplating wastewater. in contrast, we used untreated powdered eggshell. The efficiency of the study was acknowledged as a champion on Division and National Competition (October 2, 2018 & November 15-18, 2018).

METHODS

A simple experimental method was used on the mixture of water and vinegar for controlled setup, as an alternative for acid rain to prove the viability of the eggshell powder wastewater treatment on an acidic solution. Eggshells were collected, washed, membrane peeled, dried under the sun, ground from coarse to a fine size. Improvised sieve four layered funnel from recycled bottles was the water treatment apparatus. An acidic solution was poured to the water treatment apparatus with eggshell powder in every layer.

RESULTS

The study obtained the result that eggshell powder as an adsorbent for neutralization of acidic solution was effective. The compound of eggshell powder reacts with acetic acid wherein it yields calcium acetate hydrate and carbon dioxide that result to neutralize filtrate. The changes on the end product from acidic to neutralized filtrate were determined by the use of litmus paper and PH meter. in acidic solution, the color of the paper became red, in filtrate no change. in Ph meter, the solution on the first trial was 3.1, second 3.1, and on third 3.2. in filtrate, on first trial 6.5, second 6.6, and third 6.6 Three trials on the same set of eggshell powder proved that it can be used up to three times. The potential uses of eggshell powder for a larger scale neutralization of acidic water is expected.

DISCUSSIONS

The eggshell powder as an effective low-cost adsorbent for neutralization of acidic solution was proven; it conformed to the study did by Muhammad Ali Zulfikar et al.2013 using shell as an adsorbent of congo red. Studies can study its application in neutralizing acid rain for agricultural irrigation.

KEYWORDS: eggshell powder, adsorbent, calcium carbonate, acid rain, pH meter, litmus paper.

SUBMISSION ID: R04A-CABUYA-0057

Effectiveness of Polysterene as Alternative Sealant

Ian Gabriel Bagsik, Jerick Belostrino, Karl Michael Ables, & Nicole Montoya,
Munting Ilog National High School
(Adviser: Noel Anciado)

Abstract

INTRODUCTION

There are lots of things in this world like plastic, paper, cups, and styrofoam that can be recycled. If these are done correctly, less waste will crop up, new ideas will come up, and new things will be created. Looking into their usefulness after using is everybody's concern. Therefore, this study tried to explore the different techniques to recycle styrofoam and turn it into a useful product.

METHODS.

Multiple methods were used in this study. Specifically, pre-experimental research and comparative designs were used to investigate and note the observations in some interventions or treatments presumed to cause change. The pre-experimental design could be a cost-effective way to discern whether a potential explanation is worthy of further investigation. Comparative analysis was done between the commercial sealant and the proposed styro-sealant to investigate the level of acceptance of target users. The researchers gathered data from selected construction workers through a self-made survey questionnaire to test the smell, adhesiveness, and compressibility of the sealant.

RESULTS

The results reveal that the smell of the styro-sealant is not approved by the end-users of the product. Its 46.67% rating is quite lower than the 73% obtained by the commercial sealant. When adhesiveness was tested, both the styro-sealant and the commercial sealant obtained very good ratings, 80% and 83 % respectively. Lastly, in terms of compressibility, the styro-sealant obtained a higher percentage (63%) than the commercial sealant (50%).

DISCUSSIONS

The results show that in terms of smell and adhesiveness, the commercial sealant is more acceptable than the styro-sealant. But in terms of compressibility in the breakage of the sealant, the styro-sealant is better as perceived by the end-users. The results imply the possibility of using this product; however, further study is needed to improve its smell for health reasons.

KEYWORDS: Polysterene, Sealant, Alternative

SUBMISSION ID: R04A-CAVITC-0036

Enhancing the Performance of Students in Selected Learning Competencies in Chemistry through Chemdama Board Games

Nanette Jalon, CNHS

Abstract

INTRODUCTION

It is a common observation that learning Chemistry, as a discipline, creates negative feedback to most students in the secondary level. Chemistry is one of the hated subjects in Science where students would likely fail in completing the necessary requirements due to poor performance in both academic and conceptual reasoning. In this subject, the ability to name and write the chemical formula of the compound, classify the types of bond forms, as well as to compute for a compound's molar mass are key competencies in Chemistry which students find difficult to understand. Giving them an intervention by using board games such as ChemDama will boost students' interest in the subject.

METHODS

The respondents of the study were randomly selected Grade 9 students. The study made use of pre-test and post-test designs. Two outcome variables were used in the study. The first quantified students' understanding and knowledge of the information in the selected learning competencies addressed in the game. The second qualitatively assessed student perception of the impact of laboratory-based exercises, lectures, and the game, on learning effectiveness and enjoyment through survey questionnaires.

RESULTS

Statistics reveals that the Learning Competencies were significantly enhanced by playing ChemDama board game. Among the 4 competencies, only writing and naming chemical formula are not significant with a Z calculated value of 0.13. It is less than the critical value of 1.64 at 5% level of significance. Other learning competencies tested were significantly enhanced by playing ChemDama board game.

The game was regularly ranked first by students as being both the most effective and the most enjoyable way to learn. Performance on the knowledge tests and long-term retention were significantly enhanced by playing the game, compared to other teaching tools used.

DISCUSSIONS

The students who participated had positive perceptions regarding the use of the Chemdama board game. They usually found educational games to be an interesting tool to make their learning process more enjoyable.

Mastery of the topics enhanced by ChemDama is very useful in identifying metals and non-metals, classifying different types of chemical bonds as to metallic, ionic and covalent bonds, and calculating the formula/molar mass of the compound. Thus, ChemDama can be played in schools to improve students' academic performance

KEYWORDS: Boardgames, learning competencies, chemistry, student performance

SUBMISSION ID: R04A-CAVITP-0866

Isolation and Partial Purification of Winged Bean (*Psophocarpus tetragonolobus* (L.) Dc) Proteins with Bioactive Peptides Exhibiting Antioxidative and Antihypertensive Properties

Franchesca Paulene Panggat & Nathanielle Keith Bonganay, Laguna Senior High School

Abstract

INTRODUCTION

According to the World Health Organization (2013), cardiovascular diseases account for almost one-third of the causes of death every year. From this fraction, hypertension covers about half of the primary reasons that trigger cardiovascular diseases. Moreover, many diseases can also be acquired by an individual having too much free radicals present in their body that have the capacity to attack healthy cells which may lead to cancer and brain malfunction. With this alarming impact on the health status of people, the research community conducts studies to find solutions to these health threats.

METHODS

Fifty grams of mature winged bean seeds were ground and defatted by adding n-hexane (1:10 w/v). The proteins of the 3 samples with 5 grams of the defatted meal, were extracted by adding 25 ml of extraction buffer. The resulting crude proteins were partially purified using ammonium sulfate precipitation at 35% and 80% saturation. The 3 precipitates (35P-80P) obtained were dissolved in an extraction buffer and was dialyzed three times for four hours in distilled water. The crude and the partially purified proteins (35P-80P) were characterized using Bradford assay and SDS-PAGE. The partially purified samples were then hydrolyzed using pepsin, trypsin and chymotrypsin, and the combination of the three enzymes in different digestion times (2, 12 and 24 hours). Verification was made using SDS-PAGE and the Densitometric Analysis. Antioxidative and antihypertensive properties were determined using the DPPH and ACE assay and the results of the samples were compared with positive controls.

RESULTS

The results showed that the 2-hr combined enzymes digest of both assays had the highest percentage of scavenging activity and percentage of Ace inhibition with 89.26 % and 78.76% respectively. The percentage of inhibition of the sample in the DPPH assay is higher by almost 1% compared to the positive control (potencee) with 88.52%. While on the ACE assay the positive control (captopril) has a higher percentage of ACE inhibitory activity with 88.16% compared to the 2-hr combined enzymes digest with 78.76%.

DISCUSSIONS

These results revealed that bioactive peptides extracted from mature winged bean seeds are potential antihypertensive and antioxidative sources.

KEYWORDS: antihypertensive, antioxidative, winged bean seed proteins, DPPH, ACE

SUBMISSION ID: R04A-LAGUNA-0026

**Marigold (*Tagetes erecta* Linn.), Oregano(*Coleus aromaticus* Benth.)
Leaves Extract, Calamansi Juice with Coconut Oil as Pediculicide**

Glen C. Asuncion, Teacher
(Adviser: Jessa Rodriguez)

Abstract

INTRODUCTION

Our country today is suffering from an economic crisis and environmental problems. This somehow calls for discovering and producing something out of the resources available from the environment. In this study, I produced a pediculicide that can terminate head lice. I explored the active chemical components found in marigold, oregano leaves extract, and calamansi juice with coconut oil. I also investigated if there is a significant difference on the mortality rate of the head lice. The product produced was safe on humans, especially on younger children and pregnant women, when compared to commercialized lice shampoo.

METHODS

The pediculicide produced in the experiment has an insecticidal effect on head lice. Experimental method was used in gathering data and the collected data were treated using mean and standard deviation and Analysis of Variance. The study was done in school year 2016 - 2017. The 180 head lice used in the experiment were divided to six treatment set-ups with each set-up having three replications. The treatments contained specific levels of concentration: T0-No extract applied, T1-2mL extract mixture of marigold, oregano, calamansi with cooking oil, T2-2mL extract mixture of marigold and oregano, T3-2mL extract of marigold and oregano, T4-2mL marigold plant extract, T5-2mL extract of oregano, and T6- 2mL of Licealix shampoo.

RESULTS

Based on the experimentation and data gathered, it was concluded that marigold and oregano leaves extract with calamansi juice and coconut oil were effective against head lice. T1 -2mL extract mixture of marigold, oregano, calamansi with cooking oil had the highest insecticidal effect wherein 100 percent of the specimen were terminated and was comparable to Licealix commercial lice shampoo. Likewise, based on the Phytochemical screening test the treatment possessed: Alkaloids, Flavonoids, Tannins, Saponins, Steroids & Anthraquinones -which are substances also present in Pytherin licealix lice shampoo.

DISCUSSIONS

The results concluded that the product produced has a maximum insecticidal effect on head lice. It was an effective natural pediculicide. It is a plant-based treatment that is economical, very abundant in the community, and could be found anywhere in the country. It further revealed that at different compositions, extracts have a maximum insecticidal effect on the head lice. It can also be inferred that the greater number of composition of extracts, the higher the insecticidal effect on the head lice.

KEYWORDS: extract, insecticide, pediculicide, pyrethrins

SUBMISSION ID: R013-SURNOR-0001

Nitrogen Gas and Potassium Iodide Fire Extinguisher Balls

Jonan Bryan N. Arandia, Keana Janella M. Calinawan, & Rheizen Gerly B.,
Cavite National Science High School

Abstract

INTRODUCTION

Fire extinguisher balls are handheld fire suppressants that automatically discharge once thrown to fire. Fire extinguisher balls are continuously being developed to further ensure safety, convenience, and fire-suppressing qualities. Consequently, various types with varying agents are found to have relative effectiveness and some, unfortunately, contribute to environmental issues (Thawad, 2011). With this said, the creation of fire extinguisher balls that make use of environmentally innocuous fire extinguishing agents are beneficial not only to the firefighting industry but also to the whole world.

METHODS

This research constructed a fire extinguisher ball which utilizes less harmful agents and, unlike conventional fire balls with only chemically-acting agents, uses both a chemically-acting agent (Potassium Iodide) and a physically-acting agent (Nitrogen gas). Three fire balls with varying concentrations of the said agents were prepared and tested in terms of weight, extinguishing time, discharge time, utilization time, and total area of extinguished fire. Two-way ANOVA test was used as the statistical test in the study with the amounts of N_2 , and KI as the independent variables.

RESULTS

Among the three devices, the fire ball with the highest concentration of N_2 , (0.55 g) received the fastest extinguishing time (2.34 s) while the fire ball with the lowest concentration of N_2 , had the lowest discharge time (0.99 s). The total utilization time, on the other hand, still favored the fire ball with the highest concentration of N_2 , resulting to a total time of 2.94 s. The result from the Two-way ANOVA test showed a higher obtained F-value (9.552094) compared to the P-value (0.057018) which meant that the null hypothesis will be rejected. The result of the statistical analysis shows that there is a significant difference between the extinguishing duration of each concentration set-up.

DISCUSSIONS

The results imply that there is a stronger inverse relationship between the concentration of N_2 , and the total extinguishing time compared to that of KI which proves that N_2 , can remove heat and oxygen while KI can interrupt chain reactions (Voelkert, 2015); hence, giving the use of environment-friendly agents more recognition. on the other hand, the device could still be improved by focusing on the area that it can extinguish so that it can deal with bigger areas similar to Elide Fire Ball's capacity of 8-10 square meters.

KEYWORDS: Fire extinguisher ball, Nitrogen gas, Potassium Iodide, Chemically-acting agent, Physically-acting agent, Fire safety

SUBMISSION ID: R04A-CAVITP-0174

**Numerical Ability Attitude and Academic Performance in Chemistry of
Regular and Open High School Third Year Students of Munting Ilog
National High School**

Cherry Trinidad, Department of education

Abstract

INTRODUCTION

integration of subjects is significant in teaching strategies to improve the performance of students. Mathematics is one of the subjects integrated into Chemistry. Furthermore, attitude towards a subject is considered to determine the correlation between numerical ability and academic performance of third year students from regular and open high school programs.

METHODS

The researcher employed descriptive correlational method with document analysis. This method includes interview, observation, and use of questionnaires. This study determined whether numerical ability and attitude are related with the academic performance of third year students in Munting Ilog National High School and with students of an Open High School. Descriptive research is used to obtain information concerning the status of the phenomena to describe "what exists with respect to variables or conditions in a situation."

RESULTS

The result of this study showed that in numerical ability most of the regular students belong to average level while open high school students belong to dull level. In addition, the academic performance of the regular and open high school students are both in the level of developing. Regular students have an average level of ability in numbers compared to open high school students. Likewise, they have a very good attitude towards Chemistry, with a developing level in academic performance. Open high school students are dull in numerical ability but with a good attitude towards, and in a developing level in Chemistry. Furthermore, there is no significant relationship between numerical ability and attitude of regular students likewise with numerical ability and academic performance of open high school students.

DISCUSSIONS

Based on the results, regular students can pass on minimum numerical intelligence while open high school students struggle in doing numerical exercises. They both possess minimum knowledge, skills, and core understanding but need help throughout the performance, hence they are both having good attitude towards Chemistry.

KEYWORDS: behavior

SUBMISSION ID: R04A-CAVITP-0615

Photocatalytic Activity of Carbon Nanotubes and Zinc Oxide Composite Catalyst on Methylene Blue under Ultraviolet and Visible Light Irradiation

Remmus Roi L. Banzuela, San Pablo City Science High School
(Adviser: Franz Kevin Manalo)

Abstract

INTRODUCTION

Water pollution caused by plastics, heavy metals, and dyes is a main source of diseases. Dyes are used by different industries to produce textile, plastics, and clothes. Fifteen percent of over 70,000 tons of commercially available dyes is lost during dyeing process and this leaching can affect both aquatic and human life. In this study, Methylene blue, a heterocyclic dye, will serve as an indicator of the photocatalytic activity of carbon nanotubes and zinc oxide composite catalyst under ultraviolet, visible, and without light irradiation.

METHODS

Multi-walled carbon nanotubes (MWCNTs) and zinc oxide (ZnO) composite catalyst were prepared with the following CNT-ZnO ratios: 0-100, 25-75, 50-50, 75-25, and 100-0 through heterogeneous mixing method. Methylene blue solution made from dissolving 60 mg of methylene blue powder into 2 L of distilled water was mixed with the composite catalyst, ultrasonicated for 5 mins, and then exposed to ultraviolet, visible, and without light irradiation for 30 mins with constant magnetic stirring. After irradiation, 4 mL was gathered and centrifuged, transferred into test tubes and the mean transmitted intensity (lux) was measured from each of the samples using a light sensor connected to a LabQuest™ spectrometer. The percent degradation was obtained using the formula $[(P_0 - P_i)/P_0] \times 100$ where P_0 and P_i are the sample and pure methylene blue solution transmittance, respectively.

RESULTS

Ratio 75-25 of CNT-ZnO yielded the highest percent degradation on methylene blue under ultraviolet, visible, and without light irradiation having 65.39%, 59.12%, and 56.59%, respectively. Meanwhile, lowest percent degradation was yielded by the ratio 0-100 having 45.01%, 10.85% and 10.09%, respectively. Statistical analysis showed that there is a significant interaction between the ratios of CNT- ZnO and light source irradiation on the percent degradation on methylene blue.

DISCUSSIONS

The ratio 75-25 of CNT-ZnO under ultraviolet, visible, and without light irradiation degraded methylene blue better implying that CNT-ZnO can be effectively used for water treatment and remediation. In congruence, the study conducted by Byrappa, et al. (2008) and Qu, Luo and Cong (2012) yielded similar results showing that the combination of CNT-ZnO has higher degradation efficiency compared to pure CNT and pure ZnO. Other composite catalysts and **methods** of fabricating it were recommended to establish better percent degradation.

KEYWORDS: Photocatalytic degradation, carbon nanotubes, zinc oxide, ultraviolet, visible light, irradiation

SUBMISSION ID: R04A-SANPAB-0047

**Phytoremediation Capacity Assessment of Copper (Cu) and Lead (Pb)
Contaminated Soils using *Helianthus annuus L.* (Sunflower Plant)**

Kyra Carmina Chatto, Patrisha Ysabel Dizon, & Sofia Edzel Bermal, Cavite
National Science High School

Abstract

INTRODUCTION

Heavy metal contamination is an overlooked, dangerous by-product of industrialization that harms human and environmental health. Phytoremediation is a proven cheap alternative to cleaning up heavy metals. To significantly contribute to heavy metal pollutant research, this paper aims to assess the phytoremediating capability of the sunflower plant (*Helianthus annuus L.*) against two prominent heavy metals, Cu and Pb, using artificially infused and naturally-contaminated soils.

METHODS

Two sets of experiments were performed wherein healthy soil from Trece Martires, Cavite was used for the artificially infused setup and soil was collected from Binakayan, Cavite for the naturally contaminated soil setup. initial AAS analysis for the two setups revealed 2.14mg/ kg Pb and 6.22mg/kg Cu were present in the artificially infused setup while 2.03mg/kg Pb and 5.17mg/kg Cu were present in the naturally contaminated setup. Sunflower seeds were planted on both setups to determine and assess the phytoremediation capability of the specimen.

RESULTS

in the naturally contaminated soil, compared to the pre-analysis (mean of 4.615mg/L, SD 0.085mg/L), the post analysis showed significantly less heavy metal content (mean of 2.265mg/L, SD 0.035mg/L, $p<0.005$, $t>2.132$). in the metal-infused set-up, compared to the pre-analysis (mean of 4.18mg/L, SD 0.165mg/L), the post analysis showed significantly less heavy metal content (mean of 3.41mg/L, SD 0.1mg/L, $p<0.035$, $t>2.132$).

DISCUSSIONS

Overall, this study showed that sunflowers can be a promising phytoremediating agent against copper and lead contamination. Further in-depth studies should focus on (1) determining the biomolecular, metal-specific, phytoremediating mechanism of sunflower; and (2) further assess the phytoremediating property of fully-grown sunflowers through optimized experiments.

KEYWORDS: phytoremediate, alternative, natural, cheap, analysis, pollution, contamination, copper, lead

SUBMISSION ID: R04A-CAVITP-0305

Production of Bioethanol from the Sap of Butuhan (*Musa balbisiana*) Trunk

Althea Michelle Bonifacio, Aileen Joy A. Dinglas, & Meafel C. Angeles, Bucal National High School

Abstract

INTRODUCTION

Bioethanol or ethanol is a fuel used as a substitute for petrol in road transportation vehicles. It is produced by what you call "sugar fermentation process". It can help vehicle owners find an environmentally friendly way of fueling their engines. This project will help in resolving out the nation's problem in cleanliness. It means, not just helping the people, but Mother Nature herself. It can also help banana tree farmers. It will also be a lot of help to the people who are in a budget, especially nowadays where the price of vehicle gas keeps getting higher; they will save more money for other needs than putting them all on gas expenses.

METHODS

Three liters (3L) of crude extract of butuhan trunk were obtained and divided into two separate containers. in each container, 250 grams of yeast and 500 grams sugar were added. The setups were labeled Set up A and Set up B. Set up A was fermented for 30 days while Set up B was fermented for 60 days. Each mixture in both setups underwent gas chromatography to determine their alcohol content.

RESULTS

Results reveal that the fermented material in Set A yielded 1.43 percent volume of solute per volume of solvent. on the other hand, the fermented material in Set B yielded 0.273 percent volume of solute per volume of solvent.

DISCUSSIONS

Based on the results of the study, there is a greater percentage of alcohol produced in the mixture fermented for 30 days compared to the mixture fermented for 60 days. Their difference of alcohol content is 1.157 percent.

KEYWORDS: Bioethanol, banana sap, fermentation

SUBMISSION ID: R04A-CAVTP-1598

Scalable Production of Graphene Using Acetone-Water Dispersion through Shear-Exfoliation Method

Lenard Marquez & Ma. Trishia U. Macaraeg, Department of Education
(Adviser: Adelma Topacio)

Abstract

INTRODUCTION

To facilitate the development of graphene technology from laboratory to commercial uses, the researchers developed a scalable method to produce high quality and defect-free graphene as simple as possible. The researcher aimed to increase the scalability of the production to industrial scale with less complexity using readily available equipment.

METHODS

The production of graphene in this study was done using simple chemicals and equipment. The researchers used the most basic form of a shear mixer, i.e., a kitchen blender - Philips hr2056/01. To investigate the nature of the black liquid produced in the shear exfoliation, the mixtures were placed in a 250-mL beaker and was cooled for 30 minutes. Separation of the graphene and graphite was observed as the graphene floated while the graphite settled at the bottom. The mass of the produced graphene was recorded.

RESULTS

The experimentation resulted in the production of large quantities of graphene using a kitchen blender together with a solution of acetone and water. This method had a maximum yield rate of 0.4g/hr in a small volume. This method has a better efficiency than the blender-dishwashing method which had a maximum yield rate of 0.1g/hr. A shear-exfoliation method in an acetone-water solution have scaled up the process and has proven the efficiency of low-boiling point solvents.

DISCUSSIONS

The shear-exfoliation of the graphene is dependent on the duration of the mixing. Any interruption in the shear-mixing caused a decrease in the quantity of the graphene produced. Three trials have shown the potential of its scalability in mass-producing graphene. The experiment was performed in a small quantity but still yielded a higher amount of graphene, thus, scaling up the process 4x faster using the concentration of 3:1 acetone-water. The scalability of the production can still be volume-based as long as the 75% volume fraction of acetone is acquired.

KEYWORDS: Shear-Exfoliation Method, Acetone-Water Dispersion, grapheme

SUBMISSION ID: R04A-DASMAR-0022

Students' Performance and Anxiety Level in Chemistry Using Peer Assisted Learning Strategy

Josephine Hernandez, PACT

Abstract

INTRODUCTION

Through the years, science education in the Philippines has undergone modifications to provide quality education to everyone. It is here where educational institutions are needed in providing students with appropriate strategies to learn. This study attempted to find out the effect of Peer Assisted Learning Strategy (PALS) on students' performance and anxiety in chemistry on topics in stoichiometry. The study was conducted at Imus National High School, Imus City, Cavite during the second quarter of the school year 2015 - 2016.

METHODS

A class consisting of 48 students comprised the respondents of the study. This study used a single group pretest-posttest pre-experimental design. The paired t-test weighted mean and the Pearson product-moment correlation were utilized to analyze the data. The instruments used in this study are (1) Chemistry achievement test, (2) Chemistry anxiety rating scale, (3) PALS activities, (4) Students' experience survey on PALS, and an (5) Observation checklist.

RESULTS

The result of paired t-test at 0.05 level of significance revealed that there is a significant difference between the pretest and posttest scores of the students in the chemistry achievement test. The use of Peer-assisted Learning Strategy in teaching chemistry tends to enhance the performance of the students in the achievement test. There is a significant improvement in the three domains of learning, namely, knowledge, comprehension, and analysis. The students' performance in chemistry increased after their exposure to peer-assisted learning strategy activities. The students' overall chemistry anxiety has significantly decreased from high to low after their exposure to PALS.

DISCUSSIONS

The effects of PALS on the two dimensions of chemistry anxiety namely (1) learning in chemistry anxiety, (2) evaluation in chemistry anxiety were also determined. Paired t-test results at 0.05 level of significance show that after exposure of the students to PALS all these dimensions significantly decreased. A negative Pearson product-moment correlation value ($r = -0.322$) between students' achievement test scores and chemistry anxiety level revealed a low correlation. The students' overall PALS experience survey results revealed that PALS is more enjoyable and more rewarding than the traditional method.

KEYWORDS: Science, education, intervention

SUBMISSION ID: R04A-IMUSC1-0074

Styrofoam (Polystyrene) on the Compressive-Strength and Density of Asphalt-Cement Mixture

Ben Geoffrey B. Diaz, Edric John S. Follante, Irish Jane S. Cavite, Neil Albert A. Garcia, Renz Vincent D. Fernandez, & Zyra Joy L. Aguilar, Malayan Colleges Laguna

Abstract

INTRODUCTION

Due to the high volume of public and private vehicles passing major roads and highways in the country, there is an increasing number of damages on road surfaces causing roads to not last for more than ten years. Roadworks used to always be the solution, but the increase in maintenance costs would always depend on the nation's budget. Styrofoam (polystyrene) is widely used by every single person in the community. However, styrofoam products results in large amounts of waste and this would take many years to fully decompose. This study aimed to create a high-quality but cheap asphalt pavement by adding different concentrations of styrofoam in the asphalt-cement mixture. It also aims to lessen the styrofoam waste in our country.

METHODS

Materials that were needed for conducting the study were prepared and gathered. A kilogram of styrofoam was collected from Viz-Ma Trading and the Asphalt was bought from Legacel Marketing. The collected aggregates were equally separated and placed in twelve (12) different moulders. The asphalt was then mixed and heated with the aggregates in the stainless basin. To make the styrofoam-infused asphalt-cement, styrofoam was cut into small pieces and weighed accordingly to the determined proportions. It was then added to the mixture of asphalt aggregates. Oil was then put on the moulders before putting the mixture. Lastly, the asphalt-cement mixture and the styrofoam-infused asphalt-cement mixture were cooled for 24 hours.

RESULTS

All the samples were brought to X'Well Testing Services to test their density and compressive strength. The product, in a cylindrical shape, is compressed in a hydraulic press to find the maximum pressure of different mixtures and results are expressed in psi. The average compressive strength and density of the asphalt-cement mixture and asphalt-cement styrofoam mixture were 220.00, 603.33, 403.33, 320.00; 1693.67, 1806.00, 1822.67, and 1737.67, respectively. One-way Analysis of Variance (ANOVA) and Scheffe's test were used to treat the results of the study.

DISCUSSIONS

Findings show that adding 1% of styrofoam to the total mass of the asphalt-cement mixture increases its compressive strength, however, any further addition of styrofoam lowers its compressive strength. It can be inferred that a particular amount of styrofoam should be added to the asphalt-cement mixture to further increase its compressive strength. Meanwhile, in terms of density, adding styrofoam to the asphalt-cement mixture did not improve its density.

KEYWORDS: Asphalt-cement mixture, compressive strength, density, hydraulic press, roadworks, Styrofoam

SUBMISSION ID: R04A-CAVITP-0868

The Efficacy of *Emilia sonchifolia* (Tagulinaw) Charcoal as Lead Adsorbent

John Allen Villanueva

Abstract

INTRODUCTION

Access to clean and adequate water remains a critical problem in urban and coastal areas in the Philippines. Water pollutants in these areas trace back to domestic and industrial sources. Lead (Pb) pollution caused by the emission of a massive number of industrial wastes has become a critical environmental concern. Therefore, this study investigated the potential of *Emilia sonchifolia* (Tagulinaw) charcoal as lead adsorbents in contaminated water.

METHODS

The leaves and stems of *E. sonchifolia* (Tagulinaw) were placed inside the Muffle Furnace Machine (Nabertherm 180Â®) which was set to 350oC until the *E. sonchifolia* (Tagulinaw) turned into charcoal. The potential of 2.5 grams, 5 grams, and 10 grams of *E. sonchifolia* (Tagulinaw) charcoal to adsorb lead were measured by submerging samples into contaminated water (1000 parts per million (ppm) lead). The samples were stirred for 30 minutes, at 500 rotations per minute (rpm), and then filtered to remove flocculates. The lead adsorption was then measured with the use of an atomic absorption spectrophotometer.

RESULTS

The *Emilia sonchifolia* (Tagulinaw) charcoal has the ability to adsorb lead in contaminated water. The average amount of adsorbed lead of 2.5 grams, 5 grams and 10 grams of *E. sonchifolia* charcoal were 999.71ppm, 999.29ppm, and 999.16 ppm respectively. 2.5 grams of *E. sonchifolia* charcoal adsorbed the highest amount of lead while 10 grams of *E. sonchifolia* charcoal adsorbed the least. The adsorbed concentration of lead by the 2.5 grams of *E. sonchifolia* charcoal was far better than the adsorbed lead by the 5 grams and 10 grams of *E. sonchifolia* charcoal. Overall, all the different masses of *E. sonchifolia* charcoal adsorbed high and varied concentrations of lead.

DISCUSSIONS

Different masses of *Emilia sonchifolia* (Tagulinaw) charcoal have the potential in adsorbing lead. The smaller masses of *E. sonchifolia* charcoal adsorbed higher concentrations of lead due to enough binding sites wherein saturation ensued. Higher masses of *E. sonchifolia* charcoal caused adsorbed lead concentrations to decrease, with a larger fraction of lower energy sites occupied. Moreover, smaller amount of *E. sonchifolia* charcoal adsorbed higher concentrations of lead in contaminated water. The same results were obtained in the study conducted by Amuda on the removal of heavy metal from industrial wastewater using modified activated coconut shell carbon.

KEYWORDS: Saturation, Binding site, Lead Contamination, Heavy Metal

SUBMISSION ID: R04A-CAVITP-1211

Used Motor Oil and Used Cooking Oil as Shoe Polish

Jessa Rodriguez, Teacher

Abstract

INTRODUCTION

in this modern world of technology, the scarcity of resources becomes a challenge in addressing increasing demands of consumers. Shoe polish will be in demand especially in the modernized and industrialized countries throughout the world. in this research project, the researcher aimed to produce a shoe polish from used cooking oil and used motor oil which are inexpensive and abundant.

METHODS

Experimental method was used in gathering data and the data collected were treated using mean and average weighted mean in inferential statistics. Each of the three setups (excluding the control group) used five pairs of shoes which were placed in one classroom for about (14) fourteen days to test its span of use. The first setup had 100% (20mL) used motor oil, 2nd setup was 100% (20mL) used cooking oil, the 3rd setup was 50% (10mL) used motor oil and 50% (10mL) used cooking oil, 4th setup had 75%(15mL) used motor oil and 25% (5mL) used cooking oil, while the 5th setup was 100% (20mL) commercialized shoe polish.

RESULTS

The respondents were the Grade 3, 4, 5, and 6 pupils, teachers, and school head of San Pablo Elem. School for S.Y. 2017-2018. The characteristics of used cooking oil and used motor oil that enables it to be a shoe polish were explored; if there was a significant difference between the alternative shoe polish, the used cooking oil and used motor oil, from the commercialized shoe polish; and how long this alternative natural shoe polish lasts. Based on the mean as rated by respondents, it revealed that there was a significant difference among different concentrations. The 75% used motor oil and 25% used cooking oil was found to be the most effective shoe polish for it has a higher mean as compared to the commercialized shoe polish using treatment rating form A (Set 1) experimental group and treatment rating form B (Set 2) controlled group.

DISCUSSIONS

The researchers attempted to resolve problems in the disposal of used motor oil. This will lead to used motor oil being a possible source of producing new products such as shoe polish. Used motor oil has a detrimental effect on the environment. This study emphasized reusing of old oils and reducing waste oils. The product was then tested for its quality through treatment rating: color, odor, water resistance capacity, shininess, span of time, and economic advantage.

KEYWORDS: shoe polish, used motor oil, used cooking oil

SUBMISSION ID: R013-SURNOR-0000

Bamboo (*Bambusoideae*) Fiber as a Substitute Material for Roof Insulation

Veronica Marie Diroy, Zaironil Angue, & Rhonelyn Fango, Bucal National High School

Abstract

INTRODUCTION

A roof insulator is a board-type product that is used to reduce the rate of heat transfer, usually of low or medium density. Roof insulator produces a thermal insulation in a roofing system. The researchers investigated if there is any significant difference in the temperature of prototype houses with or without roof insulation.

METHODS

in this study, the roof insulator was made out of the mixture of 40 grams of bamboo fiber and 20 ml of rugby. First, the bamboo sticks were placed in a container with water and boiled for 10-15 minutes. Then, the bamboo sticks were hammered until they were finer in size. Lastly, it was combined with rugby in a 4x4 inch handmade molder and was dried. Two prototype houses were prepared. One was lined with roof insulator while the other one was not. Temperature sensors were attached to each prototype. Then, the temperatures were read three times in between 2-hour intervals.

RESULTS

The temperature readings in setup one (with bamboo) were 33.7°C, 28.56°C, and 23.15°C. on the other hand, the temperature reading in setup two were 33.9°C, 30.12°C, and 29.18°C.

DISCUSSIONS

Results show a difference of 0.2°C, 1.56°C, and 6.03°C. Apparently higher temperatures were observed in setup two than in setup one. This means that the roof insulator is an effective device that has served its purpose.

KEYWORDS: roof insulator

SUBMISSION ID: R04A-CAVITP-1697

Bricks from Rice Hull Ash and Cow Manure

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National Science High School

Abstract

INTRODUCTION

Nowadays, most of the ingredients used to create bricks come from fertile plains. This causes soil erosion which also leads to the destruction of the fertility of the land. In a study conducted by Vinish Kumar Kathuria in India in 2004, it was found out that farmers who leased their lands to brick kilns not only suffered monetary losses but also saw a decrease in the fertility of their land. For this reason, eco bricks from rice hull ash and cow manure were made.

METHODS

Three kilograms of rice hull were burned while the same amount of mud was cleaned and subjected to weathering for twenty-one days. After three weeks, five kilograms of cow manure and three kilograms of rice hull ash were mixed with five liters of tap water. Six bricks were molded out of the mixture with a 60:30:10 formulation. Three of them were dried under the sun while the other half were burned inside an oven for twenty-four hours. The bricks were tested for their compressive strength in Cavite Testing Center Tanza branch and were compared with one another through the use of One - Way ANOVA.

RESULTS

The sun-dried bricks exerted an average compressive strength of 79.67 psi which is comparably lesser than the fired brick that yielded an average compressive strength of 549.33. The statistical test for both the sun-dried and fired brick showed that the F value is greater than the critical value which caused the null hypothesis, that there is no significant difference between the compressive strength of the brick and the minimum compressive strength for building bricks adopted from the Indian Standard, to be rejected. The sun-dried brick was not able to reach the minimum compressive strength for building bricks adopted from the Indian Standard, which is 498 psi, while the fired brick was even able to exceed the minimum requirement.

DISCUSSIONS

The results show that firing a brick that is made from cow manure and rice hull ash is a better method for making a brick than sun-drying in terms of compressive strength especially in meeting the minimum requirement for building bricks according to Indian Standards.

KEYWORDS: brick, rice hull ash, cow manure, compressive strength, sun - dried brick, fired brick

SUBMISSION ID: R04A-CAVITP-0199

**Chicken (*Gallus gallus domesticus*) Egg Shells and Plastic Waste for
Coarse Aggregate of Concrete Hollow Block**

Claris Joy Flores, Irish Del Mundo, & Joanna Camille Lizardo, Students

Abstract

INTRODUCTION

in today's generation, the use of concrete hollow blocks is very important. Hollow blocks are often used for construction. But through the years the price of hollow blocks have risen. But manufacturers and buyers still pick this kind of expensive material due to its good quality and high compressive strength. By means of researching, reading, and consultation, the researchers found out that using plastic wastes and chicken eggshells is a big help for increasing the compressive strength of something. The researchers also thought that it can likewise help in increasing the compressive strength of concrete hollow blocks. The compressive strength of hollow blocks was tested to know if it can really help in making the hollow blocks stronger and sturdier.

METHODS

Chicken eggshells were collected from the school canteen. These were cleaned, dried, pulverized, and set aside. Plastic wastes were also collected from the surroundings. These were cut into small pieces and set aside. The controlled setup was prepared by mixing 2000 grams of sand, 500 grams cement, and 25 milliliters of water. Treatment 1 was prepared by mixing 2000 grams of sand, 500 grams cement, 50 grams of eggs shells, and 25 milliliters of water. Treatment 2 was prepared by mixing 2000 grams of sand, 500 grams cement, 50 grams of plastic wastes, and 25 milliliters of water. Treatment 3 was prepared by mixing 2000 grams of sand, 500 grams cement, 50 grams of eggs shells and Plastic Waste, and 25 milliliters of water. Three samples of concrete hollow blocks per treatment were tested for compressive strength.

RESULTS

Results reveal that the sample hollow blocks from the controlled setup obtained a mean compressive strength of 167 psi. Sample hollow blocks from Treatment 1 obtained a mean compressive strength of 102 psi. Sample hollow blocks from Treatment 2 had a mean compressive strength of 104 psi. Sample hollow blocks from Treatment 3 got a mean compressive strength of 92 psi.

DISCUSSIONS

Results reveal that the controlled setup had a higher compressive strength compared to any of the treatments with eggshells and plastic wastes as aggregates.

KEYWORDS: Concrete Hollow Block

SUBMISSION ID: R04A-CAVITP-1650

***Eichhornia crassipes* (Water Hyacinth) Stalks and *Ravenala madagascariensis* (Traveler's Tree) Stem as Potential Reinforcement for Concrete Bricks**

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Student

Abstract

INTRODUCTION

Eichhornia crassipes is known for its invasiveness in different bodies of water, with rivers as the most common. This may lead to the alteration and depletion of the biodiversity as a result of the dissolved oxygen in the bodies of water (United Nations Environment Programme [UNEP], 2013). On the other hand, *Ravenala madagascariensis* has leaf bases that serve as breeding areas for mosquitoes (National Parks, n.d.). With regard to these matters, this study aimed to use dried *E. crassipes* stalks and *R. madagascariensis* stem fibers to reinforce concrete bricks. There were ten (10) mix proportions with varying amounts of cement, sand, *E. crassipes*, and *R. madagascariensis*. For each proportion, three (3) samples were prepared. A total of ninety (90) concrete bricks were produced.

METHODS

The concrete bricks were cured every twelve (12) hours for twenty-eight (28) days. After the curing, capping was done to smoothen the surfaces of the bricks. Three (3) tests were conducted - Compressive Strength Test, Tensile Strength Test, and Water Absorption Test. The first two respective tests were done using a Universal Testing Machine (UTM), while the last test was done using an oven. Three (3) trials were done for each test. The data were gathered.

RESULTS

After testing the bricks, it showed that the best proportion for the Compressive Strength Test and Tensile Strength Test was the one with the greatest amount of *R. madagascariensis* stem fibers, i.e., the tenth proportion. While, the ninth proportion, having second to greatest amount of *R. madagascariensis* stem fibers, was the best in the Water Absorption Test.

DISCUSSIONS

The results indicate that the inclusion of *R. madagascariensis* stem fibers further improves the strength and flexibility of concrete bricks as compared to *E. crassipes* stalks. Moreover, using One-way Analysis of Variance (ANOVA), it was known that the F value (1.24211) is less than the F critical value (2.39281). This means that there is no significant difference between the compressive strength of British standards and the average compressive strength of the produced concrete bricks. It also shows that the produced bricks can be a substantial product in the engineering field. Additionally, the use of the two aforementioned plants can help alleviate the environmental problems they cause.

KEYWORDS: *Eichhornia crassipes*, *Ravenala madagascariensis*, concrete bricks, Compressive Strength Test, Water Absorption Test, Tensile Strength Test

SUBMISSION ID: R04A-CAVITP-0309

**Enhancing the Compressive Strength of Concrete Hollow Blocks Using
Ash of Sugarcane (*Saccharum officinarum*) Bagasse and Coconut
(*Cocos nucifera*) Husk**

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National High School

Abstract

INTRODUCTION

Rapid crack propagation, brittle mode of failure, and increased overload are common in concrete structures due to the low tensile strength of concrete hollow blocks. Although conventional steel reinforced concrete is the most popular method to reduce such problems, it is rather becoming expensive. This has led to a lot of challenges such as building collapse usually accompanied by devastating economic and human loss. For these drawbacks, the development of contemporary concrete technologies such as eco-friendly and affordable concrete mixtures for hollow blocks can be helpful. The selection of building materials should meet the needs of local conditions by building new structures and/or by improving existing structures.

The researchers decided to combine the ash of fibrous materials, i.e., coconut husk and sugarcane bagasse. Coconut fiber is a natural fiber extracted from the coconut husk, found in between the internal shell and the outer coat of the coconut. Bagasse is the dry pulpy fibrous residue when sugarcane is crushed for juice extraction.

According to Kumator Taku (2012) the ash helps improve the compressive strength of concrete hollow blocks. The researchers decided to mix different amounts of ash of coconut husk and sugarcane bagasse to see if the fiber-reinforced concrete mixture is stronger than the commercial ones in terms of compressive strength.

METHODS

Sugarcane bagasse and coconut husks were collected and dried for 7 days. These were then burned inside a drum, then cooled. After the ashes cool, these were sieved. 15kgs cement was mixed with 4L of water and 60kgs of sand. The whole batch was then divided into 9. The first part was mixed with 250g of CHA and 750g SCBA, the second one was mixed with 500g CHA and 500g SCBA, and the last part was mixed with 750g CHA and 250g SCBA. The hollow blocks were tested for compressive strength.

RESULTS

The results of the compressive strength of hollow blocks with CHA and SCBA are shown. The first trial with 250g CHA and 750g SCBA showed a weighted mean of 162.33. While the second trial with 500g CHA mix with 500g SCBA showed a weighted mean of 253.67. The last trial with 750g CHA mix with 250g SCBA showed a weighted mean of 224.67.

DISCUSSIONS

The results prove that hollow blocks with 500g SCBA and 500g CHA is greater by 185 units than the commercial concrete hollow blocks, the latter only having 68.67 units of compressive strength.

KEYWORDS: sugarcane bagasse ash, coconut husk ash, concrete hollow blocks, compressive strength

SUBMISSION ID: R04A-CAVITP-1606

Polyethylene (PET) Bricks, White Paint and Bamboo (*Schizostachyum lima*) as Multilayer Composite Thermal insulator

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Abstract

INTRODUCTION

Having a house that comes from your own hard work and professional dedication is the best gift a person can have. But what if the place you expect to lie on when you are tired is inconvenient? This is why the researchers conducted this study because they want to build a roofing structure using plastic bottles, mud, bamboo, and white-coated roof that will lessen the heat inside the house during summertime.

METHODS

The roofing of the model house was constructed using polyethylene bottles filled with mud. The giant bamboo was the ceiling on which the bottles were placed. Comparison of the room temperature was determined by preparing a traditional type of ceiling material that served as the control. Results were recorded in 5 consecutive days taking into consideration normal weather. It presents different data as a result of several testing used to produce a cooling system of a house. It also presents differences of the temperature outside and inside between the standard and modified bungalow house model. A quantitative experimental design was used in this study. T-test for 2 independent samples was used to arrive at the conclusion.

RESULTS

The research found that Polyethylene Plastic, Mud, Giant Bamboo, and White-coated roof as a multilayer composite thermal insulator truly decreases the temperature inside the house. Temperature decreased by 2 degrees Celsius when it is inside the standard bungalow house model while it decreased by 4.7 degree Celsius inside the modified bungalow house model. T-test shows that the computed t-value 11.7, compared to the value with the t-tab 2.447, it is formulated that the null hypothesis is rejected and the alternative hypothesis is accepted which means that the roofing materials used were effective in decreasing the temperature inside the house.

DISCUSSIONS

Results show that the multilayer composite thermal insulator is effective as an alternative cooling system. Results also show that the modified bungalow house made up of bamboo as a ceiling platform is more effective than that of the standard hardiflex used in a typical bungalow house. Polyethylene bricks are also more effective as an insulator in comparison to the insulator sheet, while a white-coated roof is more effective than the typical roof.

KEYWORDS: Polyethylene Bricks, Bamboo, Cooling System, Mud, Plastic bottle, Schizostachyum lima, white coating

SUBMISSION ID: R04A-LAGUNA-0029

Reinforcement of Concrete Hollow Blocks using the Adventitious Root of Rubber Tree (*Ficus elastica*) Fiber

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Abstract

INTRODUCTION

Compressive strength is an important masonry parameter. It determines the amount of pressure that a concrete hollow block (CHB) can withstand before breaking. Some people use coarse aggregates to the CHB mixture in the form of files such as abaca and snake plant. The researchers hypothesized that *Ficus elastica* fiber can also be used as a concrete aggregates because of its high tensile strength. Hence, the conduct of this study.

METHODS

Materials for making concrete hollow blocks were obtained, measured, and mixed, based on the proportions prepared for each of the following treatments:

To: 7 kg of sand plus 2 kg of cement plus 450 mL of water

T1: kg of sand plus 2 kg of cement plus 5 g of *Ficus elastica* fibers plus 450 mL of water

T2: 7 kg of sand plus 2 kg of cement plus 10 g of *Ficus elastica* fibers plus 450 mL of water

T3: 1 kg of sand plus 2kg of cement plus 15 g of *Ficus elastica* fibers plus 450mL of water

The fibers were moulded and dried for 28 days. These were tested for compressive strength.

RESULTS

Results reveal that the compressive strength of the sample hollow blocks per treatment are as follows: 297 psi for the controlled, 321 psi for treatment 1, 278 psi for treatment 2, and 267 psi for treatment 3, respectively.

DISCUSSIONS

Results show that adding a small amount of fiber can result in an increased compressibility but adding more fiber will result in a reduced compressibility of concrete hollow blocks.

KEYWORDS: Hollowblocks, *Ficus elastica*

SUBMISSION ID: R04A-CAVITP-1595

Screening of Selected Plant Fibers as Reinforcement Material for Concrete Hollow Blocks

John Markus I. Angeles, Mark Angelo S. Aquillano, & Aisac D. Diosomito,
Student

Abstract

INTRODUCTION

This study aims to know which plant fiber is better at strengthening hollow blocks. The researchers know that this study will be helpful to others especially for people who want to build a strong and tougher house. The building environment in developing countries is a major challenge in the 21st century. The use of local materials in the construction of buildings is one of the potential ways to support a sustainable development in both rural and urban areas. Manufacturers and buyers want an invulnerable hollow block because they want an enduring material for them to save money.

METHODS

Rubber plant roots, abaca fibers and snakeplant fibers were collected, washed, dried, cut, and set aside. Also, 20 kg of cement, 6 liters of water, and 80 kg of sand were mixed and divided into 4 set-ups. Setup A was not mixed with any plant fiber. Setup B was mixed with *Ficus elastica*. Setup C was mixed with abaca fibers and Set-up D was mixed with snake plant fibers. The mixture from each set up was moulded into hollow blocks and dried for 28 days. These were then tested for compressive strength.

RESULTS

Results of the investigation show that the compressive strength of sample concrete hollow blocks for Setup A is 114 psi, 321 psi for Setup B, 171 psi for Setup C, and 167.5 psi for Setup D.

DISCUSSIONS

Based on the results of the study, the setup high in fiber has more compressive strength compared to the controlled setup. And the setup that has the highest compressive strength is the setup with *Ficus elastica*. This means that adding *Ficus elastica* in a concrete mixture can increase the compressive strength of concrete hollow blocks.

KEYWORDS: Screening of selected plant fibers as reinforcement material for concrete hollow blocks

SUBMISSION ID: R04A-CAVTP-1668

Snake Plant (*Sanserviera trafisciata*) and Abaca (*Musa textilis*) Fiber as Compressive Enhancer for Course Aggregate of Concrete Hollow Blocks

Angela Sophia Sarabia, Juztine Ramos, & Kiel Diquit, Bucal National High School

Abstract

INTRODUCTION

This study was about comparing the improved strength of the concrete hollow blocks (CHB). The past researchers improved the strength and durability of hollow blocks using the different ratios of snake plant, water hyacinth and cement mixtures. The number of built houses are now increasing; this means construction materials such as blocks are used often. Concrete blocks are primarily used as building materials in the construction of walls. This is one of the several concrete products used in construction. This study was about improving the mechanical properties of concrete blocks using natural fibers as chosen by researchers because they wanted to see how these fibers would affect the strength of the concrete blocks.

METHODS

in conducting the study, we followed the standard procedure. First, the researchers gathered and prepared the materials needed for the experiment. Then, the decortication of Snake Plant was done in Taguig. Next, the extracted fibers were cut equally and cleaned. After that, the fibers underwent the process of air drying. Weighing the exact amount of fibers used in making concrete hollow blocks followed. And then, making the concrete hollow blocks with Snake Plant and Abaca fiber was completed. Next, the hollow blocks underwent the process of drying until it was ready for testing. Finally, testing of hollow blocks and analysis of data were finished.

RESULTS

Results reveal that concrete hollow blocks with 10 g, 15 g, and 20 g of Abaca fiber as concrete aggregate were found to have a mean compressive strength of 171 psi, 135 psi, and 145 psi, respectively. on the other hand, concrete hollow blocks with 10 g, 15 g, and 20 g of Snake plant fiber as concrete aggregate were found to have a mean compressive strength of 142.5 psi, 141, psi, and 167.5 psi respectively. Moreover, samples of concrete hollow blocks with no aggregate have a compressive strength of 206 psi and 208 psi.

DISCUSSIONS

Results show that at 5% level of significance, the compressive strength of concrete hollow blocks significantly differ among groups as evidenced by the calculated F-value of 2.55 with p-value of 0.1664 which is greater than the p-value of 0.0583.

KEYWORDS: abaca, snake plant, CHB

SUBMISSION ID: R04A-CAVITP-1603

**Stabilization of Concrete Cement Using *Ficus elastica* Roxb ex Hornem
(False Rubber Tree) Latex**

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Cavite National Science High School

Abstract

INTRODUCTION

One of the major issues in infrastructure construction is the development of cracks and decreasing tension resistance in concrete cement at high-stress levels causing the material to weaken (Bald Eagle Construction, 2017). Methods such as concrete reinforcement, aggregate substitution, and admixture addition could be done to improve the concrete's stability. on the other hand, rubber latex from *Ficus elastica* has no significant use in today's rubber production (Elmer Merrill, 1967). This study aimed to create a concrete design mix that can resist breaking at high pressures.

METHODS

Rubber latex was extracted and the design mix was formulated. The concrete mixture was mixed in a mixer. for treatment 1, the mixture was transferred into the greased cylindrical mould. for treatment 2, 50 cm³ of latex was added to the mixture and was transferred into the greased cylindrical mould. for treatment 3, 75 cm³ of latex was added to the mixture. Two trials were done. After the setting of samples, each was de-moulded and cured for 7 days. After curing, the samples underwent compressive strength testing using a compressive and flexural strength machine.

RESULTS

The results of the compressive strength testing for the two trials show that the compressive strengths of the pure concrete design are 3132.61 psi and 2950.75 psi. for the latex-treated concrete, the compressive strengths of the samples of treatment 2 are 2754.00 psi and 2557.32 psi, while the compressive strengths of the samples of treatment 3 are 2439.25 psi and 2300.52 psi. The minimum required stress value for the design mix is 2130 psi, which is equivalent to 71% of 3000 psi. Using One-way ANOVA in statistical analysis, the null hypotheses were rejected.

DISCUSSIONS

The results show that there is a relationship between the compressive strength and the amount of latex added. As the content of latex in the mixture increases, the compressive strength of the sample decreases. The addition of rubber latex to the concrete affected the compressive strength of an ideal concrete sample. It has been shown that the addition of latex makes the concrete less durable, thus decreasing the compressive strength.

KEYWORDS: compressive strength, concrete, rubber latex

SUBMISSION ID: R04A-CAVITP-0330

The Use of Pineapple Leaf Fibers as Aggregate for Concrete Mix

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National High School

Abstract

INTRODUCTION

Attempts of using plant fibers to reinforce concrete is slowly getting popular among selected researchers. This is because of the idea that the use of fibers will increase the compressive strength of concrete. for this reason, the researchers carried out an investigation to find out whether the presence of fibers contributed to an increase in the compressive strength of concrete.

METHODS

Pineapple leaves were collected, washed, and dried. These were then made to undergo decortication. Meanwhile sand was sifted, and the cement and mixture were prepared in the following manner: To: 300g sand, 900g cement, 300ml water; T1: 300g sand, 900g cement, 300ml water, 6g pineapple leaf fiber; T2: 300g sand, 900g cement, 300ml water, 15g pineapple leaf fiber; and T3: 300g sand, 900g cement, 300ml water, 30g pineapple leaf fiber
The mixture was mixed thoroughly and was dried for 28 days.

RESULTS

Result of the study reveal that the mean compressive strength of sample concrete block without any fiber is 5,710 psi. on the other hand, cement blocks mixed with 6g, 15g, and 30g of pineapple leaf fibers are 3,063 psi, 641 psi, and 426 psi.

DISCUSSIONS

Results reveal that adding pineapple fibers to cement blocks cause a decrease in compressive strength. Apparently, the more fibers are mixed with sand, cement, and water, the lower their compressive strength becomes.

KEYWORDS: Compressive Strength, Pineapple, Concrete Mix

SUBMISSION ID: R04A-CAVITP-1558

The Use of Taro Leaf Ash (*Colocasia esculenta*) and Corncob Ash (*Zea mays*) as Aggregate for the Production of Cylindrical Concrete

Irish Mae Peliña, Johann Lorenz Macalindong, & Kristin Gabrielle Tañag,
Bucal National High School

Abstract

INTRODUCTION

One of the major concerns in building is the use of frangible materials. This problem is more often addressed by researchers and manufacturers by adding concrete aggregates to the mixture, resulting in products with higher compressive strengths. Previous studies confirm that adding ash to the mixture will improve the product's sturdiness. Hence, the researchers venture to conduct a study on the use of taro leaf and corn cob ashes to improve the compressive strength of concrete.

METHODS

Corn cobs and taro leaves were gathered, air dried, and pulverized. These concrete cylinders were air dried for lack of the following treatments and tested for compressive strength.

T0: 1, 850 g sand + 630 g cement + 630 g gravel + 625 mL water

T1: 1, 300 g sand + 630 g cement + 630 g gravel + 625 mL water + 200 g CCA + 0 g TLA

T2: 1, 300 g sand + 630 g cement + 630 g gravel + 625 mL water + 100 g CCA + 100 g TLA

T3: 1, 300 g sand + 630 g cement + 630 g gravel + 625 mL water + 0 g CCA + 200 g TLA

RESULTS

Result show that the mean value for the samples are as follows: T0 = 710 psi, T1 = 73.3 psi, T2 = 23.33 psi and T3 = 133.33 psi.

DISCUSSIONS

Results reveal that the concrete cylinders with the highest compressive strength are those without any concrete aggregates. Next to this are the cylinders with an aggregate of 200 g taro leaf ash. Following are the concrete cylinders with 200 g corn cob ash. And last are the concrete cylinders with 100 g taro leaf ash and 100 g corn cob ash. This means that claims that ashes can increase the compressive strength of concrete do not apply insofar as using corn cob ash and taro leaf ash are concerned. Hence, it is not conclusive to say that the use of ash can increase the compressive strength of concrete.

KEYWORDS: taro, corncob, ash, aggregate, concrete, cylindrical concrete, compressive strength

SUBMISSION ID: R04A-CAVITP-1640

Utilization of Papaya Stem Fibers in Enhancing the Mechanical Properties of Brick Tiles

Jaque Dino, Monica Borlongan, & Renielyn Valenzuela, Bucal National High School

Abstract

INTRODUCTION

One of the most used materials in our country are blocks or bricks. They are used to build houses, buildings, and other stuff. There is a clamor for long-lasting bricks so that houses will not collapse easily in case of earthquakes. This study sought to investigate the use of papaya stem fibers as an aggregate material for brick-making.

METHODS

The materials needed to make bricks were obtained. Stems of papaya were chopped, macerated, and dried to obtain their fiber content. Two setups were prepared and labeled as set up A and set up B, respectively. Setup A consists of bricks without papaya fibers. Setup B consists of bricks with 250 g of papaya fiber. The mixtures in each setup were mixed thoroughly and molded in a brick mold. Then the products were sun dried for one day.

RESULTS

Results show that the compressive strength of sample bricks without fiber has a mean of 1000 psi, while the sample bricks with papaya fiber has a mean 3000 psi.

DISCUSSIONS

Based on the results of the investigation, sample bricks with papaya fiber has a higher compressive strength, as evidenced by a difference of 2000 psi when the two setups were compared.

KEYWORDS: papaya, bricks, fiber

SUBMISSION ID: R04A-CAVITP-1694

CLIMATE SCIENCE

Going Green: An Assessment on How Environmentally Literate are the Public Elementary Teachers of Indang, Cavite

Reyciel Nuestro, Department of Education

Abstract

INTRODUCTION

Awareness is essential to solve environmental problems and teachers will be able to motivate their students to take on environment-related challenges if they develop a positive attitude towards environmental education as a subject. Therefore, this study is an initial step to increase the awareness of teachers about different environmental and biodiversity conservation issues that can be incorporated into their classes.

METHODS

The study used a sample of public elementary school teachers of Indang, Cavite to assess their level of awareness about environmental issues and attitude towards biodiversity conservation. The information collected was analyzed using descriptive statistics and graphical tools.

RESULTS

Results showed that teachers indicated positive views toward the environment at the medium or high level. They are generally aware of current environmental concerns and have a positive attitude in preserving our biodiversity. Since teachers serve as role models to their students, this will have a positive influence on how they impart to their students the importance of environmental awareness and the latter's having an affirmative attitude toward biodiversity conservation.

DISCUSSIONS

The study provides baseline information that can be used for future conservation education studies in Cavite. This is an important first step to further increase the awareness of teachers about different environmental and biodiversity conservation issues that can be incorporated into their classes.

KEYWORDS: awareness, biodiversity, environmental issues

SUBMISSION ID: R04A-CAVITP-0842

Integration of Environmental Concepts in Selected Intermediate Subjects in Public Elementary Schools, Division of Batangas City

Magielyn R. Babao, Department of Education

Abstract

INTRODUCTION

Caring for the environment is everyone's responsibility. It is one of the tasks of educators to make everyone aware of environmental issues and concerns. Teachers as the most influential persons in the lives of students can contribute to make the latter environmentally responsible for the protection and conservation of nature and in combatting climate change. This study explored the Level of Teachers' Environmental Awareness and the Extent of integrating Environmental Concepts in Selected intermediate Subjects in Public Elementary Schools, Division of Batangas City during S.Y. 2016-2017.

METHODS

The study used the descriptive method with questionnaires as the major data gathering tool. interviews among respondents and documentary analyses were conducted to supplement the data obtained from questionnaires. A total of two hundred twenty-three (223) respondents were selected through universal sampling.

RESULTS

Teachers in AP were very much aware about proper waste management while teachers in Mathematics, Filipino, EPP, and English were much aware of the importance of the protection of public health, safety, and environmental quality. on the extent of integration of environmental concepts in terms of natural phenomena, the respondents teaching English, Mathematics and Filipino had great extent. The AP and EPP which are subjects taught for 40 minutes depict very great extent. As to biodiversity a great extent on its entire composite means. It sums up all the subjects under the study. on environmental responsibility, teachers in English, Filipino, AP and EPP depicts the verbal interpretation to a very great extent, while great extent for those in Mathematics. Teachers in English, Filipino, EPP and AP had a very great extent as to solid waste management while great extent in Math. It was therefore concluded that Araling Panlipunan teachers were very much aware of environmental concepts and principles, while English, Mathematics, Filipino, and EPP teachers were much aware of it.

DISCUSSIONS

Most of the subject teachers integrated to a very great extent environmental responsibility, natural phenomena, biodiversity, and solid waste management into their subjects, except Math which was done to a great extent. The main concerns of many teacher-respondents were their time of downloading videos on erosion and other environmental issues as well as their knowledge about legal bases of quarrying. The proposed supplementary materials focused on the concerns of teachers about environmental issues and weak findings. It is recommended that the supplementary materials may be shown to supervisors and school heads for the latter's suggestions before using the same in school. The school head may inform the Mathematics teachers to give more time in integrating environmental concepts while teaching the principles of the subject. A similar study may be conducted using other environmental concepts and research designs.

KEYWORDS: EnvironmentalConcept1 Environmental Awareness2 Environment3

SUBMISSION ID: R04A-REGOFF-0002

CLINICAL PSYCHOLOGY

Development and Evaluation of Collapsible Model House for Electrical Installation Simulation in Response to the Challenge of 21st Century Learning

Teresa Amarille, Gen. Pantaleon Garcia Senior High School

Abstract

INTRODUCTION

Quality education is seen as a pillar of success. in accordance with school improvement goals and to comply with Department of Education's objective of "innovative strategies to achieve universal basic education" to ensure the production of highly skilled and competent graduates, this project mainly focused on the development and evaluation of Collapsible Model Houses (CMH) for students' training in Electrical installation and Maintenance (EIM). in this school, EIM is offered under the TVL track where students are expected to acquire NCII skills after they graduate. Their valuable experience would be satisfied by a hands-on activity that stimulates their critical thinking and creativity in relation to the competencies required by the program. Hence, the proponent benchmark with other experts' strategies in training their students. The researcher developed a 5 x 8 x 6 feet collapsible model house, made up of metal studs, in a skeletal structure, as an alternative instructional material to the Traditional Wiring Board (TWB) for students' simulation to demonstrate their acquired skills and reinforce their electrical installation and maintenance training.

METHODS

A two-grouped experimental research design was employed to test the efficiency of CMH with a total population of 48 EIM students. There were two conditions employed: TWB for the control group and CMH for the experimental group. Experts from the field of engineering and architecture were consulted to assess the acceptability of the CMH as to its functionality, practicability, instructional applicability, innovation, and safety for students' training. Rubrics and FGD were used to analyze the work output of the students.

RESULTS

Experts rated the CMH as a highly acceptable ($M=89.9$) alternative instructional material for students' skills training. A significant difference between the two models is evident from the Wilcoxon signed test ($p < .002$). It rejects the null hypothesis that the average difference of the two observed measurements is 0. The participants have a high satisfaction level in using CMH in terms of its acceptability ($M=4.3$) and its efficiency (4.4) as compared to that of the TWB.

DISCUSSIONS

This study shows that the CMH is highly acceptable as an alternative instructional tool for students' demonstration of their acquired skills. The participants show high satisfaction with their skills practice in single-phase electrical wiring through the CMH than the TBW. It is suggested to fabricate the CMH for a simulation activity and conduct a three-phase system to illustrate differences for future use.

KEYWORDS: Collapsible model house, simulation, electrical installation, 21st century learning

SUBMISSION ID: R04A-IMUSC1-0090

Project PICK UP (Pupils' Intervention in Comprehension and Knowledge to Uphold Potentials)

Thelma Tuliao, Galicia Elementary School

Abstract

INTRODUCTION

Reading comprehension is a vital skill to improve one's general reading skill. Learning new words is essential to understand the story being read. The researcher decided to conduct a study in our own classroom to discover the effect of a specific reading strategy program, Project "PICK UP", on grade four pupils. Stories from grade one to grade four were used. A teacher collected the data every week. The action research began on October 22 and ended on November 29, 2018.

METHODS

The descriptive method of research was used with the pre-test and post-test as main instruments for gathering the needed data. Scores and percentage were used in data analysis.

RESULTS

Grade IV pupils of Galicia Elementary School have undergone pre-reading assessments based on the Phil IRI. Fifteen out of sixty-nine pupils are unexpectedly non-readers. I used a decoding strategy. Letters and sounds of the alphabet were the starting point for these pupils to be able to read. For the continuous program, project PICK UP was implemented. This program is designed for four weeks, where pupils read a story on a daily basis, the material used per week is, from the grade one up to grade four level from the book "Reading Developing Power". Data included the pre-test and post-test, multiple choice assessments and researcher logs. The intervention group's post-test scores were significantly higher than their pre-test scores. Every week the results show progress based on the raw scores of the students - which ultimately indicated success of the intervention.

DISCUSSIONS

Initially the researcher conducted a pre-test using a grade four reading material. This story was also used for their post-test. On the first week, the teacher used a grade one story. Each day a story was read, discussed, its difficult or new words defined, its main idea extracted, and so on. The post-test was then administered. On the second week, the same things happened up to the last week. The intervention showed positive results. We will continue to implement Project "PICK UP" wherein the habit of reading can be practiced in improving the comprehension of every student of the class.

KEYWORDS: Comprehension, intervention, Improvement, Implementation

SUBMISSION ID: R04A-CAVITP-0510

Separation Anxiety of Kindergarten Pupils in the First Month of the School Year of Buhay na Tubig Elementary School

Angie Lynn L. Amuyot, Cris Hana F. Sanchez, Mary Flor C. Bunagan, & Predeuly O. Ruto, Department of Education - Imus City

Abstract

INTRODUCTION

Separation Anxiety Disorder (SAD) is the most commonly diagnosed and impairing childhood anxiety disorder. While considered a normative phenomenon in early childhood, SAD has the potential to negatively impact a child's social and emotional functioning when it leads to an avoidance of certain places, activities, and experiences in school. This study aims to assess and determine the presence of Separation Anxiety Disorder among 30 Kindergarten pupils of Buhay na Tubig Elementary School by using the Screen for Child Anxiety Related Disorders (SCARED) scale, child and parent versions.

METHODS

The researchers used the descriptive and quantitative methods with the observation checklist as the study's major data gathering instrument. Researchers used the (Screen for Child Anxiety Related Disorders) SCARED scale which was administered to 30 Kindergarten pupils and their parents. The SCARED is a semi-structured interview that has been proven useful in diagnosing children with a range of anxiety disorders including separation anxiety, social anxiety, and school avoidance. This gives the researchers a framework for gathering important information about symptoms, including severity and frequency of presenting problems, and an opportunity to begin a functional analysis of such difficulties.

RESULTS

The study showed that 6 percent of the children presents with an Anxiety Disorder, 73 percent of which are having significant symptoms of Separation Anxiety Disorder; 33 percent of the parents are aware that their children have indications of an Anxiety Disorder, 87 percent of which are apprehensive that their children may be categorized as having Separation Anxiety Disorder.

DISCUSSIONS

Research suggests that a significant percentage of parents are concerned that their children exhibit a clinical level of Separation Anxiety Disorder. on the other hand, the youth version of the SCARED scale indicates that there is a substantial problem regarding Separation Anxiety Disorder among the 30 kindergarten pupils.

KEYWORDS: seperation anxiety

SUBMISSION ID: R04A-IMUSC1-0019

Top Chosen Strand and Factors Influencing Career Preference Among Students of Gen. Pantaleon Garcia Senior High School: Basis for Career Planning Program

Teresa Amarille, Gen. Pantaleon Garcia Senior High School

Abstract

INTRODUCTION

Career preference has been one of the problems among students in the past years. This may result in the wrong choice of college courses and may even add to future unemployment or underemployment. The K-12 program purports to decrease the qualification mismatch of students to the needed workforce of public and private institutions (Pascual, 2014). To support the K-12 Basic Education Program's objective, this three-phase study was conceptualized to assist students in their career planning. First, researchers opted to determine the topmost chosen strand among senior high school students and the factors that influence their career preference. Second, the result of this study may serve as basis for career planning programs to better understand the career decision-making processes of students, and finally, the study monitors the graduates' success in relation to their career preference.

METHODS

A descriptive design was applied to identify the main variables. Participants are 167 senior high school students randomly selected across year levels and sections. A self-made checklist and a survey were used to gather the main data with the assistance of advisers during homeroom. Some participants were invited to the guidance office to answer the checklist and to rate the survey. The data gathered was analyzed using descriptive statistics such as frequency, percentage, and ranking.

RESULTS

Result shows that the 3 most chosen strands are GAS (54%), followed by HUMSS (48%), then CSS (40%). Others are STEM (38%), Arts and Design (33%), and Cookery (2%) despite the school not offering these strands. Results reveal that some participants enrolled in their second choices because these are currently being offered. Factors influencing career preference are Personal Factor (66.45%), Family (23%), Peer (6%), and Market Demand (3.59%).

DISCUSSIONS

Most of the participants choose the Academic Track since they aspire to be in the field of medicine, engineering, business, and other careers. However, majority chose GAS believing that they can still change their career path which may imply that they are undecided and still on the process of adjustment in their career planning. Majority considered the personal factor in choosing strands believing that it has to fit their skills, motivations, interests and personal characteristics. on the other hand, family and peer serve as guiding factors in making their decisions.

KEYWORDS: Career planning, career preference, factors influencing career, chosen strand

SUBMISSION ID: R04A-IMUSC1-0082

When a Student Causes a Teacher's Trauma: An Autoethnographic Account

Lynle Cacho, Master Teacher I, Department of Education Lopez West Elementary School Bldg.1

Abstract

INTRODUCTION

The Department of Education recently reported that three out of ten children in Grades 1-3 experience physical violence committed by their teachers. For such scenarios, child protection measures have been implemented. Teacher protection measures however seem to not have been considered. To introduce a fresh alternative research method and to delineate the personal narratives of a teacher in these challenging times, an autoethnographic study was used.

METHODS

The researcher adopted the work of Meekums (2008) in describing teachers' plight. It is a narrative approach in telling a story which includes poetry and journal. Teachers' plight narrated the passion of a teacher to teach the lesson until untoward incidents happen. A wounded teacher described how she felt during an accident and how she thought about it. An account of the trauma and accompanying agony from the terrible experience is also made. This also considers how her son was affected due to the painful circumstances that happened to his mother. The analysis of the data in autoethnography begins with an emotional journey while recalling the events of the past. The recall of this emotional data is done by writing down the events. Unlike other qualitative methods, autoethnography focuses less on finding themes but more on emotional details.

RESULTS

The results of the study revealed three voices, namely: wounded teacher, traumatized person, and upset mother. Since the process of writing has demanded self-reflection, it becomes therapeutic to cure the wound within the teacher. In doing so, it has contributed to fix the shattered pieces of the teacher and lead her to have an optimistic disposition after all these unwanted circumstances, which other teachers could relate with or learn from such experiences.

DISCUSSIONS

This research approach draws upon the researcher's own experience, specifically in relation to the school culture of which she is a member. The result of the study may serve as one of the critical voices to strengthen more the teacher-protection policy in the district level and may provide information and insights relating to improving in-service training for teachers on child behavior and psychology, classroom management techniques, positive disciplines, and other related fields. It is a highly personalized account that draws upon the experiences of the teacher-researcher for the purpose of extending sociological understanding and sharing teacher's reflective voices.

KEYWORDS: autoethnography, personal narratives, teacher's plight, teacher-protection policy

SUBMISSION ID: R04A-QUEZON-0032

COMMUNITY DEVELOPMENT

"No Segregation, No Collection Policy": The Case of One Barangay in Taytay Rizal

Alexis Yanson & Manuel Bodollo, Taytay Senior High School

(Adviser: Ma Theresa T. Cruz Mat Amth)

Abstract

INTRODUCTION

Republic Act 9003, also known as The Ecological Solid Waste Management Act of 2000 intensify the segregation of solid waste in the Philippines. in this manner, all municipalities and cities roll out the implementation of this act through municipal or city ordinances known as "No Segregation and No Collection Policy." As the garbage problem worsens in some notable places in the Philippines, the implementation of this policy is indeed important. This study sought to surface the extent of implementation of the "No Segregation, No Collection Policy" in one Barangay in Taytay of senior high school students residing on the said barangay.

METHODS

Quantitative/descriptive method were used to describe the extent of the implementation of the "No Segregation, No Collection Policy" in a certain barangay in Taytay, Rizal. Specifically, a survey checklist with a 4-rating scale was administered to respondents to gather data. Descriptive statistics such as percentage, central tendency, standard deviation, and analysis of variance (ANOVA) were used to analyze the gathered data. Respondents were students in Taytay Senior High School residing in this Barangay, hence, purposive sampling were utilized. A total of 25 students were identified as respondents in this study.

RESULTS

The gathered data reflected the following: (1) in terms of segregation, respondents claimed that they segregate non-bio-degradable and bio-degradable to high extent and a rating of moderate extent in segregating properly; (2) in terms of punctuality of service, items such as "I observed that garbage were collected daily by the garbage collector" was given high extent; (3) in terms of service, the respondents rated the item "I agree that the overall service of garbage collector are good" as high extent; (4) All variables (age, educational attainment, and work experience) were not factors to the rating given by the respondents.

DISCUSSIONS

The result of this study was not surprising since this topic was widely disseminated in various forms such as social media, televisions, and campaigns. This study can be used as a note and input to an action plan and policies to maintain and evaluate other sectors on the implementation of this policy, hence this study is relevant to policy makers, environmentalists, school administration, and households.

KEYWORDS: waste segregation, senior high school, implementation, Taytay Senior High School

SUBMISSION ID: R04A-RIZALP-0040

Acapulco (Cassia Alata) Leaves and Chalk Dust as Soil Conditioner

Venice Marie N. Nagpala, Department of Education - Calamba City
(Adviser: Mirachel Batolena)

Abstract

INTRODUCTION

Soil is an essential and very important factor of every organism in the planet. It plays a vital role not only to plants, but also to other parts of the whole ecosystem (Scottish natural heritage- Scotland living landscapes). Soil is beset by a number of problems. One of these problems is soil degradation. Soil conditioner is one of the most important things that farmers use and improves crop quality aside from the commonly used fertilizers. Like other kinds of soil amendments, it is applied to the soil for the improvement of its physical and chemical properties. It usually comes in the form of fermented semi-liquid substance or in powdered mixture of organic materials. An example of this is the Humate Soil Conditioner.

METHODS. Using the mortar and pestle, twenty Acapulco leaves were pounded until it was thoroughly crushed. After this, the leaves were set aside. Then, ten sticks of chalk were pounded, still using the mortar and pestle after which, the chalk dust was collected. After crushing the raw materials, it was mixed together, producing the soil conditioner.

RESULTS

The test resulted to 3.15, showing that there is a significant difference between the used samples. It is recommended to adjust the time and date of observation as well as recording the height to get more accurate measurements to get more reliable results.

DISCUSSIONS

The objective of this study is to produce a soil conditioner out of Acapulco (*Cassia alata*) leaves and chalk dust and to test its effectiveness to the subjected plant. The leaves of Acapulco and chalk dust were gathered and were pounded. Afterwards, it was blended with each other. The produced soil conditioner was then applied to set-up D, leaving the set-up A as the controlled set-up. in testing for its effectiveness, the height of the plants was recorded and compared to each other. The researcher used t-test for independent samples for statistical analysis.

KEYWORDS: soil, soil conditioner, Acapulco, mixture, growth rate, chalk dust

SUBMISSION ID: R04A-CALAMB-0007

An Evaluation of the Feeding Program in Barangay Halang, Amadeo, Cavite

Daniella Marieh Delos Santos, Jennah Montoya, Leila Colleen Legaspi, &
Veronica May Dimapilit, Student

Abstract

INTRODUCTION

When children under five are experiencing malnutrition, they are likely to carry this over to early childhood, which has effects on learning achievements in school. In line with this, the World Health Organization, the United Nations Children's Fund and the World Bank have jointed estimates on child malnutrition using three indicators: underweight, wasted or stunted. (J. Albert, 2015). To address the issue of child malnutrition, the implementation of a feeding program that provides people free nutritious meals to reduce the rate of malnutrition became a major solution to this matter. Feeding programs alleviate hunger, enhances nutrition, and supports healthy child and family development. (P. Williams et al., 2003) The present study was conducted to evaluate the supplementary feeding program of Barangay Halang, Amadeo, Cavite in terms of their management, budgeting and effect to their beneficiaries. This will provide people the knowledge on how the feeding program works and awareness about the current situation of the activity in Barangay Halang, Amadeo, Cavite.

METHODS

This is a qualitative research. Data was gathered by conducting interviews with nine (9) mothers and one (1) grandfather of day care children which were underweight before the program. Another interview was conducted with one (1) Child Development Worker in-charge of the feeding program of Brgy. Halang, Amadeo, Cavite.

RESULTS

The study was conducted to improve the health of the day care children, specifically their height and weight. The budget per child is Php 15.00 for 120 days during weekdays. It is allotted for their lunch including tinola, sinigang, sopas, goto and sotanghon. The beneficiaries ages are from 3 to 4 years old consisting of five (5) males and five (5) females with average weights between 9 to 18 kilograms before the program. After 120 days, their weight improved ranging from 11 to 21 kilograms. Also, the beneficiaries' height of 62 to 100 cm became 90 to 118 cm after the program. It was concluded that the feeding program in Barangay Halang, Amadeo, Cavite is a successful program.

DISCUSSIONS

The evaluation of the feeding program in Barangay, Halang, Amadeo, Cavite revealed a good outcome from 2018 up to the present. The organized management of the program led the children to have progress in their health. It was concluded that the feeding program is working well and successful.

KEYWORDS: feeding program, day care, malnutrition, child development worker,

SUBMISSION ID: R04A-CAVITP-1518

Anti-Illegal Drug Engagement of Philippine National Police (PNP): The Community's Extent of Awareness and Level of Satisfaction

Richter James H. Escobia, Student

Abstract

INTRODUCTION

Undeniably, war on drugs is on the top lists of many Filipino individuals including politicians as a topic on debates for months. This crucial issue had scraped the surface of the Duterte's administration to war on drugs. Still, this brought huge impacts for the new generation especially Filipino children and youths as it affects the structure of Philippine society, citizens' safety, occurrence of crime rates that eventually affect a nation's success. It is said that "ignorance of the law excuses no one. With this, the researchers become interested to determine whether the residents of Tacurong City, particularly in Barangay New Isabela are fully aware and satisfied of the said PNP's Oplan Tokhang Project." Thus, this study was conducted.

METHODS

This study utilized the descriptive- correlation research design. The researcher used a researcher-made survey questionnaire comprises three parts. The survey questionnaires were validated by three (3) experts as to the face and content validation. The said survey questionnaires were immediately retrieved by the researchers once the respondent was done answering. In statement of the problem number 1, frequency and percentage distribution were used to determine the profile of the respondents. While, on the statement of Problems 2 and 3, weighted mean was used to determine the extent of respondents' awareness and level of satisfaction to the PNP's Oplan Tokhang Project.

RESULTS

Based on the results of the study, it is concluded that the majority of the respondents are mostly in middle adulthood stage, male, married, Ilonggo, college graduate and are government employees. In terms of the extent of awareness of the respondents, results revealed that the community is "Aware" of the different campaigns of the PNP regarding anti-illegal drug programs. On the other hand, in terms of the level of satisfaction on anti-illegal drug campaign, it reveals a "highly satisfied" result. The results further revealed a strong positive relationship as to the extent of awareness and level of satisfaction implying that the more aware the community is, the more they are satisfied with the implementation of the project.

DISCUSSIONS

Based on the result of the study, it is recommended that the law enforcers should conduct more intensified barangay-based seminars and programs that would help the citizens of the community to understand fully the goals the Project Tokhang.

KEYWORDS: Drug Engagement, Community Awareness, Project Tokhang

SUBMISSION ID: R012-TACURO-0003

Attitudes of the Feeder Barangays of Aglipay High School towards R.A. 9003

Apple Jane Dela Cruz, Senior High School Student
(Adviser: Jadee Plaida)

Abstract

INTRODUCTION

Solid Waste Management is the collection, transportation and disposal of waste materials. It relates to the materials produced by humans. According to Jatau (2013), adequate knowledge of the negative impacts of poor waste management practices promote personal hygiene and health. in a study of Plaza (2017), about 35,000 tons of solid waste are generated everyday which alarmed the environmentalists and convinced people to eradicate this practice. Aglipay High School, an eco-friendly institution is working together with the community to sustain an eco- friendly community for the benefit of its students. This study is conducted to find the attitudes of the feeder barangays of Aglipay High School towards R.A. 9003.

METHODS

This study used a descriptive-quantitative method. Respondents from the three feeder barangays of Aglipay High School attested to what extent did they agree with statements through a Likert scale. A cluster sampling was used wherein 20 respondents were purposively chosen from each feeder barangay. Simple mean and frequency counts were used to treat the data. T-test is also used to determine if there is any significant difference when respondents are grouped according to their educational attainment.

RESULTS

Results show that respondents portray positive attitudes towards Solid Waste Management. Posting a mean score of 1.38, respondents strongly disagree with the statement that the feeder barangays throw garbage on rivers and water streams. 2.08 mean predicts that respondents are aware of proper segregation. More so, 35 respondents or 58.333% strongly agreed that residents of the feeder barangays of the institution are disposing their waste properly. Respondents that are grouped in age and educational attainment shows positivism towards RA 9003 as the overall result revealed a score of 95% or 57 of the respondents has a positive attitude towards RA 9003.

DISCUSSIONS

Based on results, it can be inferred that feeder barangays of Aglipay High School possesses positive attitudes towards RA 9003. Despite the limitations of this study, it speaks and calls for the continuous information and dissemination campaigns about RA 9003 to equip and instill positive attitudes and the importance of Solid waste Management to the environment and community.

KEYWORDS: Waste, RA 9003, Environment

SUBMISSION ID: R002-QUIRIN-0037

**Community Impact of Senior High School Outreach Program through
"Project SALOK (Suportang patubig At Lingkod kabataan "Okay na
okay para sa Kababayan)**

King Cj Nerida, Lopez National Comprehensive High School
(Adviser: Sharon Villaverde)

Abstract

INTRODUCTION

Water plays a vital role in our daily lives. It is important to have enough clean water supply but its availability is decreased by its limited resource and interrelated factors. Climate change, increasing demand, lowered water tables, and environmental degradation are some of the factors. Hence, it is important that every community create and have their good water management system as a response to the continuous need of water supply by its growing community. This study analyzes the community impact of senior high school outreach program through Project SALOK (Suportang Patubig At Lingkod Kabataan Okay na Okay para sa Kababayan), that will help a specific community (Zone 5 of Brgy. Gomez, Lopez, Quezon, Philippines) to have their good water management system and supply.

METHODS

This study will use a descriptive method, employing qualitative and quantitative approaches with the use of research questionnaires that will be distributed to the respondents and community-based research that begins with the importance of the community and has the aim of combining knowledge with action to achieve social change. The data will be interpreted using frequency counts and percentage. The results will be used for an innovative approach for the Project SALOK (Suportang patubig At Lingkod abataan, Okay na okay para sa Kababayan).

RESULTS

The primary water source of every household residing at Zone 5 of Brgy. Gomez is from the Lopez Water District and water delivery system. Most of the households use between 4-6 cubic of water every month and spend Php 251 to Php 300 for it. The primary use of water is for cleaning, cooking, washing clothes, and taking a bath. Although there is a source of clean water, it is often inadequate. The survey questionnaire showed that the residents of the community believe that it is important to have their good water management system and have additional machinery such as motorized water pump for their deep well to create more and rapid source of water. We had a partnership with the Rotary Club of Lopez wherein they gave water pump and thus, PROJECT SALOK has been realized.

DISCUSSIONS

The results imply the needs of the community for good water management system and additional machineries to improve their water resources, thus Project SALOK will be a good program to pursue for good community development of Barangay Gomez, Zone 5.

KEYWORDS: Community Impact, Zone 5 of Brgy. Gomez, Outreach program, Project SALOK, Water management system

SUBMISSION ID: R04A-QUEZON-0083

Developing Local Youth Justice Programs through the Implementation of Curfew

Rajna Coleen Carrasco, Labas Senior High School
(Adviser: Margie Monderin)

Abstract

INTRODUCTION

Youthful crimes are not new in human affairs, but the growing number of criminal acts done by juvenile delinquents is very alarming. Santa Rosa, Laguna is known to have a wide range of crime incidents which is commonly happening during night time. The curfew in Santa Rosa, Laguna was implemented in 2003 to all barangays. However, not all areas are obeying the policy or implementing it properly. Thus, this research aims to know the innovation in the development of the implementation of curfew in selected areas of Santa Rosa and be able to propose a way to improve the ordinance in the city.

METHODS

A mixed-methods design was used. Using a sequential transformative strategy, the researcher conducted this research in the nine barangays of Santa Rosa, Laguna. Thirty - three participants, which included the parents, minors, and store owners, responded to a set of semi-structured interview questions and ten barangay officials responded to a set of survey questionnaires. The answers in survey questionnaires were measured through statistical tests, using weighted mean and the responses in interview guide questionnaires were interpreted using coding analysis.

RESULTS

Most barangays in Santa Rosa, Laguna used information dissemination as the strategy in the implementation of curfew. Adjustment of time and punishments were the most effective strategies in the implementation of curfew in the selected areas. There was a progressive development in the implementation from 2011 to 2018 because based on the records in the women's desk, the juvenile crime rates involving minors are decreasing every year. This signifies that the implementation of curfew was effective to discipline the minors of the city of Santa Rosa, Laguna. A curfew is justified to reduce opportunities for teenagers to commit crimes same as to become crime victims. The measure also protected minors away from fraternity and gang wars. It also lessens drug rates in the city.

DISCUSSIONS

The results demonstrate the innovative development of the implementation of curfew. The mandatory rule is needed to be continuous. The women's desk must continue monitoring the juvenile crime rates while the barangay officials need to assure that the implementation of curfew are progressing and crime rates are surely dropping every year. Other barangays are recommended to innovate their strategies to have an effective policy in the curfew. The techniques covered by this study from the nine barangays can be a basis to other implementers.

KEYWORDS: Juvenile, Curfew, innovative Development

SUBMISSION ID: R04A-STAROS-0088

Financial Management Capabilities of the School Principals on the Allocated Maintenance and Other Operating Expenses (MOOE)

Joselyn Sampal, Department of Education

Abstract

INTRODUCTION

Several problems remain unsolved regarding budget preparation, execution, and control in public elementary schools in the Division of Albay. The findings of this study can enhance the essential competencies in this area of management which can greatly influence the effectiveness and efficiency of the performance of the school as a whole. There is a need to include this kind of study in the field of research and in education so that school principals may gain insights on how to manage school finances properly. Further research regarding financial management capabilities of school principals may also be conducted using other variables which were not included in the present study.

METHODS

The descriptive evaluative method was employed in determining the financial management of the public elementary school principals in the Division of Albay on the allocated MOOE and the constraints encountered by the principals in the financial management of MOOE and the relationship of the principal's profile to his financial management capabilities. forty-five school heads and forty-five public elementary school teachers who are members of Bids and Awards Committee, Division of Albay comprised the respondents of the study. The main instrument used in data gathering was the questionnaire checklist supplemented by informal interviews. Library technique was likewise employed to gather secondary sources of data for this study.

RESULTS

The study yielded the following salient findings: 1. the school principals are very capable on budget preparation; while capable along budget execution, monitoring and evaluation. 2. The constraints on resource allocation, including provision for contingency, publishing financial statements regularly for transparency and participating in monitoring some aspects of the school budget were very much a problem.

DISCUSSIONS

To enable the principals to do work with better precision, it would be very crucial if they would continuously boost their own professional development by acquiring relevant financial skills and abilities required to effectively manage resources in the school.

on the issue of transparency and monitoring of school funds, the principals lack formal financial management training. These problems can likewise be resolved by having a bursar or even a teacher for that matter who possesses relevant skills in financial accounting and annual balance sheet of the school.

KEYWORDS: Financial Capabilities, Management, Maintenance and Other Operating Expenses, Budget Evaluation, Budget Execution, Budget Monitoring, Budget Preparation, Constraints, Bids

SUBMISSION ID: R005-ALBAYP-0017

Forcing the Saba Banana (*Musa balbisiana*) Fruits to Ripen with the Leaves of Various Plants

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(Adviser: Mirachel Batolena)

Abstract

INTRODUCTION

Saba banana takes several days to be ripened (5-10 days). This typical condition is unwanted for the sellers. The usual solution for this problem is to use and add calcium carbide or "karburo" on the banana but because "karburo" is flammable, volatile and may have substances that are harmful to individuals, it is necessary to find other means of forcing Saba bananas to ripen. In this investigatory project, Saba bananas were forced to ripen with the use of leaves from varied plants.

METHODS

Saba bananas were forced to ripen with the use of leaves from varied plants such as acacia, ipil-ipil and kamias leaves. Two hundred (200) grams of the leaves were covered with newspaper together with five (5) fingers of same appearance of bananas. After every 24 hours for 5 days, the covered bananas were checked and observed and their appearances were recorded in the data sheet.

RESULTS

Among the leaves investigated, acacia leaves were the most effective in forcing the earliest ripening of banana fruits. After 24 hours of wrapping unripe and green Saba bananas with acacia leaves, fruits were almost ripening when removed from the covered newspaper. The second most effective ripening agent was ipil-ipil leaves. The ripening of Saba bananas using "kamias" leaves was almost the same as those of bananas that were allowed to ripen without leaves.

DISCUSSIONS

To ripen the banana, farmers used calcium carbide which is dangerous for the health of the people that's why study like this aims to solve the problem of using "karburo" to ripen the saba banana fruits. Fruits ripen by itself because of ethylene. Because of the experiments conducted at UPLB, this investigatory project tried and evaluated the effectiveness of other leaves like acacia, ipil-ipil and kamias in forcing the ripening of saba bananas. Ripening of Saba was fastest when acacia leaves were used. This is followed by the ipil-ipil leaves. The ripening of bananas using kamias leaves was almost the same as bananas without leaves (control).

KEYWORDS: ripening, calcium carbide, ethylene, bio ethylene, forcing, saba banana

SUBMISSION ID: R04A-CALAMB-0016

Full Circle Cogenerative Collaboration to Increase Stakeholders Level of Participation in Brigada Eskwela Program

Joanna Marie Yocampo, Bagacay National High School

Abstract

INTRODUCTION

The Brigada Eskwela program of the Department of Education is one of the most sustainable projects that highlight the participation of the stakeholders. Bagacay National High School has been blessed with different stakeholders that support the school but the level of participation is low. To address this, the Full Circle Cogenerative Collaboration program evaluated through descriptive-quantitative research came to view. This Basic Education Research Funded program helped to solve the percentage and level of participation of BNHS stakeholders.

METHODS

Under the F3C program, the school implemented the following interventions: Cogeneration or the specified task mapping, Bandillo which is the home to home marketing, Powerhouse or the task delegation, Hotline - the center communication system that highlights various ease of contact and prioritization, Crown, that gives credit and awards to key persons and stakeholders and Circle which is the inclusion of Brigada in the school quarterly monitoring and placement of Brigada orientated activities to school policy and guide such as the School Improvement Plan. The programs included activities to increase the sense of ownership and drive of the stakeholders in the Brigada proper from the planning, implementation, and monitoring. Survey and interview tools were used to measure the effects of the said innovations.

RESULTS

Results of the research showed that compared to the 2017 Brigada with 63.46% percentage of participation, 2018 F3C attained 95.62% of the targeted stakeholders which is 32.16% higher. The program also resulted in a 4.611 level of acceptance which falls as extremely accepted with School Tour, Bandillo and Care for Stakeholders as the highest. It also showed an average 4.517 level of participation under 15 indicators that have a significant difference to the 2017 level of 4.247. The program also had a highly positive correlation between the percentage of volunteers and the level of participation.

DISCUSSIONS

This data implies that a cogenerative environment on school - community partnership is most essential in creating a productive and genuine partnership between stakeholders. Furthermore, the paper highlights the need for continual monitoring and task specification on endeavors to match the stakeholder capability to school activities such as Brigada. Lastly, this approach for community development builds a strong foundation on engagement that will increase school level and therefore cater to the learners of the institution.

KEYWORDS: Cogenerative, Brigada, Stakeholders

SUBMISSION ID: R005-CAMSUR-0013

Helping Hands: Helping Learners Achieve Their Dreams (innovation in Access to Education)

Ybette Quine, Department of Education - Tanauan City

Abstract

INTRODUCTION

Tanauan City integrated High School (TCIHS) is the biggest public secondary school in the City of Tanauan. Being strategically located, the school's enrolment has continuously been increasing over the years. Economic hindrances cause many students to drop out of school opting to work and help their parents augment their family's basic needs, thereby creating an alarming rate of dropouts in the previous school years. Because of the increase in the number of dropouts every year, the school thinks of a best practice that can save their learner's academic status.

METHODS

Guided by the Department of Education's vision and mission of providing quality education for all, TCIHS through the collaborative efforts of teachers and private companies particularly Ibiden Philippines inc., launched the HELPING HANDS ADOPT-A-SCHOLAR PROGRAM (INNOVATION IN ACCESS TO EDUCATION) in the school year 2013 - 2014. The main objective was to provide assistance, both financial and emotional to the selected students. for effective implementation of the program, the school organized a technical working group. Moreover, the following strategies were made; planning, adjustment, operating procedure, evaluation, and reporting.

RESULTS

Without Helping Hands Program, there was a 7.54% increase in dropping out cases from SY 2013-2018. However, upon launching the program, it went down to 1.87%. From 119 drop-out cases, the number dropped down to 53. From 34 students, the program is now catering 178 student-scholars with an increase equivalent to 544.12%. There is also an increase in the number of performing scholars. From 33, the number swelled to 58 performing students. This reflected a 75.76% increase in performance rate. Moreover, the number of sponsors from 2013 has rapidly increased from 9 to 145 by 2018 which shows that there is a 1511.11 % increase.

DISCUSSIONS

The results showed that with the strong partnership of the school and Ibiden Philippines. inc., Helping Hands is definitely sustained. Effective teamwork among school staffs is practiced as it ensured the smooth running of the program. Many of the deserving students were given the chance to continue to stay in school. The program created a positive impact to our scholars as it broadened their social connectivity towards their sponsors. If the team will continuously work together, they can ensure the success of the implementation in the long run and can surely help more deserving students not only in TCIHS but to the whole Division of Tanauan City.

KEYWORDS: enrolment, drop-out, partnership, scholarship program

SUBMISSION ID: R04A-TANAUA-0083

Impact of Pantawid Pamilyang Pilipino Program 4Ps to the Family-Beneficiaries of Pupils in Ithan Elementary School, Binangonan II District

Carina Cerda, Department of Education - Rizal

Abstract

INTRODUCTION

The research was designed to determine the impact of Pantawid Pamilyang Pilipino Program (4Ps) to the family beneficiaries of pupils in Ithan Elementary School, Binangonan II district.

METHODS

To determine the impact of Pantawid Pamilyang Pilipino Program (4Ps) to the family-beneficiaries, the study used descriptive method of research.

RESULTS

The study revealed that the health and education of 67 pupil-beneficiaries of Pantawid Pamilyang Pilipino Program (4Ps) improved in Ithan Elementary School, Binangonan II district.

DISCUSSIONS

This action research determined the impact of Pantawid Pamilyang Pilipino Program (4Ps) to the 67 pupil-beneficiaries. This was conducted in School Year 2018-2019.

KEYWORDS: 4Ps, impact, assistance, education, health

SUBMISSION ID: R04A-RIZALP-0397

Intensifying Community and School Partnership through Reinforcing Supreme Student Government Innovation-3P's Prutas sa Perang Papel

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(Adviser: Gaylee Masangcay)

Abstract

INTRODUCTION

The success of education becomes highly possible through community and school partnership. When students learn to connect and give contribution to their local community, they grow up as responsible citizens. This partnership is the flagship of the Supreme Student Government project 3P's (Prutas sa Perang Papel) where students, teachers, parents, and stakeholders recycle papers to be used as mango wrappers. Through this income generating and innovative project, problems on leadership roles and participation of students were analyzed. Hence, the study described the level of school and community partnership in areas of educational, health services and social improvement of the senior high school students. It has the end view of proposing a project proposal to increase the school-community partnership of the senior high school students as they promote 3P's in barangay.

METHODS

The study utilized a descriptive research design with 89 respondents from the school and community of Conde Labac, Batangas City. Weighted mean and composite mean were used to analyze data from the survey questionnaire.

RESULTS

Results revealed that there is a moderate level of school and community partnership in terms of educational services, health services and social improvement of the senior high school. Disaster risk management, Wash in School (WINS) program and community organization that involves senior high school students are some of the services that increase the partnership. The respondents strongly agreed that the school innovative project 3 P'S (Prutas sa Perang Papel) promotes recycling and income.

DISCUSSIONS

To increase the level of school community partnership from a moderate level, services to increase the social involvement of the senior high school students must be done which include extending school projects to the local community. The participation of parents and stakeholders is a factor that increases the partnership; however, joining in community-based organizations and projects should be given emphasis. A project proposal on extending the school-based innovative project 3P'S (Prutas sa Perang Papel) is proposed to increase school participation and linkage thus strengthening community partnership.

KEYWORDS: school, community partnership, recycling, senior high school

SUBMISSION ID: R04A-BATANC-0186

Lack of Street Lights: Its Effects as Perceived by its Residents in Selected Barangay of Donsol

AJ Ontoria, Student – Senior High School
(Adviser: Julius Caesar Averilla)

Abstract

INTRODUCTION

Many barangays in Donsol are lacking street lights. Only affluent residences who can afford to provide lighting in their vicinity become the source of lights in the streets. This study aims to determine the effect of the lack of streets lights. The researchers aim to raise concerns and highlight the awareness of the value of street lights to everyone, especially the local government officials in the barangays. This study entitled "Lack of Street Lights: Its Effects as Perceived by Its Residence in Selected Barangay of Donsol" determined the problem of the lack of street lights and its effects to the residents at night. The study also aims to highlight what solutions may be conducted to this problem in the selected barangays in the municipality of Donsol.

METHODS

This study used descriptive survey for conducting the research. Structured questionnaires were used as the main instrument in gathering the data. The data was gathered through direct distribution of the structured questionnaires to the respondents. The participants of the study involved 40 respondents in the barangays of: Cristo, Dancalan, Tupas, and Tres Maria. Ten respondents were selected in every selected barangay to answer the structured questions.

RESULTS

Male respondents comprised sixteen out of the forty respondents or 40%, while female respondents comprised twenty-four out of forty respondents or 60%. Based on the data gathered from the surveyed questionnaires, the most common effect on peace was the occurrence of troubles,] and accidents, due to the lack of street lights (f=16). in terms of security, the most common effect was incidents occurrence, and the strictness of parents to their children that must be kept at home at night (f=16). in terms of convenience, being afraid of going home alone was the most common answer (f=17). From the data gathered, the most proposed activity that may highlight the value of street lights is conducting a seminar for barangay officials (f=26).

DISCUSSIONS

Based in the findings, the barangay officials must be informed about the lack of street lights in their barangay. The following activities are suggested: conduct a meeting for barangay officials, monthly checking of the wires that connected to every streetlight, and conduct a seminar for barangay officials. The findings of this study encourage the future researchers to make further research and surveys, and to broaden the scope of this study.

KEYWORDS: projects, community involvement, officials

SUBMISSION ID: R005-SORSOP-0000

Mini Desk Air Conditioner Cooling Fan Out of Recycled Materials

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(Adviser: Mirachel Batolena)

Abstract

INTRODUCTION

Air Conditioning is the process of changing the state of air by eliminating heat and humidity to attain more comfortable interior environments, typically with the aim of distributing the conditioner air to an occupied space such as a building to improve thermal comfort and indoor air quality.

METHODS

As the increasing heat temperature and price hikes in electricity charges of presently happen in our country, the "Mini Desk Air Conditioner Cooling Fan out of Recycled Materials" was invented and investigated to address the problems. It is a homemade device and a substitute for commercial mini portable air conditioner fan cooler personal space quick cool conditioner. It is made up of scrap PVC pipe, plastic green chicken screen, ply wood, mini-fan, and submersible motor with hose tube. It is a substitute for the mini portable cooling fan that can be out by some recycled materials that can usually be found at home. There is no need to spend money to buy this product. Since there are air conditioners are expensive, this study aimed to create a device which will decrease room temperature and serve as an alternative mini desk air conditioner cooling fan made from recycled materials.

RESULTS

According to the results, there was a change in room temperature when the mini air conditioner cooling fan out of recycled materials was used (0.5°C). The results were compared and showed with the use of graph to show that there is a difference in room temperature before and after the use of the mini desk air conditioner cooling fan out of recycled materials. This indicate that the ventilation system was more effective in terms of cooling down the room.

DISCUSSIONS

As the remarks stated above, there is difference between the change in temperature before and after the usage of mini air conditioner cooling fan out of recycled materials. This indicate that the ventilation process is much fit for the stabilization of room temperature when it comes to cooling down the room. Therefore, it is effective to use as an alternative mini air conditioner cooling fan even though it is made up of recycled materials.

KEYWORDS: mini air conditioner, ambient temperature, improvise, personal space, cooling fan

SUBMISSION ID: R04A-CALAMB-0011

Perception of the Residents of Barangay Progreso on Oplan Tokhang

Maricar Que, Senior High Student Student
(Adviser: Jaydee Plaida)

Abstract

INTRODUCTION

The Philippines attracted global attention recently due to the anti-drug campaign of President Rodrigo Duterte. Oplan Tokhang (a portmanteau for knock and plead in Cebuano) has created a human rights crisis after thousands of suspected drug users and pushers were killed (Amnesty international, 2017). From June- September 2016, 3,600 alleged drug users and pushers were killed due to Oplan Tokhang. This brought fear to most Filipinos as it operated in the barangay or community level. This study aims to collect the perception on Oplan Tokhang by the residents of Barangay Progreso.

METHODS

The study used a descriptive-quantitative research design. A 15-item Likert scale-based questionnaire was administered to the respondents who were chosen through purposive random sampling. The data gathered was treated through simple mean and frequency counts. T- test was also used to determine if there is significant difference when data was grouped in terms of age and gender.

RESULTS

Results show that respondents strongly agreed that Oplan Tokhang helped to stop pushers and users of illegal drugs in the community as it posted a mean score of 3.6. 47 respondents or 87% believe that the program has a positive impact to the community. Respondents also perceived that since Oplan Tokhang was implemented, the community became more peaceful and more conducive for living. This statement is supported by the mean score of 3.56 which falls under the descriptor “Strongly agree”. This only shows that Oplan Tokhang is beneficial to Barangay Progreso. in addition, the community perceived that Oplan Tokhang yields calmness to a person as the program yields peace to the community. More so, 47 of the respondents had a positive view that the anti-drug campaign adheres to human rights laws. forty-eight (48) respondents or 96% believe that the program benefited the people, especially those who are innocent.

DISCUSSIONS

The results attest that the anti-drug campaign of the government yields positive perception to the people of community thus, making communities drug-free. This study therefore presumes that Oplan Tokhang is beneficial for both the community and individual life and this should be strengthened to achieve a friendly environment.

KEYWORDS: Drugs, Oplan Tokhang, Community, Perception

SUBMISSION ID: R002-QUIRIN-0040

Perception of the Residents of Barangay Ramos on Oplan Tokhang

Robinson Grande Jr., Senior High School Student
(Adviser: Jaydee Plaida)

Abstract

INTRODUCTION

Illegal drugs are one of the major problems of countries all over the world. Drug addiction has severely affected the society. The flagship program Oplan Tokhang brought burden and benefits to the country. In a data published by the Associated Press (2016), an average of 36 suspected drug pushers and users are killed daily, creating a human rights crisis that brings fear to the people of the country. Oplan Tokhang pushed drug users and pushers to surrender to authorities and plead to change for the better. It is in this context that this study is conducted to find the perceptions of the residents of Barangay Ramos towards this anti-drug campaign.

METHODS

The descriptive-quantitative method is used to identify the perception of the respondents. A questionnaire was utilized wherein respondents, who are chosen purposively, answered a 15 item Likert scale-based structured statements. Results were treated through the quantitative method. Mean and percentages were utilized to analyze data and to be the basis for its interpretation in order to derive the conclusions and recommendations.

RESULTS

Results show that 42 or 84% of the respondents perceived that Oplan Tokhang is beneficial to the community. This data is being supported by the result mined from the statement "Oplan Tokhang draw more illegal drug surrenderees" with 88% or 44 respondents agreeing with this statement. Almost all of the respondents imbued positivity to the statements on the structured questionnaire as it posted mean scores of not lower than 3.0 except for the statement Oplan Tokhang adheres human right laws which only posted 2.98 mean score. Citing the perceptions of respondents on the individual benefits of Oplan Tokhang, 47 or 94% of the respondents believe that Oplan Tokhang benefits the people, especially the innocent civilians and the program makes an individual be more disciplined. Collectively, people of the community, have positive perceptions about the anti-drug campaign, "Oplan Tokhang".

DISCUSSIONS

The result therefore demonstrates that residents of Barangay Ramos see Oplan Tokhang to have positive impacts to the community. It is therefore recommended to strengthen the program to achieve a harmonious community.

KEYWORDS: Drugs, Oplan Tokhang, Perception, Community

SUBMISSION ID: R002-QUIRIN-0039

Quarrying and the Agricultural Areas of Barangay Guinalbin and Ramos

Rhonald Ganitano, Senior High School Student
(Adviser: Jaydee Plaida)

Abstract

INTRODUCTION

Quirino is known for having wide agricultural areas which gave birth to the reason why agriculture plays a big role to the progress and development of the province. Barangay Guinalbin and Ramos, two of the feeder barangays of Aglipay High School face quarrying-related problems as farmlands near the riverbank are being flushed by strong water due to floods and typhoons as a result of quarrying activities. This urged the researchers to assess the state of quarrying and its impact to the agricultural areas of the feeder barangays.

METHODS

A Quantitative-Qualitative Research Design was used. A purposive random sampling was employed. A Likert Scale Questionnaire was used to gather data. Simple mean and percentages were used to primary treat the data. The T-test was utilized to determine if there is a significant difference between the respondents of the two communities. Researchers conducted semi-structured interview questions to validate the data being gathered. interview answers were used to validate the quantitative findings.

RESULTS

Results show that after posting a general mean of 2.1, respondents inferred that respondents do not want quarrying to enter their community. A 2.533 mean says that respondents tend to disagree that quarrying is beneficial to the landowners. This is being supported by 60% or 18 of the respondents' answers in the interview. One of the respondents cited "Dagitay lang met agpapaquarry iti mabenbenpisyuan" (only the direct quarry partners benefit"). Results also show that quarrying affects the farmlands within the riverbanks. This is being supported by the mean score of 3 which asserts that people agree with this idea. "Ambituses digit data mi ta marigriggaay da metten" (Our farmlands are gradually fading as it is being carried by waters). Based on the data, results show that quarrying have a negative impact to the community.

DISCUSSIONS

Based on the results, it can be inferred that people of the community have negative perspectives on quarrying. This study therefore supports the statement of former DENR Secretary Gina Lopez that quarrying and mining destroys the environment and its benefit is just for the short term. Despite the limitations, the results embodied the voice of the people of the community against quarrying.

KEYWORDS: Quarrying, environment, agriculture, community

SUBMISSION ID: R002-QUIRIN-0038

Rice Straw (*Oryza, Sativa, L.*) As Raw Material in Making an Alternative Cardboard Food Packaging

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(Adviser: Mirachel Batolena)

Abstract

INTRODUCTION

Styrofoam is usually used as food packaging but this material cannot be recycled. This can cause in the increase of waste and contribute to pollution which can affect the environment. Local agencies do not allow the use of more styrofoam because of its chemical substance called polystyrene or styrene which leeches through our food or drinks, harming our digestive organs and contributing to air pollution when disposing it. In this investigatory project, rice straw was investigated if this can be an alternative material to cardboard food packaging.

METHODS

The rice straw was cut, boiled, and crushed in order to get the pulp. The pulp was then subjected to three experiments. The amount of rice straw and starch were varied in every product. In product (A), it contained 1000 grams of rice straw, 500 grams of starch and with 100 grams controlled of incense and alum; product (B) contained 1200 grams of rice straw and 800 grams of starch together with the controlled of incense and alum; and product (C) contained 1500 grams of rice straw, 1500 grams of starch and with controlled of incense and alum. The samples produced were then subjected to different test: texture, appearance, water holding capacity and thickness.

RESULTS

Results showed that product (C) was mostly liked in terms of its characteristics in texture and appearance. In terms of water holding capacity, product (C) also withstands the most for having absorbed least of water placed in it. And for the thickness among the three experiments still, product (C) is the thickest. Based on the gathered result, the equal measurement of starch and rice straw produced a sturdy cardboard food packaging.

DISCUSSIONS

In this investigation, the rice straw residues are the main material. The rice straw was cut, boiled and crushed in order to get the pulp. The pulp was then subjected to three experiments. The amount of rice straw and starch were varied in every product but the incense and alum (tawas) were controlled. The products coded as product (A), (B), and (C). The samples produced were then subjected to different tests: texture, appearance, water holding capacity and thickness. The data gathered were then analyzed using 5 Point Likert Scale and Self-Test. Result showed that Product (C) was mostly liked in terms of its characteristics in texture and appearance and water holding capacity.

KEYWORDS: pulp, Styrofoam, packaging, rice straw, paper, fibers, alternative

SUBMISSION ID: R04A-CALAMB-0015

Sangguniang Kabataan (SK) Programs and Activities in Banaba West, Batangas City

Larame Enopiquez, Rhenalyn G. Ramos, & Trizia Mae C. Pagcaliwagan,
Banaba West National High School
(Adviser: Marian De Mesa)

Abstract

INTRODUCTION

Barangay governance plays a vital role in the empowerment of local government units in a country. By virtue of RA 7160, the Sangguniang Kabataan (SK) was created in the Philippines. The SK serves as a platform for young leaders' accountabilities, fairness, and transparencies in the exercise of their duties and functions as servants of the adolescent community. of the many programs and activities of the present SK officials in Barangay Banaba West, Batangas City, the researchers thought of coming up with a study that would assess its effectiveness, identify its impacts to the adolescent community and propose strategies, that will strengthen the SK officials' programs and activities.

METHODS

This quantitative study used the descriptive type of research. There are five hundred and fifty-five (555) adolescents aged 15-21 in Barangay Banaba West in Batangas City. From this number, the researchers were able to distribute their self-made questionnaires to five hundred and twenty-three (523) teenagers or roughly 94% of the population of teenagers. Data collected within that week were immediately tallied, tabulated, analyzed and interpreted. To clarify some vague answers, interviews were done.

RESULTS

Based on the findings, most of the adolescent-respondents are male whose mean age is 18 years old. of the classifications of SK programs and activities in Barangay Banaba West, Batangas City, the majority were positive that sports-related programs and environmental protection activities dominated all the others. in terms of impact on the youth, most of them noted that they appreciate programs where they had been engaged in and participated.

DISCUSSIONS

The results imply that most of the respondents find the SK programs and activities better appreciated when they are included, like in terms of sports. This could be a reason why males dominated in the number of research participants. The results likewise imply that the Sangguniang Kabataan (SK) officials may continue with their sports related and environmental programs deemed effective by most. The SK officials may consider the researchers' proposed intervention activities towards enhancing the sets of programs for the coming years.

KEYWORDS: Sangguniang Kabataan, Programs and Activities, Effectiveness, Batangas City

SUBMISSION ID: R04A-BATANC-0184

Services and Benefits of Aquasilviculture Activities in Selected Areas of Cavite

Rolando Pañares, Researcher

Abstract

INTRODUCTION

Activities are implemented to improve the conditions of the coastal communities. Coastal communities are homes of the economically challenged sector of the country's population. The cooperation of the recipients may determine the progress of the activities. Aquasilviculture activities provide services resulting in the changes of monetary and non-monetary benefits for the communities. In this study, the researcher explored the varying economic benefits of aqua silviculture activities to the fisherman in the province of Cavite.

METHODS

The descriptive method was used in this study. Using the input process output approach, the researcher conducted personally guided surveys. The participants responded to a set of prepared questionnaires. Frequency of occurrences, mean, weighted mean, median, and mode was used for the quantitative analysis of the data collected from the participants.

RESULTS

The participants of the study were cooperative and enthusiastic about the activities. A total of one hundred twenty-five participants were surveyed. The participants narrated that interests were high at the start of the implementations. The hatchery, the fishpond building, and the mangrove reforestation were received enthusiastically. As time progressed, some services did not arrive, activity completion delayed and interests waned. The slowing down of activities hampered the activities but hopes were high for the progress of the activities.

DISCUSSIONS

The results demonstrated the need for increased services and benefits of the activities for the participants. The services and supplies drive interests and participation in the communities. The logistical support and technical guidance were very important in continuing the interests and help attain the goals of the activities.

KEYWORDS: Coastal Resource Management, Aquasilviculture, Benefits

SUBMISSION ID: R04A-CAVTP-0444

Skating the Tracks: A Narrative Inquiry-Based Study of the Skates Drivers of Brgy. Rizal, Lopez Quezon

Clyde Coral, Lopez National Comprehensive High School
(Adviser: Sharon Villaverde)

Abstract

INTRODUCTION

A handcar (also known as a pump trolley, pump car, jigger, Kalamazo, velocipede, or draisine) is a railroad car powered by its passengers, or by people pushing the car from behind. A typical design consists of an arm, called the walking beam, that pivots, seesaw-like, on a base, which the passengers alternately push down and pull up to move the car but the skates nowadays are modern type where the skates has a motor and more easily to use. The track on a railway or railroad, also known as permanent way, is the structure consisting of the rails, fasteners, railroad ties and ballast, plus the underlying subgrade. It enables the skates to move by providing a dependable surface for their wheels to roll upon.

METHODS

This study used a quantitative descriptive method using focus group discussion. The researchers utilized a questionnaire type of descriptive research method and purposive sampling which enables the researchers to gather information from the respondents on the narrative inquiry-based Study of the Skates Drivers of Brgy. Rizal, Lopez Quezon using structured interview.

RESULTS

The findings of the researchers where the highest is at the range of 15-25 and the lowest were at the range of 57-71. in terms of gender, all of the respondents are male. in terms of educational attainment, 30% graduated in elementary and 70% finished High School. The positive questions that scored highly (strongly agree) are “being a Skates driver help their family” and “enjoying being a skate’s driver”.

DISCUSSIONS

It concludes that all of the skate’s drivers took up this profession because it seems that this is a tradition of older people. During the interview, most of the skate drivers answered that they are 4Ps beneficiaries and that they enjoy being a skate’s driver for decades. During low season, most of the problem encountered by the respondents were having a few passengers and cannot support the family in their daily needs and some of the skate’s driver experienced heat stroke

KEYWORDS: Skates Driver, Culture, skating the tracks, qualitative

SUBMISSION ID: R04A-QUEZON-0103

Teenage Pregnancy: Its Social and Emotional Perspective of Teen Pregnants

Joana Marie Atalin, Senior High School Student
(Adviser: Jaydee Plaida)

Abstract

INTRODUCTION

Teenage Pregnancy has become one of the perennial issues in the country nowadays. As reported by the UN Population Fund (UNFPA), teenage pregnancy has a huge rate in the Philippines and this is supported by the data from the National Statistics office that 8 percent among 1.7 million babies born in 2004 were born by mothers aged 15-19 years old. This urged the call for the conduct of this study to strengthen the programs and mitigation measures on teenage pregnancy and to make students aware on the potential scenarios of teenage pregnancy.

METHODS

A quantitative-qualitative research method is employed wherein quantitative method is set to be the foundation of the qualitative interview for the respondents. Purposive random sampling was utilized to determine the respondents. A 10- item questionnaire was administered to measure the emotional and social perspective of pregnant teen mothers. Analysis was conducted which became the basis in constructing semi-structured interview questions. Mean and frequency counts and t-test were used to answer the research questions.

RESULTS

Results under social perspective show that 53.333% or 8 of 15 respondents strongly agreed with the ideas that people they know care about them and help them. This result is being supported by the statement of 2 of the respondents "...kahit na ganito yung nangyari sa akin, nararamdaman ko naman yung pagmamahal ng tao sa paligid ko..." (Even though I have experienced this, I still feel the love of the people around me). Respondents disagreed with the idea of not pursuing studies because of the problems they have faced. in terms of its emotional phase, respondent's idea posted a mean of 2.904 which asserts that respondents do not feel at ease due to lack of sleep. However, 60% or 9 of the respondents agree that teen pregnant mothers felt confusion among themselves as their family is expecting them to finish a degree.

DISCUSSIONS

With the data gathered, it can be inferred that mothers who experienced teenage pregnancy are more optimistic and they persevere despite the challenges. Despite the study's limitation, it can be concluded that the study will attest the perception of teen moms towards teenage pregnancy to be positive.

KEYWORDS: Teen, Pregnancy, Social, Emotional

SUBMISSION ID: R002-QUIRIN-0035

The Impact of "Pantawid Pamilyang Pilipino Program" on Ternatenos

Rochelle Ann Torres, Department of Education
(Adviser: Cora Del Rosario)

Abstract

INTRODUCTION

The Pantawid Pamilyang Pilipino Program is a conditional cash transfer (CCT) program which provides cash to beneficiary households, subject to compliance with program conditionalities. The Pantawid Pamilya Pilipino Program is central to the Philippine government's poverty reduction and social protection strategy (Fernandez & Olfindo, 2011). This study aims to determine the impact of the Pantawid Pamilyang Pilipino Program (4Ps) on the living conditions of the students who have families included on the program. In addition, the program assists the beneficiary households in improving their daily lives via financial assistance from the Philippine government. However, financial literacy as well as schema of the program are lacking on some beneficiary households as reflected from the study.

METHODS

Using mixed methods, this present study used a researcher-made questionnaire and face-to-face interview. The study was conducted to 50 students of Ternate West National High School - Ternate, Cavite with families as beneficiaries. The responses of the head of the family responses were gathered, recorded, tabulated, analyzed and interpreted.

RESULTS

The results showed that the living conditions of 32 families out of 50 sample beneficiary 4Ps households improved, mainly because of the additional income source from the government. The rest of the respondents attest that 4Ps made no difference in their living conditions. Furthermore, the cash was released on irregular schedules so once it was disbursed, it would be automatically spent to the necessary family expenditure. From the face to face interview, the respondents claimed that the cash grant was insufficient to support their families' needs. It also revealed the importance of the students' participation in keeping their households to the program.

DISCUSSIONS

The study provides a number of important facts that should be considered by household respondents when discussing the impact of 4Ps. Moreover, the research can reinforce 4Ps implementation to the beneficiaries. It provides valuable insights for Philippine government and program leaders about the quality and reach of the program's services. It promises possibilities of increasing the cash grant to sufficiently address the needs of household beneficiaries.

KEYWORDS: conditional cash transfer, beneficiaries, financial assistance

SUBMISSION ID: R04A-CAVITP-0697

The Use of Banana (*Musa balbisiana*) Pseudostem and Recycled Paper in Making Cardboard

Marc Danielle P. Espiritu, Department of Education - Calamba City
(Adviser: Mirachel Batolena)

Abstract

INTRODUCTION

Global warming is predicted to have varied effects besides increased temperature. Paper-making from trees contributes heavily to this problem. In this study, the used banana (*Musa balbisiana*) pseudostem together with the recycled paper is considered as the solution in global warming problem. Instead of cutting more trees, fallen dried pseudostem and used paper can be recycled to make a cardboard or any source of paper because of their pulps.

METHODS

The dried and fallen pseudostem of the banana underwent sun drying for 2 to 3 days then boiled for 3 to 4 hours until it became smooth, while the used paper was soaked and grinded by the use of a blender to become slurry. After grinding the two materials, they mixed and sieved and added a caustic soda in order to get the pulp that became the cardboard material. The product is tested by a self-test for their durability, usability, and acceptability of the respondents.

RESULTS

Sample A is made up of 67% of banana pseudostem and 33% of recycled paper. Based from the data, sample A has 97.90 grams per square meter (gsm), 0.205 mm thick, 14.80 Nm m²/g tearing index, 43.82 Nm/g tensile index and 247.25 folds under 1kg tension load. If you force to fold it, it will be cut into pieces. In sample B they have the same amount of papers and pseudostem with 50% for each ingredient while for sample C the banana pseudostem is composed of 60% scrap paper and 40% for banana pseudostem.

DISCUSSIONS

The researcher found out that the used dried pseudostem of the banana can also help the environment in terms of reducing the number of trees to be cut to produce cardboard materials. This study was accepted by the respondents in terms of the durability, usability, and acceptability.

KEYWORDS: banana pseudostem, alternative, cardboard, caustic soda

SUBMISSION ID: R04A-CALAMB-0008

COMPANY AND INDUSTRY INFORMATION

Hire Me: A Phenomenological Study on Job Search and Rejection of Unemployed College Graduates

John Francis Alano & JC Adam Palma, Student
(Adviser: John Francis Alano)

Abstract

INTRODUCTION

Unemployment in the Philippines is still increasing. One reason is the status of college graduates whose job application was not accepted. While existing studies clearly established unemployment among college graduates, lived experiences of these diploma holders had not been closely looked into. The research aims to describe and understand the experiences of college graduates in finding a job and being rejected by different companies to obtain how their experiences contribute to the prevailing problem in unemployment in this country.

METHODS

Qualitative phenomenology method was employed in the study. Eight male college graduates who were not hired and are still unemployed served as the participants. Purposive sampling was used since the researchers have friends and relatives who experienced the phenomenon. The researchers were guided by interpretative Phenomenological Analysis (IPA's). It includes reading, re-reading of the transcripts of interviews, coding, developing of themes and finding comparisons and/or connection between the themes that emerged.

RESULTS

The participants experienced the following challenge in searching for jobs: financial problem, struggles on job interviews, communication skills and errors in answering during the interview. Regarding rejection, the participants said they felt the following: disappointment, discouragement, shyness, loss of self-confidence and fear of telling their families that they were not hired. However, they tried to stay positive by continuing to search for other companies where they can apply, ask friends and other people for possible recommendations and seek the understanding and support of their families.

DISCUSSIONS

Searching for a job in spite of having a college diploma is not easy for the participants. They had good favorable and unfavorable experiences in this process. Furthermore, although unemployment evoked negative emotions, most unemployed college graduates have been positively transformed by the experiences of being rejected by the company. Therefore, listening to the lived experiences of unemployed college graduates can motivate not just them, but other students that in the future will experience looking for a job.

KEYWORDS: unemployment, college graduates, job searching, rejection

SUBMISSION ID: R04A-CAVITP-1044

COMPUTER SCIENCE & ENGINEERING

Smart ID: The Development of a Prototype ID Holder with a Built-In Power Bank and Flash Drive

Jonathan M. Nova, Pantay Integrated High School
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Abstract

INTRODUCTION

File sharing has now become faster with the use of external storage devices. An example of this is a flash drive. Flash Drives are now the most efficient way to share files due to their small size. Even device charging has now become easier and more convenient. Most people now use a power bank to charge their mobile devices because they are portable.

As everyone is always in a hurry, a combination of a flash drive and power bank would be a great idea as it solves two major technological needs: file sharing and device charging. Students are the number one beneficiaries of this project since they are 21st century learners who use technology in learning. In addition to the flash drive and power bank, there is also an ID slot which makes it a 3-in-1 device where the user could wear it as a normal ID. By using this as an ID case, the flash drive and power bank would be easier to carry around.

METHODS

This study made use of creative designing utilizing both research-centered and practice-oriented approaches. This also explored methods where creating the assembly from its parts requires specifying the spatial and mating relationship between parts.

RESULTS

Smart ID could be used and worn like a simple ID holder that students are currently using. It has a standard USB A plug used to connect to computers. It also has a NAND flash memory which stores data. The flash drive feature of the Smart ID also has a USB Mass Storage Controller, which is a tiny microcontroller with a small amount of on-chip ROM and RAM. The drives also use crystal oscillators, which produce their 12MHz clock signal and control data output through a phase-locked loop. Moreover, Smart ID has a built-in micro USB for charging devices and a micro USB slot for recharging the power bank. Also, it has a power button for booting up and booting down.

DISCUSSIONS

With the use of Smart ID, file sharing and device charging has never been easier. The encryption of flash drive has helped the users secure their files more. Smart ID has also helped grow efficiency in technology.

KEYWORDS: Security ID, Flash Drive, Power Bank

SUBMISSION I.D: R04A-TANAUA-0111

An Automatic Watering System for the "Gulayan sa Paaralan" in Lemery Senior High School

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(Adviser: Orven Mendoza)

Abstract

INTRODUCTION

The Lemery Senior High School like other educational institutions is implementing "Gulayan sa Paaralan". Different plants and vegetables like water spinach, legumes, cabbages and chili pepper are being maintained by the teachers and students in order to support the green project and lessen the malnutrition among the learners of the school. With an aim of developing a prototype which will show how to lessen the drastic effect of climate change, the researchers decided to design and create a project that answers three objectives; First is to create a prototype that applies automatic watering or irrigation for the "Gulayan sa Paaralan"; Second, is to know the effects of using the project in sustaining the production of plants and vegetables, and lastly to show how technology could be used in the changing environment.

METHODS

The project developers gathered enough information in order to produce a prototype capable of watering or irrigating automatically the plants and vegetables. Consultations and unstructured interview were also done among the teachers and students to know the common problems and concerns related in maintaining the rectangular garden. Through the help of the low-cost microcontroller board - Arduino uno and a thermistor the developers were able to create the prototype that also helped to broaden their knowledge and trained them to practice the field of ICT in a broader scale.

RESULTS

Findings of this project study reveal that the proponents were able to create a prototype for the automatic watering of the plants and vegetables of the rectangular garden using Arduino uno microcontroller. The project really helped the assigned teachers and students in the garden by means of having an automatic watering system that will automatically be activated once the temperature is high. It can be gleaned from the data obtained that the project study has big positive effects for teachers in teaching their classes and learning of the students by applying technology in the environment.

DISCUSSIONS

This project enhances the traditional method of watering the plants and vegetables in the rectangular garden at the Lemery Senior High School by applying and integrating ICT in climate change. The Automatic Watering System which has an integration of modern technology can be an effective and innovative approach in adapting climate change and a good reference for the future ICT project in Lemery Senior High School.

KEYWORDS: Prototype, Thermistor, Arduino Uno Microcontroller

SUBMISSION ID: R04A-BATANP-1092

The Awareness of Students and Teachers of Cabangan High School Regarding the Intranet

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Abstract

INTRODUCTION

The Intranet is a private network which is used in organizations and institutions for members to connect to each other. It is usually used in companies. However, intranet can also be used in school institutions. The research aims to strengthen the awareness of students and teachers of Cabangan High School regarding the intranet. Having the exposure to the use of the intranet helped in gaining knowledge and skills that are necessary on using the network. After learning the intranet, it can be applied or implemented to Cabangan High School.

METHODS

This study used descriptive qualitative research with the use of survey questionnaires. Self-administered questionnaires were distributed to the selected respondents. The sampling technique used in the determining the respondents was total enumeration. Respondents were chosen for they have appropriate knowledge regarding the technology. However, based on the observation of the researcher, even if respondents already had the appropriate knowledge in technology, the research still determined the level of awareness of the respondents regarding the intranet.

RESULTS

Majority of student and teacher respondents were found out to be aware of different aspects of the intranet. This implied that they were already quite exposed to technology and on different aspects of technology from time to time. Also, most of school activities were aided by technology. The awareness made students and teachers see the importance of the intranet to an organization or institution. The realization of the respondents helped them gain more knowledge on the intranet. However, the respondents still lack the appropriate knowledge to be able to enhance the skills of the respondents.

DISCUSSIONS

The results proved that the importance and use of the intranet must be further studied and is to be implemented not only in companies but even in schools to possibly achieve a centralized system that brings productivity to the students and members of the faculty. It is where all of the important data of the school will be saved. In this regard, students and teachers were exposed and accustomed on the importance, processes and uses of intranet through a learning material. Being exposed and familiar with intranet will further increase the level of awareness of students and teachers. Having the appropriate knowledge will also help in developing the skills of the respondents. Therefore, providing a learning material will eventually enhance the respondents' knowledge and skills.

KEYWORDS: intranet, technology, level of awareness

SUBMISSION ID: R005-LEGAZP-0009

A Caviteñan Application: A School Disaster Risk Reduction Management Mobile Application

Johan J. Villanueva
(Adviser: Louie-Zel Pedro)

Abstract

INTRODUCTION

Nowadays, students are hooked into using their mobile phones as their primary devices to look up for information and with all the harms of fake news, it is hard to distinguish factual information from fake ones. Cavitenan is an Android Application designed to help students determine the right information they need. It features a simple user interface that gives the user recent news, suspension updates, and for the students' safety. The Application also has tons of offline infographics about the safety and security of themselves in case of a natural disaster such as an earthquake.

METHODS

The research utilized descriptive developmental design. The development of the mobile application went through several phases such as planning and designing phases, development phase, validation and evaluation phases, and try-out and finalization phases. The mobile application was pilot tested to the students of Cavite National High School and IT experts. The Cavitenan application was first designed in Adobe Photoshop CC and coded in Hyper Text Markup Language or HTML using Notepad++ and converted to APK through Web2Apk Builder.

RESULTS

The expert-evaluators of the Cavitenan application gave the application a high acceptability rating in terms of its user interface and design, features and contents inside as well as the compatibility and usability of the application to the user. The user interface of the application showed positive feedback to the users, other users pointed out that they like the color combination of yellow and maroon complimenting the schools color. In terms of the features, the feedback was overwhelmingly positive based on the results of the survey.

DISCUSSIONS

Based on the rating of the IT experts and evaluation from the student-users of the mobile application, it was found out that the application has high ratings in terms of interface, layout and design, usability and compatibility. The application was also able to update students in the cancellation of classes, school news, and information about school events. It also informed and guided students on what to do during disasters. Hence, by providing offline infographics, the objective was fulfilled. The students were able to browse through the infographics, learn about safety and it was accessible even without an internet connection. In conclusion, the main objectives were accomplished in the research. The Cavitenan application is a DRRM application designed to give factual information to students and provide offline infographics.

KEYWORDS: DRRM, Mobile Application, ICT

SUBMISSION ID: R04A-CAVITC-0136

A Computerized Form 137 for the Bucal National High School

Jerille Tañagras, Tricia Ann Guinto, & Rhea Lyn Incapas, Bucal National High School

Abstract

INTRODUCTION

Nowadays, people are finding ways to make work easier. Advances in technology have enabled a wide range of applications to be developed that can be used by many people on the move. Educational technologies need to be applied in school for ease in the processing request of school documents. For this reason, a study on the development and validation of Computerized Form 137 for Bucal National High School was conducted.

METHODS

The system was programmed following the pre-designed concept using Visual Studio, C# programming language and XAMPP. Its development followed every phases of Prototyping Model: Planning, Analyzing, Design, Testing, System Prototype, and Final Implementation. The program was evaluated in terms of functionality, reliability, usability, efficiency, maintainability, and portability.

RESULTS

Results of the study show that the system is functional as evidenced by a score of 3.65, reliable as evidenced by a score of 3.25, usable as evidenced by a score of 3.92, efficient as evidenced by a score of 3.19, portable as evidenced by a score of 3.31. These scores show that the Computerized Form 137 System for Bucal National High School is acceptable and has passed all the given criteria and standards of evaluation and was rated very good.

DISCUSSIONS

Results reveal that the Computerized Form 137 System for Bucal National High School is functional, reliable, usable, efficient and portable.

KEYWORDS: computerized, form 137, technology

SUBMISSION ID: R04A-CAVITP-1562

The Generation of Electrical Energy from an Overheated Phone Using Peltier Tiles

Terrence Salorsano & Jules Fuentes Panganiban

Abstract

INTRODUCTION

We are trying to find out alternative ways of producing electricity and we found out that heat coming from our own body can be used or heat coming from any source can be harnessed and converted into electricity using Peltier tiles.

METHODS

The following materials were obtained from an online shop to do our prototype.

First, we planned on how to make our prototype with our consultant. Second, we tried the Peltier tiles on how much it can handle the heat so we left it outside the house where it can be heated and we also heated it in a fire stove. Then, after a few hours passed we tried to measure the electricity converted to know on how much was converted if it can be used on a phone. Third, we constructed the prototype with the help of our consultant with the given data we have gathered after our experimentation. Lastly, we have tried to use it on an overheating phone to know if the heat coming from the phone can be converted to electricity and also to find out if it will have a defect on the phone being charge. Then with the given results we have come up with the conclusion to make our study prove that it can be used on a phone.

RESULTS

The Results revealed that the heat coming from the phone can convert heat into electricity and boost the charging status of the phone. The Peltier tile which used to convert the heat into electricity did not show any problems when it was used on a phone. It will also help the phone cool down because of the cooling system inside the Peltier tile.

DISCUSSIONS

Many of the cellphone users agreed that our invention helped them when they were playing. It helped them charge their phone because it converts the heat of the phone into electrical energy and there were no side effects while charging the phones using the converted energy and the charging status was much faster than before. The only problem is that this invention is only recommended for those who play games or whose phone overheat much faster like Asus.

KEYWORDS: Electrical, Energy, Peltier tile

SUBMISSION ID: R04A-CAVITC-0130

Lemery SHS' TVL WIFI Camera System: An Innovative Approach in Teaching and Learning the TVL-Automotive Servicing Program

Orven Mendoza, Lemery Senior High School

Abstract

INTRODUCTION

One of the programs offered by Lemery Senior High School under the technical-vocational track is the Automotive Servicing Program. This program involves an actual engine parts and tool demonstration by the teacher for the students to learn the desired learning competencies. There are times when students find it hard to see and check clearly what the teacher is pointing in the engine or doing in the working table while sitting in their own chair. To address this issue, the researcher decided to propose a solution that uses smart phones and an android application (Web of Cam). The system utilizes smart phones camera and wireless fidelity (Wi-Fi) connections for the effectiveness of the teaching-learning process.

METHODS

This study is centered on the Lemery Senior High School, TVL Track - Industrial Arts-Automotive, a public educational institution. The institution has five (5) composite TVL - Automotive teachers and three hundred twenty-four (324) TVL- Automotive students. The chief instrument for data gathering was the use of survey questionnaires. The survey test among the teachers and students of TVL-automotive program yield data wherein the acquired values served as a very good guide for dependable interpretation and analysis.

RESULTS

The researcher was able to create and implement a system for automotive teachers and students that integrates ICT in conducting classes and utilizes school available resources. Using the system, students were able to see and check clearly what the teacher is pointing in the engine or doing in the working table. Students can now easily remember which part of engine the automotive teacher is talking about while teaching because they can take pictures while sitting in their own chairs. The learners no longer need to go near the teacher and to the workplace to get a clear sight of the actual demonstration because they can see it from their smartphones.

DISCUSSIONS

Because of the developed system, students were able to easily cope / understand the lesson on the different parts of the engine during their classes. The students use and apply ICT in learning and maximize their time in doing automotive laboratory works. The developed system can be evaluated and monitored by the automotive teachers and students by using the monitoring and evaluation form created by the researcher that was posted in the bulletin board of the automotive laboratory.

KEYWORDS: TVL-Wi-Fi Camera System, Smart Phones, WebofCam Android Application

SUBMISSION ID: R04A-BATANP-1077

A Management Information System for the Library in Bucal National High School

Ashley Brylle Angue, Rhea Jean Caballero, Rois Mikylla Beatriz Benecen, & Shelli Mae Camposagrad, Bucal National High School

Abstract

INTRODUCTION

Nowadays, modern people use advancement in technologies to find ways in making their work easier. In addition, the motivation towards learning technologies is increasing. Educational technologies can improve school services such as easier locating of books in the libraries. A system that will help those who are in charge of collecting data such as book titles, authors, book id's, number of books, and more needs to be designed and executed. It is for this reason that a management information system for the library of Bucal National High school is made. Library management system is a project which aims in developing a computerized system to maintain all daily work of library. It also has a facility of admin login through which the admin can monitor the whole system. It also has a facility where student can see list of books issued and its issue date and return date after logging in their accounts.

METHODS

The system was programmed using the researchers' pre-designed concept with the application of different programs such as Microsoft Visual Studio 2015. Its development followed every phases of prototyping model: planning, analyzing, design, testing, system prototype and final implementations.

The system was tested for functionality, reliability, usability, efficiency, maintainability and portability of programs and features which can be determined by indicators 1 and 0 corresponding to success or fail, respectively. Ten sets of data per function were collected, analyzed, and interpreted.

RESULTS

Results of the ten trials on functionality, reliability, usability, efficiency, maintainability and portability reveal 10 out of 10 scores each.

DISCUSSIONS

Results show the success rate of 100 percent in all components of the program management system. This is due to the fact that during programming, efforts were made to ensure 100 percent success rate for each part of the program.

KEYWORDS: Management nformation System, Library

SUBMISSION ID: R04A-CAVITP-1556

MENTOR: Mock Examination from Notes to an Organized Reviewer

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Cuevas, CNSHS

Abstract

INTRODUCTION

The Department of Education (DepEd) continuously seeks innovative ways to improve students' academic performance. Numerous studies conclude that aiding conventional studying technique with media-based techniques present a significant improvement on students' grade. Since Cavite National Science High School (CNSHS) advices students who do not meet the cut-off grade to transfer to a different school, the need for complementary learning tool is needed. The researcher developed the toll MENTOR: Mock Examination from Notes to an Organized Reviewer to optimize the positive effects of both mobile learning applications and mock tests in instilling mental preparedness among students.

METHODS

After gathering the necessary equipment, the android-based application was programmed using XCode and Android Studio 3.1.0. Using C++ language, each feature of the application was coded. Testing and debugging the initial version of the application was done to correct feature errors and to improve application efficiency. This process focused on accuracy enhancements in the application's ability to check answers, randomize questions and choices, match inputted data, and display correct flashcards. Sixty purposively selected grade 12 students were asked to rate the application based on interface, functionality, innovation, reliability, and efficiency.

RESULTS

The application's ability to check answers was optimized by 30%. Randomizing questions and choices, as well as matching inputted data was improved by 30%. Lastly, displaying correct flashcards was enhanced by 20%. In the application evaluation, MENTOR received a weighted mean of 4.4 in interface, 4.37 in functionality, 4.3 in innovation, 4.34 in reliability; and 4.39 in efficiency. These weighted means are all equivalent to very satisfactory rating. In instilling mental preparedness, the application received a very satisfactory weighted mean of 4.37. The application's total weighted mean is 4.36 which is also considered as very satisfactory.

DISCUSSIONS

The MENTOR: Mock Examination from Notes to an Organized Reviewer application is ready for dissemination and further improvement. This android-based software can turn personal notes into mock tests. Conclusive results of the application evaluation present efficiency in aiding the conventional learning methods of the CNSHS students. These results could still be enhanced through additional features like pre-inputted data, online features, and data-sharing option.

KEYWORDS: MENTOR, mobile learning applications, android-based software, matching game, flashcards, interface, functionality, innovation, reliability, efficiency

SUBMISSION ID: R04A-CAVITP-0299

A Mobile Application for Improving the Performance in Precalculus (Conic Sections) of STEM Students in Laguna Senior High School

Von Vincent Vista, Laguna Senior High School

Abstract

INTRODUCTION

One of the effects of the implementation of K-12 education in the Philippines, is the incorporation of Calculus in the curriculum for STEM Students. In the research locale which is Laguna Senior High School, the subject is considered as the most difficult subject for students, based qualitative and quantitative data. For this reason, the researcher aims to develop a mobile application. This is to help STEM Students take interest and improve in the field of Precalculus to bridge the gap to students who find it difficult and implement 21st century learning which is learning with ICT. The researcher aims to find out if utilizing the application will improve the skill of STEM Students in solving Precalculus questions.

METHODS

The application is developed using the Unity Game Engine and C#. The researcher programmed an application that generates questions and contains modules for the subject. Unlike other applications that covers Precalculus in which the questions are pre-made, the researcher created a system that generates the questions. This avoids repetition and ensures variation. The application is tested using the brute- force technique for verification of the questions generated.

From a population of 333, the sample size of 178 respondents was determined using the Slovin method. This is halved for the control and experimental group and a Pretest- Posttest method was used to determine the performance of the students. The control group doesn't have the app while the experimental group uses the app.

RESULTS

There is a significant difference between the control and experimental groups. For the control group, there is a 35.05% decrease from the pretest mean score of 10.7 to the posttest mean score of 6.95. For the experimental group, there is a 174.65% increase from the pretest mean score of 10.69 to the posttest mean score of 29.36. The double tailed t-test conducted reveals that the computed p-value is lower than the significance level which is 0.05. Therefore, there is a significant increase in the performance of the students.

DISCUSSIONS

The results show that the mobile application developed greatly improved the students' performance in solving Precalculus questions. Furthermore, the application can be used as a tool for reviewing, practicing, and training students who want to improve on this particular field. With the success in LSHS which is the testing grounds of the application, the application is now ready for public distribution so everyone can have access to the application.

KEYWORDS: Mobile application, Precalculus, STEM, K-12, 21st Century Learning, ICT, Computer Science

SUBMISSION ID: R04A-LAGUNA-0019

Pushed or Pulled: A Comparative Analysis of Factors Affecting Dropout Rate Among Students of the Looc Integrated School

Analyn Domingo, May F. Natividad, & Elizabeth E. Ocampo, Looc Integrated School

Abstract

INTRODUCTION

The cause of a student dropping out is often termed as the antecedent of dropout because it refers to the pivotal event which leads to dropout. Moreover, research on school dropout extends from early 20th-century pioneers until now, marking trends of causes and prevention. However, specific dropout causes reported by students from several studies have never been examined together, which, if done, could lead to a better understanding of the dropout problem. Push, pull, and falling out factors provide a framework for understanding dropouts. Push factors include school-consequence on attendance or discipline. Pull factors include out-of-school enticements like jobs and family. Finally, falling out factors refer to disengagement in students not caused by school or outside pulling factors.

METHODS

The Descriptive Correlative Approach was utilized in the study. The researchers used the questionnaire, observation, data analysis, and informal interview guide as instrument. The researchers used the descriptive method to measure the mean perception of the students on the factors that include school-consequence on attendance; out of school enticements; and students' disengagement.

RESULTS

Generally, all the given factors related to the cause in dropping out of students received an interpreted mean of high; the push factors including the school consequences on attendance or discipline received an interpreted mean of high also; the pull factors that include out-of-school enticements like jobs and family was interpreted high; and the falling out factors that refer to disengagement in students received an interpretation of high. The correlation between the push and pull factors received an interpretation of high meaning that the push and pull factors are intertwining to one another that contributes to the dropping out reasons of the students.

DISCUSSIONS

The results revealed that there were many factors that can greatly affect the reasoning of students in choosing to drop out from the school. Thus, teachers, administrators, parents, and other stakeholders must work together in honing and motivating the students to continue attending school. Positive reinforcement towards students is highly encouraged to motivate them to finish schooling as well as create an environment of positive feedbacks that lead to open communication. An in-depth research is encouraged to further provide concrete solutions to address the said gap.

KEYWORDS: Pushed Pulled comparative drop out

SUBMISSION ID: R04A-CALAMB-0360

Scrutinii: Cavite National Science High School

Jay Nelson M. Panganiban, Aliya Aira A. Arbis, & Bianca Marie C. Argete

Abstract

INTRODUCTION

Students check the library to browse for titles manually. Most schools fail to acquire systemized storages for data. This difficulty is what gave the researcher the idea of making a desktop application database that aims to make browsing through research papers in Cavite National Science High School easier and more efficient.

METHODS

The researchers used the Visual Basic (VB) programming environment from Microsoft where a programmer uses a graphical user interface (GUI) to choose and modify preselected sections of a code written in the BASIC programming language. The researcher first asked for permission from the officials of the school to gain access and show research papers from the students who conducted the research. To compile the research papers in the database, the researchers scanned the papers using mobile scanning applications. The scanned data were encoded into the database program. The database program has a log-in and registration feature for the students and school officials. It also features a search engine, filters and tags for more convenient usage and browsing. After making the database, it is tested using a survey and the selected students of Cavite National Science High School from all levels are picked and took the survey and have used the database.

RESULTS

The results showed that the students who took the survey gave the database Very Satisfactory ratings in terms of accuracy, user- friendliness and content. Only 4% of the total respondents gave the database the rating of 2 in terms of its accuracy. 96% of them gave the database a rating of 3 in terms of the said category. 6% of the total respondents from grades 7-10 gave the database the rating of 2 in terms of its user-friendliness. 94% of them gave the database a rating of 3 in terms of the said category. 3% of the total respondents from grades 7-10 gave the database the rating of 2 in terms of its content. 97% of them gave the database a rating of 3 in terms of the said category.

DISCUSSIONS

The database based on the survey is very effective in searching and browsing research papers easily and faster. Similar research about this is the database of the Polytechnic University of the Philippines which only include the abstract of the researches. The Scrutinii database have parts of the paper from front page, abstract, Chapters 1 to 5 for papers published from 2010 up to 2018. This makes this research very effective in making it easy to browse and search student researches in Cavite National Science High School.

KEYWORDS: Database, Cavite National Science High School, Paper

SUBMISSION ID: R04A-CAVITP-0755

A Student's Basic Information System with QR Code Technology

Patrick Karlvin Pimentel, Patrick Jade Pelicano, & Abba Celestial, Students

Abstract

INTRODUCTION

The traditional way of storing information in papers is seen as inconvenient by different companies and school administrators. Being time-consuming and being prone to natural and man-made hazards are factors that create a negative impression about it. In academic purposes, students' information is still processed the traditional way, which makes it hard for teachers, administrators, and students to keep track of students' data. It is also hard to communicate with one another with regard to the information of the students. To address this issue, the researchers sought to create an application that locates and efficiently show information, embedding QR technology for a more convenient way of locating data and by utilizing Excel files as a databank as Excel is one of the most used tools by teachers.

METHODS

The layout for the Excel file was designed and a fixed layout was made. The different functionality codes for reading Excel files and QR codes were then developed. The code for the main program was finalized, and all developed codes were integrated into one executable software. A questionnaire to determine the acceptability of the program among elementary and secondary schools was created to be answered by beta testers, specifically by teachers and administrators.

RESULTS

After the survey, responses were analyzed. Results on the acceptability test in elementary level with 4 respondents, specifically administrators and a principal, showed a 4.5500 mean in the questionnaire with a standard deviation of .1606, which can be interpreted as highly acceptable. Results of the secondary school showed a 4.7250 mean with a standard deviation of .3991, which can also be interpreted as highly acceptable. After collecting the data, the significant difference between the acceptability of both schools was determined using T-Test statistical tool that resulted in a value of .737 which interprets that there is no significant difference between the acceptability of elementary and secondary schools to the proposed system, with both being highly acceptable.

DISCUSSIONS

The results signify that the program created is approved by the respondents, and that they support the proposed system. Improving this system can greatly help the communication between teachers and students with student data such as basic information, grades, and awards. It also helps the students in monitoring and keeping track of their data.

KEYWORDS: Data-Bank; Excel; QR Code; Programming; Software; Paper-Works; School System

SUBMISSION I.D: R04A-CAVITC-0131

The Procurement and Supply Chain Analytic System

Noel G. Macaraig, Laarni L. Macaraig, Deped-Masapang INHS

Abstract

INTRODUCTION

The Procurement and Supply Chain Analytic System was developed to improve the budget utilization system of the school administrators of the Department of Education Junior High School Division of Laguna and provide them with analytics feature that would further isolate the problem from unnecessary procurement of items and predict the budget allocation per quarter. The research was anchored on the Research and Development Theory. The researcher used Waterfall System Development Life Cycle model as guide through iterative step-by-step process during the system analysis and designs.

METHODS

The study used the ISO 25010: 2011 Software Quality Management Tool to assess the application in terms of Functionality, Usability, Reliability, Performance efficiency and Security. The study used different statistical tools in evaluating the results of the collected data such as weighted mean, analysis of variance, percentage, rank and distribution, and five-point Likert Scale.

RESULTS

The findings of the study showed that the respondents at Masaya Integrated National High School gave the Procurement and Supply Chain Analytic System a weighted mean of 4.38 which is verbally interpreted as "Highly Acceptable." The evaluation of the application came to a conclusion that there is no significant difference between the evaluation of the school administrator, faculty, subject coordinator, supply personnel and custodians, and IT practitioners in terms of the criteria used from ISO 25010: 2011 which further proves the application's effectiveness.

DISCUSSIONS

We conclude that the Student Performance Analytics Application based on Performance, Usability, Reliability, and Security is Highly Acceptable to the users. Based from the comments and suggestions of the respondents, the developed application provides them a faster, accurate, and automated storing, viewing and analyzing of budget allocation and procurement of supply. The Procurement and Supply Chain Analytic System was assessed by the respondents at Masaya Integrated National High School for Academic Year 2017-2018.

KEYWORDS: procurement, supply chain, analytic system

SUBMISSION I.D: R04A-LAGUNA-0326

CONSTRUCTION & PROPERTY MANAGEMENT

Analysis of Teacher's Qualities of Bucal National High School - Senior High School Teachers for Classroom Management Improvement

Norman Duarte - Dames Cavite

Abstract

INTRODUCTION

Quality nation results from quality education which is the outcome of effective learning. Learning comes from a combination of teacher, student, and proper lesson planning. Among the three, competent and reliable teachers serve as a key to unlock student's potential in developing the required skills and competencies to acquire quality education. This study is focused on identifying the qualities of Senior High School (SHS) teachers of Bucal National High School that are beneficial to create competency development leading to effective changes in the classroom which then result to better learning.

METHODS

Using the – descriptive-quantitative research design, twenty-three (23) SHS teachers underwent self-assessment through questionnaires given by the researcher. The said questionnaire contains 10 parts. Each part discusses a certain quality a teacher must possess. Through this, the results from the questionnaires were computed using their mean and were interpreted using a scale that the researcher has lifted from a verified questionnaire.

RESULTS

The results showed that the SHS teachers of Bucal National High School are confident in contextualizing, establishing a dialogue between disciplines, and visiting future / alternative scenarios. They are also competent in integrated problem-solving, systems thinking, and working and living with complexity to some extent (TSE); while assessing their analytic and critical thinking skill, clarifying values, decision- making and acting for change, managing emotions and concerns, and self-awareness competency to a great extent (TGE).

DISCUSSIONS

Overall, it can be said that the teachers have a mostly-positive assessment of the skills that they have, which helps them understand their roles as educators in the classroom. Not only does this help them understand their roles better, but this also reflects upon their capability to adapt and help transform their students to become better individuals who can contribute for the betterment of society.

KEYWORDS: teacher qualities, self-learning, faculty assessment, competency development

SUBMISSION ID: R04A-CAVITP-0080

Plywood Filling from Mahogany (*Swietenia mahoganí*) Fruit Shells

Hannah Jane Perez & Joyze Franchesca Fancubit, Students

Abstract

INTRODUCTION

The researchers aim to make high quality plywood filling from mahogany fruit shells and conserve trees in the environment. The use of mahogany fruit (*Swietenia mahogany*) shells can help in producing plywood filling to reduce waste. This will benefit the consumers, environment, and future researchers.

METHODS

This study used experimental method. The independent variable is the process of preparing mahogany fruit shells as the main ingredient of the plywood filling. The dependent variable is the quality of each finished plywood filling. To arrive at a result, the researchers gathered data by testing its parameters specifically durability, nail holding capacity, shock resistance and water resistance. Data were tabulated for comparison and analysis.

RESULTS

No damage was observed in Set-ups A, B, and C when the product was tested for its durability. The product was dropped from 2, 4, and 6 feet high respectively. While in testing its nail holding capacity, the nail was easily installed in the produced plywood. In testing its shock resistance, when a 5 kg object was dropped to the produced plywood from 1, 2, 3 feet high, no damage was observed in Set-ups A and B. A slight damage was observed in Set-up C. When the products were soaked in the water for 15, 30, 60 minutes respectively, Set-ups A and B turned dark while the two thin sheets of Set-up C separated. The produced plywood from mahogany fruit shell with 12 mm thickness costs Php150.00 and helps to conserve trees. The commercial plywood with 12 mm in thickness costs Php 400.00 and uses trees as its main material.

DISCUSSIONS

The findings revealed that the most effective combination of ingredients in producing plywood filling was 200 grams of pulverized mahogany fruit shells and 200 grams of wood glue. After subjecting the product to physical tests, it was observed that there was no damaged part on the test for durability. After the test for nail holding capacity, it was observed that the nails were easily installed in the produced plywood. In the test for shock resistance, although some marks were seen after a 5-kg object was dropped from 3 ft high, the produced plywood was not destroyed. On the other hand, in the water absorption test, the produced plywood turned dark. Plywood with mahogany as filling showed similar characteristics as that of commercial plywood.

KEYWORDS: Plywood filling, Mahogany Fruit shells, Durability, Nail holding Capacity, Shock resistance, Water Resistance

SUBMISSION ID: R04A-BATANC-0285

The Use of Crushed Chicken Egg Shells as a Potential Additive for Concrete

Jhunvil Mae P. Cacho & Mykaella Jordanne D. Sampiano

Abstract

INTRODUCTION

Due to increasing number of generated wastes, improper disposal and landfill management lead to more pollution issues posing a huge threat to public health. As one of many proposed solutions, construction industries seek for potential alternative raw materials and low-cost additives to be reused without compromising the quality of concrete. With the right treatments, various types of industrial and non- biodegradable waste can be used as fillers in making concrete (Marinamarican, 2015). This research study aims to use waste chicken egg shells as potential additive in concrete, along with the standard materials such as cement, sand, and gravel.

METHOD

Chicken egg shells were gathered within Tanza, Cavite. The egg shells were crushed and added in the mixture design based on the American Concrete Mix Design. Two formulations with 6 replicates each were made: treatment 1 for the standard concrete and treatment 2 for the concrete with crushed egg shells. The concrete mixtures were placed in a 4" by 8" cylindrical molders and were detached after drying. The concretes were cured for 7, 14, and 28 days, respectively. After the curing process, each treatment has undergone the compressive strength test in accordance to their labels.

RESULTS

The conducted compressive strength test showed that the replicates of both treatments have obtained similar trends among the results, wherein TM2 has achieved greater average compressive strength compared to TM1 after the 7, 14, and 28 days of curing. With the presence of egg shells acting as potential fillers, air void formations were lessened, resulting to stronger and more durable cylindrical concretes. The obtained averages of the formulations with and without egg shells significantly increased as the concrete ages and its duration extends, obtaining a higher average compressive strength after every curing period. The 28day old provided the greatest compressive strength among the mixtures, whereas the amount of materials was kept constant in all concrete samples.

DISCUSSIONS

The results may be attributed to the proper tampering of concretes while being poured in its cylindrical molders. Using one-way ANOVA, the findings showed that there was a significant difference between the mean compressive strength of TM1 and TM2. Both the null hypotheses were therefore rejected. The gathered outcome showed that egg shells can be used as a partial additive in concrete as it increases the compressive strength of a standard cylindrical concrete.

KEYWORDS: chicken egg shells, compressive strength, curing, concrete

SUBMISSION ID: R04A-CAVITP-0208

DENTAL MEDICINE

The Lived Experiences of Dentists When Using Ultrasonic Scaling Instruments for Cleaning Teeth for the First Time

Angeline Lungay, Trece Martires City Senior High School

Abstract

INTRODUCTION

Ultrasonic scaler is an essential component in dentistry today. And as technology gets increasingly innovative, dentists feel more pressured. Some dentists believed that ultrasonics is difficult to handle the first time (Magnum Opus Dental, 2014). The study focused on the experiences of dentists on their first time use of ultrasonic scalers. This research aims to identify the common difficulties of dentists and how these difficulties help them in their job.

METHODS

The researchers used qualitative research design, specifically descriptive research design, whereas common difficulties of dentists on their first-time use of ultrasonic scalers in cleaning teeth were evaluated. The study used snowball sampling in selecting the respondents. There were three dentists from Emilio Aguinaldo College (EAC)-Dasmarinas City, Cavite who served as respondents. Their experiences, specifically their common difficulties in using ultrasonic scaling instruments were evaluated.

RESULTS

Based on the results of the study, dentists who were interviewed shared that their common difficulties in using ultrasonic scaling instruments are anxiety and difficulty in using the equipment. But because of these common difficulties, the respondents learned how to increase their psychological strength and develop their adaptability in their field of work. When dentists are highly involved, respondents voiced persistence despite common difficulties. The more practice, purpose, and attention in which dentists use their ultrasonic treatment, the more proficient they will become.

DISCUSSIONS

The results show that similar experiences were shared by each of the respondents. These results can also help future dentists who want to pursue dentistry. as this research provides understanding on common difficulties of dentists in using ultrasonic scaling for the first time.

KEYWORDS: common difficulties, dentists, ultrasonic scalers

SUBMISSION ID: R04A-CAVITP-0617

DEVELOPMENT STUDIES

**The Child-Rearing Practices of Married Teachers in
Public Elementary Schools in the
Talisay District and their Influence on Children's Development**

Kienne Ira Contreras

Abstract

INTRODUCTION

Child-rearing practices include experiences, skills, qualities, and responsibilities involved in being a parent and in teaching and caring for a child. Parents now are engaged in work, while contemplating their responsibilities as mother and father so they can raise their children to be morally upright. In Talisay District, there are many working parents, who have children needing their love and attention. It is for this reason that the researcher who is a guidance designate deemed it wise to conduct an investigation on the kind of child-rearing practices of married teachers and their influence to children's development in Talisay District.

METHODS

The descriptive method of research was employed in the study with the questionnaire as the main instrument in gathering data. The first part dealt with the child-rearing practices of married teachers towards nurturance, achievement, obedience, self-reliance, and trainings. The second part focused on the child-rearing practices of married teachers in terms of physical, emotional, and social development. There were 28 married teachers involved in this study from the 7 public elementary schools in Talisay District, School Year 2018-2019. The weighted mean, frequency, percentage, ranking, and Pearson product moment coefficient of correlation were the statistical tools applied by the researcher in the analysis and interpretation of the data.

RESULTS

With an accumulated over-all average weighted mean 4.20, it is indicated that the married teacher-respondents oftentimes adhere to the practices that influenced their children in terms of their physical, emotional, and social development; wherein social development ranked first; emotional development, second, and last in the rank was physical development.

DISCUSSIONS

The findings implied that the married teacher-respondents from Talisay District have much concern with the children and are responsible in raising them. Married people do childrearing practices towards nurturance, achievement obedience, and self-reliance. They prioritize the physical, emotional and social development of their children by providing facilities in a clean environment, developing emotional security, showing love and concern, feeling of belongingness and providing opportunities to help them face new challenges.

KEYWORDS: Child Rearing Practices, Achievement training, Nurturance training, Self-reliance training, Obedience training, Married teachers

SUBMISSION ID: R04A-BATANP-2201

COALikasan: Sustaining Natural Resources by Converting Paper Waste into Alternative Firewood

Ghianne Lester A. Dikitanan, Maria Dolores C. Macabata, & Rodelyn E. Gonzales

Abstract

INTRODUCTION

The prevalent destruction of natural resources which rapidly changes the earth into a big ball of burning dumpsite is the biggest threat that the entire human race can ever face. According to DENR, the Philippines is losing approximately 47,000 hectares of forest cover yearly. The alarming effects of global degradation have influenced individuals in the field of Science to exert hefty efforts in saving the world from the entire destruction. This chain of events has compelled the researchers to develop alternative burning coals out of waste paper and dried leaves. Through this, cutting down trees and global waste can also be reduced to the fullest extent which can result to sustainable development and bring positive change to the community.

METHODS

This study utilized mixed research specifically descriptive research design to decode the perception and to determine the acceptability of environmental charcoal in terms of durability, availability of resources, market demand, and social impact. Prior to the data gathering process, the researchers made alternative firewood and presented it to the respondents. Researchers interviewed 60 respondents from Brgy. III-C, San Pablo City. After gathering the data, the researchers utilized weighted mean and chi-square as the statistical treatments in the study.

RESULTS

After analyzing and interpreting the data gathered, it was seen that majority of the respondents perceived that the environmental charcoal was a good alternative firewood. After applying the statistical treatments, the computed assessment of the product was interpreted as Strongly Agree (4.20-4.99) in terms of Durability (4.74), Availability of Resources (4.902), Market Demand (4.76) and Social Impact (4.81). Using the degrees of freedom 0.05, the computed value was 42.81 which was greater than the critical value, 21.026. This led to the rejection of the null hypothesis stating that the respondents did not accept environmental charcoal as an alternative firewood.

DISCUSSIONS

The results demonstrate the rate of acceptability of environmental charcoal as an alternative firewood. The researchers are looking at new inventions such as the environmental charcoal which can help reduce environmental problems like pollution and massive cutting of trees without the use of money. This endeavor will not be successful without the support and involvement of the community.

KEYWORDS: Environmental charcoal, alternative firewood

SUBMISSION ID: R04A-SANPAB-0025

Contributing Factors to the Success of English Instruction: An Assessment

Evangeline Velasco, Department of Education

Abstract

INTRODUCTION

The researcher conducted the study in order to visualize the totality of the factors that would contribute to the success of the English language as a medium of instruction in the primary level in the Schools Division of Lipa City. It further dealt on the significance of the use of English as the medium of instruction for preparing in the knowledge-based world for the 21st century learning.

METHODS

The researcher utilized descriptive research with the use of survey questionnaires as the main data-gathering instrument. Using random sampling technique, the questionnaires were administered to 30 elementary public-school teachers in the Schools Division of Lipa City. The data gathered were interpreted upon applying the T-test.

RESULTS

Most of the respondents were young adults between the ages of 20-35, majority are female, graduates of Bachelor's Degree, with considerable length of teaching experience. With regard to the factors that would contribute to the success of the English language as a medium of instruction, teacher respondents strongly agreed in three of the four factors namely schools, modules, and teacher, that will influence most in the success of English as the medium of instruction. Least to influence was the students. There is significant difference in the assessment according to gender in terms of the teacher factor while there is no significant difference in the other three contributing factors that influence the success of English as the medium of instruction.

DISCUSSIONS

Based from the analysis of the findings, the study recommended that schools must enforce the use of English as the medium of instruction because speaking and writing in English in this age of globalization is necessary especially if we would want to compete in the knowledge-based world. A policy of using English as the sole medium of instruction must be strictly implemented in the primary and secondary level so as to maximize the exposure of students in the language. The Department of Education must conduct a language assessment for both students and teachers, whether or not the use of the English language improved the learning of academic subjects. English instruction must be integrated in order to determine the levels of English competence of both the students and teachers.

KEYWORDS: Contributing factors, success of English Instruction, public school teachers, descriptive

SUBMISSION ID: R04A-LIPAC1-0175

The Development and Validation of Printed Instructional Materials (Comics) for Teaching Kinematics

Mark Jester Juanitez, Banisil National High School

Abstract

INTRODUCTION

Physics is considered by many students as the most difficult subject as it requires a lot of mathematical visualization. Teachers should innovate to address this dilemma by developing graphic materials that can convey complex ideas and hold learners' attention. This study aimed to develop and validate printed instructional material in a form of comics.

METHODS

Research and Development (R & D) Design was used in this study. Fifty (50) Grade 7 students took the pre-assessment test to identify their least-mastered competencies. This served as the bases of the content of the material. Fifteen (15) validators composed of 10 Non- Master Teachers and 5 Master Teachers validated its acceptability using an adapted validation tool. Data gathered were statistically analyzed using weighted mean and t-test.

RESULTS

The pre-assessment test showed that Grade 7 students performed poorly in Kinematics. Specifically, students have low mastery in a. describing the motion of an object in terms of distance or displacement, speed or velocity, and acceleration, b. differentiating quantities in terms of magnitude and direction, c. interpreting the visual representation of the object's motion such as motion graphs. The result of the t-test displayed that both Master Teachers and Non-Master Teachers showed unanimity on their evaluation of the comics in terms of its accuracy, clarity, appeal, and originality.

DISCUSSIONS

The poor performance of the students in Kinematics implies the need to develop instructional materials like Comics that is perceived to be Very Highly Acceptable by most Science Educators. Comics, as a great visual representation, will not only incite students to easily remember visual graphics containing key information, it will also develop their creative and higher-level thought processes which is one of the goals of the 21st Century Education.

KEYWORDS: comics, kinematics, acceptability

SUBMISSION ID: R012-GENSAN-0005

The Development of an Interactive Exhibit as Information Education and Communication Material on Cave and Karst Resources

Cherry Ann Quinones, Banisil National High School

Abstract

INTRODUCTION

Caves and karst are extremely fragile environments. However, threats to these resources are very high given that no existing specific policy directed towards the protection of karst resources is in place. Local conservation initiative through the strengthening of awareness on the importance of cave and karst resources is seen as an important strategy in safeguarding these highly fragile but essential resources. Hence, an Interactive Exhibit as an IEC material to increase awareness on cave and karst resources targeting young learners was developed and validated.

METHODS

Employing Research and Development design specifically single-experimental case method, 120 respondents were chosen in pilot testing the developed material. Focus Group Discussion, personal correspondence, and interviews with cave and karst experts, as well as secondary data analysis, were conducted for the development of the IEC material. Validation of the IEC material was made by a group of cave experts, environmentalists, and teachers using the adapted validation tool while the pre/post-tests were validated by the DENR. The tests were given to the respondents before and after exposure to exhibit to measure the effectiveness of the developed material.

RESULTS

To be able to create an Interactive Exhibit IEC Material, creative brief was created. This serves as a framework and an essential step in the production of an effective IEC Material with seven (7) identified elements which include the rationale, target audience, communication objectives, key components of the IEC material, obstacles, key messages and advice, and tone and creative considerations. The result of the expert validation revealed that the content of the IEC material was very highly appropriate and highly adequate, and its usability was very high. Learners exposed to the fun and interactive learning experience in the Cave and Karst Interactive Exhibit showed significant improvement in their awareness of cave and karst resources, an initial step towards karst conservation.

DISCUSSIONS

The use of the IEC material, when prepared properly following the standards, can be an effective means of increasing the level of awareness of the target audience. If the production is focused only on printed materials, it can only reach a limited number of individuals. Hence, it is important to select a combination of these materials (e.g. video, printed materials) to suit different people's level of awareness with varying comprehension level.

KEYWORDS: Information, Education, Communication Material, Caves, Karst, Interactive Exhibit, Conservation Initiative

SUBMISSION ID: R012-GENSAN-0004

The Development of the Rice Bean (*Vigna umbellat*) for Flour and the Standardization of its Selected Products

Florites Labroda, Department of Education

Abstract

INTRODUCTION

The study aimed to promote the utilization of indigenous plants in support for the Program of the Department of Education the "Gulayan sa Paaralan Project," encouraging the use of local indigenous plants to be served at the feeding program and address the issues of malnutrition and food security in our country. The researcher developed rice bean (*vigna umbellata*) flour and prepared standardized recipes from it. Products derived from rice bean flour were rice bean flat noodles, rice bean piaya, and rice bean chiffon cake.

METHODS

The products were evaluated through their sensory characteristics and underwent a proximate analysis test. The study used experimental method of research. 60 trained panelists were selected through a random sampling. The rice bean products were evaluated using 5-point hedonic scale. For general acceptability, duo-trio test of difference was used. The data were gathered, tallied, tabulated and statistically treated using weighted mean and percentage.

RESULTS

The products developed were mainly rice bean flour since rice bean is a good source of protein, fiber, and carbohydrates. Its valuable nutrients are needed by different groups of people. The panelist assessed rice bean products as acceptable in terms of its individual sensory attributes and over all acceptability. Findings revealed that rice bean flat noodles have the highest percentage of acceptance among the rice bean products. It was followed by rice bean chiffon cake and rice bean piaya. In addition, the study provides the proximate analysis result of the various rice bean products presented in the study. The results were obtained from Adamson University Technology Research and Development Center (AUTRDC).

DISCUSSIONS

The rice bean by-products are potent additional food stuff to be adopted and served as their acceptability rating is high. Panel's perceptions on the general acceptability of the rice bean products were highly positive. Thus, further research should be conducted to develop other formulations of rice bean by-products. Promotion and utilization of the rice bean (*vigna umbellata*) by-products be done through their use as a supplementary food item in the schools' feeding programs and "Gulayan sa Paaralan Project" in the different Department of Education schools.

KEYWORDS: Rice bean, standardization, development, legume, indigenous, duo-trio, proximate

SUBMISSION ID: R04A-DASMAR-0004

Factors Affecting and Causing Poor Reading Abilities of Grade III Pupils in Palangue 3 Elementary School

Lerma Angue & Sweetchel Sarmiento, Department of Education

Abstract

INTRODUCTION

This study is concerned with the factors affecting and causing poor reading abilities of Grade III pupils. Reading skill is an important skill. It is a stepping stone in the walk of knowledge. It is an activity which involves comprehension and interpretation of ideas. Reading is an essential life skill. It does not only increase knowledge, but it also builds maturity and character, sharpens thinking, and widens awareness in social, economic, political, and environmental issues. Johnsson-Smaragdi and Jönsson (2006) best summarized the many benefits of reading. Reading is also supposed to enhance the communication potential by developing our language and vocabulary, by affecting the ability of logical reasoning, the capacity of expressing oneself and by affecting the level of comprehension and understanding. Practical reasons that speak in favor of reading mainly pertain to the area of work life and studies and to the ability to act as a citizen in the democratic process. These reasons underscore the importance of understanding texts and the ability to produce texts and formulate arguments in discussions.

METHODS

The essentials of action research design follow a characteristic cycle whereby initially an exploratory attitude is adopted, where an understanding of a problem is developed, and plans are made for some form of interventional strategy. Then the intervention is carried out (the "action" in Action Research) during which time, pertinent observations are collected in various forms. The new interventional strategies are carried out, and this cyclic process repeats, continuing until enough understanding of the problem is achieved. The protocol is iterative or cyclical in nature and is intended to foster deeper understanding of a given situation, starting with conceptualizing and particularizing the problem and moving through several interventions and evaluations.

RESULTS

After implementing the steps in improving reading skills, Grade III pupils of Palangue 3 Elementary School can now read properly, and their grades were all high. The factors affecting students' propensity to read were their source of reading materials, their perception of the benefits of reading, family and peers influencing them to read, and having an environment conducive to reading.

DISCUSSIONS

The result demonstrates the need for more steps in improving the reading skills of the pupils and the factors affecting student's propensity to read.

KEYWORDS: poor reading, reading skills, factors, pupils

SUBMISSION ID: R04A-CAVTP-0178

The Learning Action Cell and its Influence on the Professional Development of Teachers in the District of Pililla

Pitsberg B. De Rosas, Shem Verlee O. Cabotaje, Analiza B. Ilocso, & Lyn P. Sanchez

Abstract

INTRODUCTION

Transformational Researchers support the realization of the Department of Education order and K to 12 Basic Education Program. We aim to determine how deeper the level of understanding of the teachers on the assessed personal & professional needs based on the result of the District Performance Review that was implemented. The researchers determined how the participants absorbed the knowledge presented by the selected resource speakers and evaluated the implementation of Learning Action Cell Session (LAC) from different topics.

METHODS

The descriptive survey was used in this study. It involves the collection of data through the process of online survey to answer the queries concerning the strengths and weaknesses of the DISLAC Program. The research was conducted in nine (9) elementary and (5) secondary public schools. The study was conducted to identify the intervention program that could be developed to improve the teaching on learning process.

Online survey was utilized to gather the data and other necessary information regarding the respondents. Likewise, monitoring and evaluation were done to further validate the implementation of DISLAC sessions.

RESULTS

Majority of the participants belong to Teacher 1 position both from elementary and secondary. Most teachers can enhance personal growth and development. Teachers use a combination of these methods to solicit valuable feedback and teaching career. District Learning Action Session helped the respondents gain different techniques and strategies using modern technology to handle 21st century learners. Professional development is a mandatory component of being a teacher.

DISCUSSIONS

The respondents realized the importance of working as a team to evaluate the positive educational learning outcome. The researchers considered the ethical issue that arise from the study. The names and the individual result of each survey both manual and online were not revealed for confidentiality. Teachers yearn for learning because they see themselves as vessels of knowledge which have to be updated and stay relevant. DisLAC aided the schools for Training Matrix that would be relevant for the crafting of new Annual Implementation Program (AIP).

KEYWORDS: Transformational online-survey intervention feedback mandatory

SUBMISSION ID: R04A-RIZALP-0079

One Call Away: an Old Keypad Phone as Security Alarm

Alexandra Q. Labutap & Andrea C. Lozada, Student Researchers

Abstract

INTRODUCTION

Alarming cases of robbery were recorded in areas located not only in San Pablo City but nationwide. In fact, Social Weather Station released a survey result last November showing that 5.3% or around 1.2 million families got involved in common crime cases including robbery and intrusion. As a result, residents invested in security instruments. This urged the researchers to improvise an affordable security alarm that will notify the house owner when there is an intruder through phone call. The formulation of this simple device requires an old keypad phone which is being left behind because of smartphones. Through this alarm, one's safety is only one call away.

METHODS

This research utilized mixed research particularly the descriptive research design to know the perception and to determine whether the security alarm is acceptable in terms of effectiveness/satisfaction, quality, and availability of resources. Prior to the data gathering process, a prototype of the security alarm was made and presented to the respondents. Researchers used interview and survey questionnaire for the thirty (30) respondents chosen in Brgy. San Francisco. Also, they applied statistical treatments such as weighted mean, chi-square, and coding for the qualitative analysis.

RESULTS

Majority of the respondents stated that the keypad phone security alarm was an effective product which could serve security purposes. Moreover, they said that the product gave old keypad phones another purpose and could hinder people from throwing them away. Through the application of statistical treatment, the computed assessment of the security alarm was interpreted as Strongly Agree (4.20-4.99) in terms of Effectiveness/Satisfaction (4.67), Quality (4.67) and, Availability of Resources (4.81). Chi-square showed a computed value of 18.03 which was higher than critical value of 15.507. Therefore, the null hypothesis stating that the keypad phone security alarm was not acceptable in terms of the given categories was rejected.

DISCUSSIONS

This study determined the acceptability rate of the keypad phone security alarm. Researchers are looking forward to further improvements through the support and involvement of the community. Once the society uses this affordable alarm, the common crime rate will be reduced because this alarm immediately notifies the owner and hinders intruders to do unwanted things. This study also encourages everyone to reuse things that are losing their purpose because of modernization.

KEYWORDS: Security alarm, Keypad Phone, Respondent's perception

SUBMISSION ID: R04A-SANPAB-0026

**A Phenomenological Study on the Effect of Birth Order on the Career
Choice of Senior High School Students of Looc Integrated School
S.Y. 2017-2018**

Arienne Therese Guinto, Looc Integrated School

Abstract

INTRODUCTION

Deciding on a career is a crucial part for the students, especially for the Senior High School students as it is considered a stepping stone towards their future. Selecting a career is associated with different aspects. Birth order has long been an important factor in certain social customs and life experiences that includes opportunities for reproduction, emigration, decision, inheritance practices, and choice of profession as well. Within the family, the role of birth order appears to be considerable in the expression of personality social attitudes and family sentiments. The researcher decided to conduct this study to determine the effect of birth order on the career choice of the Senior High School students of Looc Integrated School S.Y. 2017-2018.

METHODS

This study used descriptive design under qualitative approach. The researcher chose Grade 11 students of Looc Integrated School S.Y. 2017-2018 using purposive sampling. To analyze the data gathered during the interview, the researcher utilized thematic analysis.

RESULTS

This study revealed that the responsibility that the participants hold according to their birth order has significant effect on the career choice of the participants. Four (4) out of five (5) participants considered the sake of their family in choosing a career. The participants find it hard to know what career they want to pursue someday and based on the study; birth order has an effect in a way that expectation of the parent of the participants plays an important role in choosing a career. The participants considered the following factors in choosing a career: financial stability of family and personal interest. According to the participants, the need for financial stability and their personal interests are the major factors the participants consider in choosing a career.

DISCUSSIONS

The researcher concluded that birth order plays an important role in the lives and experiences of the oldest child, second/middle child, youngest child, and the only child in terms of choosing a career. The findings revealed that birth order is considered a great factor relative to the responsibilities given to the oldest, middle, youngest or even an only child. The researchers recommend to further research on the birth order and family constellation with situations of miscarriages, twins, adoptions, and bigger family constellations and family structures.

KEYWORDS: Birth order, Career choice, Personality, Phenomenological

SUBMISSION ID: R04A-CALAMB-0392

DIGITAL DESIGN

An Assessment of the Animated Film "The Road to Excellence" as a Learning Tool in Teaching UBCV1

Reuel James Medrano, Mary Cyrel Perez, Bernard Ryan Geoffrey Rosales, &
Alvin Bulagner, University of Batangas

Abstract

INTRODUCTION

In this era where innovation, technology, and learning are fast changing, educational institutions and organizations need to reshape the curriculum and develop innovative teaching strategies to adapt to the needs of the 21st century learners. One of skills that the 21st century learner must develop is creativity. Generation Z and Alpha, who are also known as the Social Media Kids possess creativity that needs to be honed for them to be ready for the skills needed in the industry. The researchers fully acknowledge the need of developing this skill, hence this study. The researchers are ICT students who studied ANIMATION NCII as their major subjects in grade 11. They produced a fully animated video of Chapter 8: Road to Excellence in reference to the University of Batangas Core Values (UBCV1) equivalent to four (4) units teaching the history and core values of the university as their final project. The researchers used the animated film as their topic paper in Practical Research 2 that aims to assess the animated film as a learning tool compared to traditional classroom discussion in UBCV1.

METHODS

The study is qualitative and quantitative in nature. Two (2) sections with 40 students each who were enrolled in UBCV1 with the same teacher were selected for the data gathering. One section went through traditional classroom discussion and the other watched the animated film.

RESULTS

The results revealed that students who watched the animated film correctly answered the questions compared to those who went through the traditional classroom discussion. The teacher who was interviewed suggested that if both classroom discussion and the particular style of the animated film that was used will be both utilized in teaching the subjects, the students will be more interested with the lesson.

DISCUSSIONS

The significant mean difference revealed that by watching the animated film, the performance of the students in the formative test was higher than the traditional classroom discussion, indicating its effectiveness as a learning tool. Moreover, the study recommends that this kind of method should be used as an alternative learning tool.

KEYWORDS: Animated Film, Learning Tool, UBCV1, Technology

SUBMISSION ID: R04A-BATANC-0195

Factors Affecting the School-Based Management (SBM) Level of Practice in Three (3) Selected Public Secondary Schools in Nasugbu East District

Joy Lyn Manalo

Abstract

INTRODUCTION

Education in all countries of the world is perceived as the corner stone of improvement. It forms the basis for literacy, as well as technological and skills achievement. This is why schools must be properly managed and supervised. (Agih, 2015) School-Based Management supports the schools to provide better teaching and learning environments. (Bandur, 2008) Three selected public secondary schools in Nasugbu East District Catandaan-Yabut National High School and Tala National High School have a “developing” SBM Level of Practice but very near “maturing level,” while Malapad na Bato National High School increased to maturing level last school year. It indicates that there is progress in the practice of teachers aside from the principal's support. School improvement depends on the active involvement of teacher leaders and availability of resources. School administrators cannot do it all.

METHODS

This study utilized the descriptive method of research which made use of questionnaire in gathering the necessary data. and was conducted to know the factors affecting the SBM Level of Practice in Three (3) Selected Public Secondary Schools in Nasugbu East District for the purpose of proposing an SBM Level of Practice Model.

RESULTS

The effectiveness of the SBM in terms of the Four principles: Leadership and Governance, Curriculum and Learning, Accountability and Continuous Improvement and Management of Resources was rated very good by the respondents. Likewise, factors that affect the SBM Level of Practice like general duties of school, faculty and staff personnel, curriculum and instruction, student's support, school-community relations, administration and physical facilities were rated agreed by the respondents. Moreover, there was significant relationship between the responses of the respondents regarding their perceptions on the effectiveness of SBM and Factors that affect the SBM Level of Practice.

DISCUSSIONS

Due to a positive result, it was recommended that schools' stakeholders should sustain good practices in SBM Principles in spite of school-community wide learning problems. Likewise, the study revealed that stakeholders must be always abreast on the factors affecting the SBM Level of Practice to move toward the maturing level. Lastly, since there was significant relationship between the perceptions of teachers on effectiveness of SBM and factors affecting the SBM Level of Practice, the schools should uphold good practices of the school for excellent result.

KEYWORDS: School-Based Management, SBM Level of Practice Model, Maturing Level

SUBMISSION ID: R04A-BATANP-2218

Perceiving the Importance of AutoCAD in the Spatial Ability of STEM students in Palahanan National High School

Rey Vincent Alcantara, Student
(Adviser: Eric Hernandez)

Abstract

INTRODUCTION

The spatial visualization ability is the ability that people are using in doing inventions, creating ideas, and other activities that are related in orientation and visualization of things. In this study, we revealed the effectiveness of using AutoCAD in developing the spatial ability of the learners especially to the STEM students which is very related and in demand to their strand.

METHODS

The descriptive method was used with the questionnaire as the main data gathering instrument. It consists of items that develop the spatial ability of the students in terms of mental rotation and mental transformation. STEM students of Palahanan National High School served as the respondents of the study. Frequency, percentage, ranking, and weighted mean were the statistical tools used in quantifying the data gathered to reveal how AutoCAD develops the spatial ability of the learners.

RESULTS

Spatial ability is a very significant form of intelligence. The commonly used spatial abilities are mental rotation and mental transformation skill which helps people in visualizing things, objects, and places. The researcher focused on these abilities and carried out a test relating the mental transformation and mental rotation. The result shows that AutoCAD has a high ability to enhance and develop the spatial ability to meet the demands needed by the STEM students.

DISCUSSIONS

The result shows that AutoCAD greatly develop the spatial ability of the learners. STEM students need to hone their spatial ability (mental rotation and mental transformation) through the use of AutoCAD. Moreover, it was recommended to have AutoCAD practices as part of the intervention activity for STEM students.

KEYWORDS: spatial ability, AutoCAD, mental rotation, mental transformation

SUBMISSION ID: R04A-BATANP-0276

Application of Adobe Photoshop in Graphic Designing

Reneth Loto, SHS Student

Abstract

INTRODUCTION

Adobe Photoshop is a graphics editor developed and published by Adobe Systems for Mac OS and Windows. This software application allows the user to manipulate and edit digital images. It has multiple tools that can help the users to edit the image easily. The study aims to show the proper application of Adobe Photoshop in graphic designing to illustrating graphics, layout, and design, to name a few.

METHODS

Descriptive research design was used in the study to show the application of Adobe Photoshop in graphic designing. The participants of the study are thirty (30) selected Senior High students of Alfonso National High School for school year 2018-2019. The researchers used random sampling technique in conducting the survey. The Four-point Likert scale was used to obtain the responses of the participants.

RESULTS

The findings showed that the use of Adobe Photoshop in graphic design have positive impact on the students interest in learning computer editing. The results of the study indicated that the participants agreed that the application of Adobe Photoshop improved their skills in terms of graphic designing.

DISCUSSIONS

The study revealed that using Adobe Photoshop helped the students to gain knowledge about manipulating images using the editing tools that the software provided. Also, constant practice will help them to produce better outcomes. Application of this educational tool may also enhance the skills of the students to become more efficient in editing images as future graphic designers.

KEYWORDS: Adobe Photoshop, Graphic Designing, Manipulating images

SUBMISSION ID: R04A-CAVTP-0114

ECOLOGY & ENVIRONMENTAL SCIENCES

The Larvicidal Activity of the *Mimosa pudica* (Makahiya) Leaves Against Larvae

Mark Daniel Lampa, Cabuyao Integrated National High School

Abstract

INTRODUCTION

Mosquitoes are one of the prominent transmitters of diseases which cause great impact on the mortality rate in the Philippines. For this reason, many researchers explore ways on how to reduce their population. In recent years, the use of many synthetic insecticides for mosquito control has been very limited due to large expense and its environmental effects. Natural control using botanical plant is a new trend. The application of plant extracts as an alternative mosquito control strategy has been available since the ancient times. These natural insecticides are nontoxic, readily available, and affordable.

METHODS

The study utilized true experimental research design which is the most accurate form of experimental research. The collected leaf samples were dried for four days until brittle and fully dried. The leaves were sliced and cut into small portions and homogenized. Thereafter, the makahiya leaves were soaked into the ethanol and the researchers performed the iodoform test to check the presence of ethanol. The ethanol left in the solution was evaporated by means of the evaporating device. The concentrations of ethanol extract were then constituted to 30%, 60%, 90% and 100% ethanol extract. The solution was placed in each petri dish where the larvae were located and observed.

RESULTS

The data gathered in the study helped establish the larvicidal potential of *Mimosa Pudica* against mosquito larvae. Average extermination time results indicated that among the concentrations, the 100% ethanol leaf extract was fastest when it comes to the time span of death and mortality in direct comparison to the 30%, 60% and 90% ethanol leaf extracts. It is also concluded that the time span of extermination is inversely proportional to the concentration of the ethanol treatments. The 90% extract, however, does not surpass the capacity of extermination by the 100% ethanol, both with the lowest extermination time among the four applied concentrations, although the time span of mortality was close. Results showed a statistically significant difference of 30% extract compared to the other concentrations. As shown in the Tukey Test results, only the significant value of the 30% extract showed a significant difference between each concentration.

DISCUSSIONS

Mimosa Pudica (Makahiya) has shown a higher larvicidal potential against mosquito larva. This implies that makahiya leaves can be an effective larvicide to control the population of mosquito vector.

KEYWORDS: Larvicidal Activity, *Aedes Aegypti*, *Mimosa Pudica*, Phytochemical constituent

SUBMISSION ID: R04A-CABUYA-0044

**A Comparative Analysis of Heavenly Elixir (*Tinospora rumphii boerl*)
Biopesticide Against Black Rice Bug (*Scotinophara coarctata fabricus*)**

Nicole L. Maceda, Angelo Levardo Loyola Senior High School

Abstract

INTRODUCTION

The Malayan black rice bug *Scotinophara coarctata* (Fabricus) or "itim na atangya" is one of the most common species of black bugs attacking rice plants in many agricultural towns and provinces. This study is a comparative analysis of heavenly elixir (*T. rumphii* Boerl) biopesticide and synthetic pesticide against black rice bug.

METHODS

The vines of the heavenly elixir underwent drying, powdering, and soaking. The filtered extract was subjected to ethanolic extraction. Isolated extract was stored in a cool temperature. The mortality rate of the control and experimental group was gathered and compared. T-test was used to compare the mean of the two groups.

RESULTS

Since the t-computed value (4.1) is greater than the t-tabular value (2.306) at 0.05 level of significance with 8 degrees of freedom, then the null hypothesis (H_0) is rejected. This means that there is a significant difference between the mean of the mortality rate of the bugs treated with heavenly elixir biopesticide and synthetic pesticide.

DISCUSSIONS

Considering that the mean of the mortality rate of the experimental group (98.33) is greater than the mean of the control group (86.25), it implies that the heavenly elixir biopesticide is more effective than the synthetic pesticide against black rice bug.

KEYWORDS: atangya, black rice bug, heavenly elixir, biopesticide

SUBMISSION ID: R04A-CAVITP-1233

The Absorption of Heavy Metals in Water Using Chicken (*Gallus gallus domesticus*) and Duck (*Anas platyrhynchos domesticus*) Eggshells

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Samantha B. Enverga, Juan Benedict G. Oriaio, Kian F. Profogo, & Angelo
Levarado, Loyola Senior High School

Abstract

INTRODUCTION

Water pollution has always been a contemporary issue that Filipinos have to face, especially for those who are living near waterways such as estuaries, rivers, and bays. Chemical pollutants such as heavy metals infect bodies of water until they become toxic to us, humans. The purpose of this research is to find a solution to water pollution through an alternative and affordable adsorbent which can be found at home and does not need extra precaution on its application.

METHODS

Different masses (5g, 10g, and 20g) of powdered chicken, duck, and mixture of duck and chicken eggshells were mixed with 25 ppm aqueous solution at pH 4 contaminated with lead, cadmium and chromium separately. Each solution with different masses of eggshells was replicated two times for its validity. After the aqueous solution with eggshells was filtered, the analysis on the presence of the toxic heavy metals in filtrate was conducted in Atomic Absorption Spectrophotometer.

RESULTS

The results of the study were treated using Mean Average, Two-way Analysis of Variance, and Pearson Product Moment Correlation Coefficient. Findings indicate the presence of powdered eggshells in aqueous solution contaminated with heavy metals (Pb, Cd, and Cr) can decrease the heavy metal concentration in the solution. The types of eggshell and the masses do not affect the concentration of the toxic heavy metals left in the aqueous solution. When it comes to the relationship between the concentration of toxic heavy metals in the aqueous solution and the mass of the different types of eggshells, significance depends on the sample used.

DISCUSSIONS

Increasing the mass of eggshells added to the aqueous solution increases the adsorption rate of toxic heavy metals. Mixture of chicken and duck, duck, and chicken eggshells are the most effective in adsorbing Pb, Cr and Cd, respectively. When chicken eggshell and duck eggshell is added to Pb, Cr and Cd, and a mixture of chicken and duck eggshells to Pb and Cd, the amount of heavy metals left in the solution do not vary with the masses of different eggshells used. When chicken and a mixture of chicken and duck eggshells are added to the Cr, the adsorption is dependent on the mass of the eggshells. Further improvements are recommended in the study such as the use of other types of eggshells, test on other types of heavy metals and develop an eggshell-based filter.

KEYWORDS: Water, heavy metals, chicken, duck, eggshells, lead, cadmium, chromium, AAS, ANOVA, PPMCC

SUBMISSION ID: R04A-CAVITP-1242

Agricultural Land Recovery Towards Fertilization

Ma. Czarina Anne Nickolai Ellorda, Department of Education

Abstract

INTRODUCTION

Agriculture is considered to be the backbone of the Philippine economy. For the past years, farmers have been using synthetic chemicals such as pesticides, fertilizers, and insecticides to make sure that the crop will yield great produce. However, due to the continuous use of these chemicals, they accumulate and harm not only the crops but also harm the soil and groundwater. In this study, we investigated how farmers from different barangays manage soil fertility, crop growth, soil degradation, crop production, and sustainable soil management of croplands in Urdaneta City.

METHODS

The researchers used a descriptive type of research. It is the most appropriate method to use in order to answer the specific problems in the study. Furthermore, this method of research involves the collection of data in order to test a hypothesis or to answer questions covering the current status of the subject of study. With such characteristics, this research method is most appropriate to use in this study since it intends to determine the extent of land recovery of agricultural land towards land fertilization.

RESULTS

The survey yielded a result that there is no significant difference in the extent of agricultural land recovery towards fertilization across the profile variables. This implies that the age, sex, type of fertilizer, type of crop, monthly income, land ownership, times of applying fertilizer, tools or equipment used in farming and times of harvesting have nothing to do with soil fertility, crop growth, crop production, and sustainable soil management.

DISCUSSIONS

The result demonstrated that consistency in teaching old and new farmers of knowledge on how to attain and maintain soil and crop's health: the elements present in the soil, the right practices, the proper management, and cultivation.

KEYWORDS: agriculture, soil fertility, crop growth, crop production, sustainable soil management

SUBMISSION ID: R001-URDANE-0018

***Bixa orellana* (Annatto Seeds) as an Alternative Highlighter Ink**

Markuz Venedict Riman, John Lester S. Ilagan, & Alexis Yuan P. Diao,
CNSHS

Abstract

INTRODUCTION

Highlighter is essential for working people as well as for students. The ink used in a highlighter pen plays an important part in defining the reading experience, comprehension, and visual impact of the written message to the person reading them. (Alarcon, Fampula & Gatdula, 2017). This study aims to produce highlighter ink out of Annatto seeds and determine the physical properties of the produced highlighter ink in terms of resistance of fading, odor, the intensity of color, and its comparison to a synthetic highlighter.

METHODS

Seven hundred fifty grams (750g) of Annatto seeds were crushed and blended. Three different set-ups with different concentrations of ethanol and Annatto Seed were made, the first set-up containing 50 mL ethanol and 1.5 g Annatto powder, the second set-up containing 50 mL ethanol and 2.5 g Annatto powder, and the third set-up containing 50 mL ethanol and 4 g Annatto powder. The concentrations were filtered with cheesecloth to get the crude extract which are placed into three different highlighter containers that is injected using a 10 mL injector syringes. One-way ANOVA was used to analyze the data collected.

RESULTS

The data gathered from tallied responses of color intensity test showed that set-up 1 containing 800% concentration was the brightest highlighter ink among the three setups but, compared to the synthetic highlighter, it was duller. Data from the fading resistance test revealed that the 800% concentration has the most resistance to fading among the three setups, same as the synthetic highlighter. On the odor of the three setups, it was found that setup 3 was the most pleasant among the setups and the synthetic ink. One-way ANOVA revealed that there is a significant difference between the characteristics of the three setups containing 300%, 500%, and 800%, respectively. Furthermore, it was also found that there is a significant difference between the characteristics of set up three containing 800% concentration and the synthetic highlighter ink.

DISCUSSIONS

The results showed that Annatto seeds could be used as an alternative ink for highlighters. The setup with 800% concentration was the most effective in terms of the characteristics of the ink compared to the other setups. The commercially-sold highlighter pen's characteristics are more improved than the organic one, but is similarly effective. Therefore, the highlighter ink from Annatto seeds could help produce a natural dye which is more cost-efficient.

KEYWORDS: Annatto Seeds, Highlighter Ink, Color Intensity, Odor

SUBMISSION ID: R04A-CAVTP-0211

Caffeine as Growth Enhancer on Tomato (*Solanum lycopersium*)

Angela M. Cayasip, San Pascual Senior High School 1
Adviser: Costancia H. De Villa

Abstract

INTRODUCTION

Pesticides and fertilizers are widely used for cultivation and gardening, but they contain potentially toxic chemicals which can be harmful when ingested. The researcher focused on the study of caffeine after realizing its potential. It has been discovered that caffeine releases certain chemical that is essential in plant growth. This study was done to prove that adding caffeine will help in the cultivation of tomatoes. The researchers made use of ingredients and materials which are readily available and can be found in the locality.

METHODS

The researchers used 3 types of caffeine-containing beverages: left over brewed-coffees, fresh coffee grounds and instant coffee or most commonly known as 3in1. All those three inhabited specific amounts of chemical component that helps in the growth of tomatoes. Four (4) pots were prepared by the researcher. They contain the same amount of soil for cultivation. The tomato seeds were planted on each pot naming Plant A, Plant B, Plant C, and Plant D, respectively. Proper and exact amount of water and exposure to sunlight were given to each plant for five (5) days. After five days of cultivation, the tomato seeds started to sprout.

RESULTS

All the sprouts still received the same amount of water and exposure to sunlight. However, Plant B was given a ½ cup of brewed coffee, Plant C with 10 grams of coffee grounds and lastly, Plant D with a ½ cup of instant coffee. After conducting the experiment, it shows that caffeine in form of coffee ground will give the best result and there will be no eminent change in color and texture of the tomatoes.

DISCUSSIONS

If caffeine is properly and carefully used, it can increase the growth of tomatoes. To achieve the desired results, the right amount of caffeine should be used. Choosing and continuously discovering the most effective and inexpensive materials on cultivating plants are important. The findings of this study indicate that with the help of caffeine, the growth of tomatoes (*Solanum Lycopersicum*) will hasten and it may be a potential solution to a lot of problems related to cultivating plants.

KEYWORDS: caffeine, growth enhancer

SUBMISSION ID: R04A-BATANP-1939

Calamansi (*Citrus microcarpa*), Serpentina (*Rauvolfia serpentina*), and Sambong (*Blumea balsamifera*) Leaves Extracts as Bio-molluscicides against Golden Apple Snails

Ryan S. Cutamora & Angelo Levardo, Loyola Senior High School, Yvette Lorraine M. Novicio, Polytechnic University of the Philippines, Mary Rose D. Perez, Cavite State University-Carmona, Monique Carvajal, Cavite State University, & Patrick John G. Santisidad & Angelo Levardo, Loyola Senior High School

Abstract

INTRODUCTION

As an agricultural country, the Philippines greatly suffers from the damages inflicted by golden apple snails (*Pomacea canaliculata*), a major pestilence to the farmers of the country. With this, calamansi (*Citrus microcarpa*), serpentina (*Rauvolfia serpentina*), and sambong (*Blumea balsamifera*) were utilized as an alternative bio-molluscicide for golden apple snails. These are some plants that possess molluscicidal properties and are locally available in the country specifically in Carmona, Cavite.

METHODS

Materials needed for conducting the study were gathered and prepared. Calamansi, serpentina, and sambong leaves underwent washing, pounding, and stocking processes. Five treatments (calamansi, serpentina, sambong, tri-herbal leaves extracts, and the controlled variable), with three replications each, were applied to the golden apple snails and the resulting data were recorded.

RESULTS

After 24 hours, it was observed that all of the bio-molluscicides affected the mortality rates of the subjects. The data were statistically treated and analyzed using one-way ANOVA. It was revealed that the mortality rate of golden apple snails treated with calamansi, serpentina, sambong, and tri-herbal combination bio-molluscicides has significant difference when compared with the untreated control. It was also observed that there is a significant difference between the mortality rates of golden apple snails treated with the bio-molluscicides after 12 hours and 24 hours. Hence, it was proven that the bio-molluscicides are more effective when the golden apple snails are exposed to these bio-molluscicides for a longer duration of time.

DISCUSSIONS

We conclude that the calamansi, serpentina, sambong, and tri-herbal combination leaves extracts are all equally effective as bio-molluscicides against golden apple snails.

KEYWORDS: golden apple snails, calamansi, sambong, serpentina, bio-molluscicide

SUBMISSION ID: R04A-CAVITP-1734

The Carbon Sequestration of Mangroves (*Sonneratia alba* and *Avicennia marina*) in a Community-Managed Forest Using Allometric Models

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Adviser: Mario Cudiamat

Abstract

INTRODUCTION

Mangrove forests serve as important ecosystem due to their enormous capacity to store carbon dioxide and other greenhouse gases, thus, playing a vital role in mitigating climate change impact. One of the major effects of climate change is the fast rate of sea level rise. If carbon dioxide will not be lessened, the earth's lithosphere will experience global warming and other changes in the climate. In this study, the researchers assessed the carbon stock potential of *S. alba* and *A. marina* in Calatagan, Batangas.

METHODS

The study utilized transect-plot technique to assess the carbon storage accumulated by *S. alba* and *A. marina*. Purposive sampling was used to determine the presence of two mangrove species. A survey of growth parameters of mangrove was conducted to determine the GBH (Girth Breast Height) and height in the five (5) 10m x 10m quadrats. Allometric models by Komiyama (2005) were utilized to calculate tree carbon biomass and converted to equivalent carbon dioxide sequestered.

RESULTS

The results showed that *S. alba* has a higher structural characteristic with mean GBH of 43.57 cm, mean height of 5.18 m, biomass of 19.02 t/ha, and carbon stock of 8.56 t/ha. On the other hand, *A. marina* has a mean GBH of 29.2 cm, a height of 4.15 m, biomass of 7.55 t/ha, and carbon stock of 3.4 t/ha. This means that *S. alba* can sequester 157.04 metric tons CO₂, compared to *A. marina* with 62.39 metric tons CO₂. This implies that *S. alba* contains higher CO₂, from its biomass than *A. marina*.

DISCUSSIONS

The results imply the need to strengthen conservation, management and propagation of mangrove species reforestation focusing on *S. alba*. This also suggests that carbon sequestration must be considered in the planning of monitoring and assessing mangrove reforestation.

KEYWORDS: carbon sequestration, mangroves, climate change

SUBMISSION ID: R04A-BATANP-0151

**The Carbon Stock Accounting of Mangroves under the Family
Rhizophoraceae and Avicenniaceae in Calatagan, Batangas: A Blue
Carbon Initiative Towards Climate Change Adaptation**

Lorabell Esguerra, Department of Education, Senior High School in Calatagan,
Batangas

Abstract

INTRODUCTION

Carbon stock accounting is becoming a popular blue carbon initiative around the world in response to climate change. Climate change and global warming happen due to greater amount of carbon dioxide in the atmosphere. Mangrove ecosystem plays a crucial role in promoting biodiversity and mitigating climate change impact by sinks of atmospheric carbon. Calatagan, Batangas, Verde Island Passage, Philippines has a huge potential for carbon sink development because of its rich biodiversity. Biodiversity of mangroves and carbon sequestration estimation can be a very good consideration in conservation planning to help lessen the impact of climate change. The researchers in collaboration with PALITAKAN (Pro-mangrove Alliance Implementing Team and Arms as Kilitisan's Advocate of Nature) conducted this research to calculate and determine the carbon sequestration of mangroves.

METHODS

The study utilized descriptive research design. This research investigated and accounted the carbon stock by mangrove forest. A reconnaissance survey of the growth parameters of mangrove was conducted to determine the GBH (Girth Breast Height), height and the crown cover in the four (4) standard 10m x 10m transect plots. Total biomass and carbon equivalent were computed based on the growth parameters using allometric equations. Carbon dioxide equivalent was computed using CO₂ factor based from the biomass of the mangrove trees.

RESULTS

The data was run through the Paleontological Statistics (PAST) software version 3.14. Results revealed that Family Avicenniaceae has high carbon stock compared to Family Rhizophoraceae. It was supported by the computed t-value of 10.6378 which is higher compared to the critical value of 1.9790.

DISCUSSIONS

From these results, management and conservation of species under Family Avicenniaceae should be strengthened while those species under Family Rhizophoraceae must be reinforced towards propagation of its density. This also suggests that blue carbon initiatives and accounting must be considered in mangrove management planning towards sustainable management of mangroves.

KEYWORDS: Carbon Stock Accounting, mangrove, family, Blue Carbon initiative, Climate Change

SUBMISSION ID: R04A-BATANP-0174

Challenge and Future Needs: A Water Analysis of the Calumpang River

Francis Darril Albo & Handi Fallarna, Department of Education

Abstract

INTRODUCTION

Urban rivers are vulnerable to different urban processes and activities that cause pollution and degradation of the water ecosystem. Restoring the health of rivers poses a huge challenge to governments and other actors in the public domain. While the rehabilitation and/or restoration of urban rivers in developed countries offer measures and pathways to follow for developing countries, the differences in circumstances between the developed and developing countries including the various local conditions do not warrant simple replication and immediately transferable fixes.

The rationale of the study is to assess the water quality of Calumpang River in Batangas City. The researchers chose to conduct a study related to the issue due to the fact that Calumpang River is one of the river bodies accessible to study. Rest assured that the study only focuses on the water quality of the river and the survey was conducted by the researchers.

METHODS

This study aspires to have an understanding and awareness about the current state of Calumpang River. This was conducted in order to know how it may affect other tributaries due to its risk pollutants. Specifically, the parameters studied that served as indicators of some abnormalities on its normal state- turbidity, phosphate and pH. In order to make the study plausible, we used composite sampling and samples were tested by technical partners from Lipa City Quality Control.

RESULTS

The results from the test and statistical analysis showed that it is already under Class D which means that its water can only be used for agriculture and manufacturing process after treatment. Three samples were used, Kumintang Ibaba, Bridge of Promise, Malitam Mangrove Area, and Palloca Puntan Bridge, and among the three samples Kumintang Ibaba, Bridge of Promise has the highest level of all the chosen parameters.

DISCUSSIONS

Improper waste disposal and poor sewage system contribute to Calumpang River's increasing pollutants. In response, an action plan is proposed to at least minimize and mitigate hazards to some of its tributaries. Future researchers can provide current baseline information reflecting water quality of the river to ensure more accurate results. At the same time, they can continue sampling and monitoring the status of the river to enhance management of its water quality.

KEYWORDS: Water Analysis, Calumpang River, Pollutants, Water Quality, Turbidity, Phosphate, PH

SUBMISSION ID: R0-4A-LIPAC1-0246

Cogon Grass (*Imperata cylindrica*) as Thread: An Alternative Material for Textile Production

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Adviser: Alexis Alumno

Abstract

INTRODUCTION

Thread is the most important raw material in household Textile Production. It is very expensive that is why it has been immobilized and textile manufacturers have to depend on the products imported from other countries. In view of the fact that thread can be made from fibrous materials such as plants and animals, Textile Industry has discovered an easy way to utilize and manufacture threads. Since Cogon grass stems are highly abundant grass in the Philippines especially in locality of Lian, the researchers proposed a study on producing thread out of cogon grass and to maximize its beneficial and economic significance in Textile Industry.

METHODS

Experimental method was done to obtain the results. Researchers selected and gathered Cogon grass (*Imperata cylindrica*) from different barangays in Lian. The collected cogon grass was washed, pressed, and measured then experimentation came next. Four sets of cogon grass with different amount of detergent were boiled for different length of time. Set A has the least amount of detergent while Set C has the most amount of detergent. Set D is the control setup. After experimentation, cogon grass went through sorting, sun drying, twisting and knotting. The strength of cogon grass was tested by attaching them to stone with different weights. The threads were weaved by the researchers, and finally, fabric was produced.

RESULTS

After the experiment, set A produced a maximum amount of 28 grams useable thread for textile production, set B produced 37 grams, set C produced 43 grams and set D which is the controlled setup only produced 11 grams within the longest period of boiling time. The longer the boiling period and the higher concentration of detergent powder, the greatest amount and the strongest threads yielded. Overall, the result shows that after the preparation of the four sets of cogon grass, the researchers found out that set C with the most amount of detergent and boiled for the longest period of time has the highest tensility and can hold heavier objects making it suitable for textile manufacture.

DISCUSSIONS

The research demonstrates that the stems of Cogon grass (*Imperata cylindrica*) are mainly composed of fibers which can be utilized to yield and produce threads for Textile production. Researchers suggest that other raw materials with similar properties to cogon grass be studied and used as an alternative raw material for textile production. This research can be the basis for future researchers as they conduct the same study.

KEYWORDS: thread, textile production, cogon grass

SUBMISSION ID: R04A-BATANP-0827

Coliform Load, Physico-chemical Parameters and Anthropogenic Activities Along Ylang-Ylang River, Cavite

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Abstract

INTRODUCTION

Ylang-Ylang River is one of the major rivers in Cavite which traverses from Silang to San Jose, Dasmariñas converging with San Juan at Bacao, Gen. Trias. This sporadic river is a floodway and a point of wastewater discharges from domestic, industrial and commercial establishments.

METHODS

Three sampling stations were chosen and a total of 295 households was randomly selected to answer the survey. The physico- chemical parameters were measured in situ at the midpoint and the peripheral sides of the river. Multiple Tube Fermentation Technique (MTFT) was employed and results were analyzed following the Standard Method for the Examination of Water and Wastewater.

RESULTS

Results showed that the three stations along the river system were contaminated with coliform levels that exceeded the standard limit set for Class C water. Temperature, salinity, total dissolved solid, conductivity and chloride showed positive correlation to coliform load while pH and dissolved oxygen showed negative correlation. Anthropogenic activities that contributed to coliform contamination of Ylang-Ylang River were the use of organic fertilizer, improper disposal of waste and manure and direct defecation of humans.

DISCUSSIONS

Overall assessment revealed that water quality of the river was deteriorating and was exacerbated with varied anthropogenic activities of the residents along the river system., Due to these activities, there is a need for proper management and protection of the river.

KEYWORDS: MTFT, wastewater, peripheral sides, water analysis, waste disposal

SUBMISSION ID: R04A-CAVITP-1576

A Comparative Study Between β -Cyclodextrin Microencapsulation of *Euphorbia hirta* (Tawa-Tawa) and *Carica papaya* (Papaya) Essential Oils for Mosquito Repellency Finishing of Cotton Fabric

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National Science High School

Abstract

INTRODUCTION

Dengue fever is an infectious disease carried by mosquitoes and usually occurs during tropical seasons. With the increasing rate of dengue victims, many commercial repellent products are sold in the markets. However, these products consist of chemical compositions that may cause harm to our health. To provide an alternative solution for these commercial products the researchers analyzed treated cloth with plant extracts based in microencapsulation as a possible replacement for prevailing methods in preventing the spreading of mosquitoes. Through the use of β -Cyclodextrin, microencapsulation is created.

METHODS

Crude extracts from *Euphorbia hirta* (Tawa-Tawa) and *Carica papaya* (Papaya) leaves were microencapsulated with β -Cyclodextrin. Different ratios of β -Cyclodextrin and crude extracts were prepared. The mixtures were heated and stored in the refrigerator overnight. Using a vacuum oven, microcapsules were filtered, dried, and pulverized. Cotton cloths were submerged in a solution of β -CD- *Euphorbia hirta* and *Carica papaya* crude extracts microcapsules and BTCA for an hour with pH confined. The treated fabric was padded and dried; the microencapsulated essential oils that were applied on the cotton fabrics were washed for durability test. For the repellency test, fifty (50) female *Aedes aegypti* mosquitoes were used. Number of mosquitoes that landed on the cotton fabric was observed for an hour with one-minute intervals.

RESULTS

Based on the results, it clearly showed that microencapsulation of essential oils was an effective method to prolong the repellency of mosquito. Mosquito repellency showed that the *Euphorbia hirta* and *Carica papaya* fabrics without washes have the least number of mosquitoes that landed on the cloth within an hour of experimentation. Meanwhile, non-treated cotton cloth got the highest number of mosquitoes that landed on it. The results depict that the microencapsulation of extracts on the cotton fabric could repel mosquitoes. For the durability test, treated cotton fabrics under 10 washes, between EHF2 and CPF3, papaya fabric has the least number of mosquitoes and tawa-tawa fabric have the highest number of mosquitoes that landed on the cloth. On treated fabrics under 20 washes, between EHF3 and CPF3, papaya fabric still has the least number of mosquitoes and tawa-tawa have the highest number of mosquitoes on the cloth. Consequently, *Carica papaya* leaves is more effective in repelling mosquitoes than *Euphorbia hirta*.

DISCUSSIONS

The results demonstrated that cotton fabric treated with extracts of *Carica papaya* and *Euphorbia hirta* can repel mosquitoes more than non-treated cloth. The replacement of microencapsulation of leaves crude extracts to commercial product repellents is possible. However, the higher number of mosquitoes that landed on tawa-tawa fabrics showed that papaya is more effective in repelling the mosquitoes away. Therefore, it could be concluded that only *Carica papaya* can be used to repel mosquitoes.

KEYWORDS: microencapsulation, mosquito repellency, alternative, β -Cyclodextrin

SUBMISSION ID: R04A-CAVITP-0212

A Comparative Study of *Capra aegagrus hircus* (Goat) Manure and *Imperata cylindrica* (Cogon Grass) as an Alternative Source of Paper

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Abstract

INTRODUCTION

Paper is widely used for storing information, printing books, newspapers, and magazines. Despite being part of our daily lives, severe environmental impacts are posed, particularly the loss of trees (Udeajah, 2013). To solve this crisis, this research study used the manure of a pure herbivore goat in producing an alternative source of paper and compared its effectiveness to the paper made out of cogon grass.

METHODS

Three (3) kilograms of air-dried goat manure underwent washing, rinsing, sieving, and handpicking, on a screen box, to further remove physical residuals. It was then mixed with water and caustic soda, and subjected to a cooking vessel to soften the fibers. Further processes were made, and the whole paper-making out of cogon grass were handled by the institution. Three set-ups were made: 100% goat manure paper, 100% cogon grass paper, and 50%-50% cogon-manure paper. All the set-ups were then subjected to different physical property testings: (1) tensile strength index, (2) burst index, (3) tear index, and (4) folding endurance. Data collected were analyzed using t-Test: Two-Sample Assuming Unequal Variances.

RESULTS

The test values of the physical properties between set-up 1 and 2 indicate that 100% goat manure paper has less basis weight, thickness, tensile index, tear index, burst index, and folding endurance compared to 50% goat manure-50% cogon grass paper. While the values between set-up 1 and 3 indicates that 100% goat manure paper had more basis weight and thickness, but less tensile index, tear index, burst index, and folding endurance compared to 100% cogon grass paper. Following the greatly varied values of each set-up, results on the statistical analysis using T-test: Two sample assuming Unequal Variances shows that there is a significant difference between the values of set-up 1 and 2 and set-up 1 and 3 subjected under different physical property testing.

DISCUSSIONS

The results revealed the possibility of producing paper out of goat manure and cogon grass. Among the three set-ups, the set-up with 100% goat manure is the least effective to use as paper. Hence, it is recommended to use a different animal waste or manure that has greater cellulosic fibers.

Meanwhile, the set-up with 100% cogon grass is found to have the greatest number of test values in all the physical properties tested. It is an effective way to produce paper out of non-wood materials to reduce cutting of trees and other negative environmental impacts.

KEYWORDS: goat manure, cogon grass, alternative source of paper, physical properties, alternative, tensile index, burst index, tear index, folding endurance

SUBMISSION ID: R04A-CAVTP-0315

The Construction and Evaluation of No Fine Concrete Using Waste

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Abstract

INTRODUCTION

Pollution is one of the major problems worldwide. It affects other living organisms and causes diseases for humans. Many researchers conducted a study to lessen the pollution. One of the best ways to reduce pollution is to process waste into different helpful materials. The main cause of environmental pollution is the improper management of solid waste material such as plastics and glass. Tons of waste glasses that do not decompose naturally are improperly disposed. As the number of waste glass continues to increase, humans will suffer. In this study the researchers used waste glass powder to make a no-fine concrete that let the water flows through it. The researchers aimed to analyze its compression strength and its permeability.

METHODS

This study is divided into five phases: preparation of materials, pulverization, mixing, construction and testing. The researchers pulverized the waste glass and mixed it to cement to form granules of rocks and then mixed it again in cement for construction.

The testing was divided into two which is the permeability and compression strength test. The researchers poured 1 liter of water to the concrete. Then, the researchers also set a time to see its permeability. Moreover, the researchers improvised a compression strength test with the use of a 300 kg vehicle and rolled it upon the concrete.

RESULTS

The researchers found out that the no- fine concrete (NFC) is able to let the water flow through it in a short period of time. However, in the compression strength test the waste glass can't reinforce the NFC since in the first and second trial it broke at the second time the vehicle rolled upon on it. But in the third trial it broke at its first passing.

DISCUSSIONS

The results show that the constructed no-fine concrete is effective in terms of the permeability test. It is proven that it is possible to use a waste glass powder to make a no-fine concrete. On the other hand, it is recommended by the researchers to make the no-fine concrete thicker for the good outcome in terms of its compression strength. The researchers found out that the constructed no-fine concrete has a less compression strength compare to a normal concrete because the granules of rocks are not compact to each other.

KEYWORDS: NFC, Waste Glass, Permeability, Compression Strength

SUBMISSION ID: R04A-CAVITP-0400

The Construction and Evaluation of an Oil Spill Dispersant using *Tamarindus indica* (Tamarind) Seed Extract

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Abstract

INTRODUCTION

Oil spills are one of the major problems in our community. Oil spill happens when oil is leaked from ships, shore facilities, pipelines and offshore platforms. Oil spills affect humans and the environment as there are several routes by which oil can get back to humans and marine species from accidental spills. The objective of research was to introduce the potential of tamarind seed extract as organic oil spill dispersant to disperse oil spills. Generally, the purpose of the study is to make an organic oil dispersant using *Tamarindus Indica* (tamarind) seed and to evaluate its effectiveness in terms of dispersing efficacy.

METHODS

This study is an experimental research. The researchers gathered the tamarind seeds in Binakayan Public Market and were brought to Adamson University to undergo extraction process through Sulfuric Acid Digestion. The researchers provided 3 clean containers, 2 gallons of saltwater, the egg mixer, 3 kinds of petroleum product (gasoline, fuel oil, kerosene) and the tamarind seed extract itself. The time and frequency of stirring and amount of oil was controlled in the study. The data gathered were from the rating of the researchers through a Likert scale and was interpreted using T Test of Independent Samples and One-Way Analysis of Variance.

RESULTS

Since the computed t values (4.42, 4.75 and 8.42) were clearly beyond the critical values (4.30 and 3.18) it can be inferred that there is a significant difference between the negative control and the tamarind seed extract. On the other hand, to answer the second specific research question, the researchers used One Way ANOVA test. The computed average for the trials in gasoline (3.33, 3.33, 4.33), fuel oil (3.00, 4.33, 4.00) and in kerosene (4.33, 5.00, 4.33) was interpreted using the One-Way ANOVA test. Based on the result, the constructed oil spill dispersant is more effective in kerosene since the computed average of the kerosene (4.55) was higher than the computed average of gasoline and fuel oil which is 3.66 and 3.77. Also, using the One-Way ANOVA, the calculated critical value was 5.14; however, the computed f value was 2.19.

DISCUSSIONS

The researchers found out that the constructed oil spill dispersant is more effective in kerosene. The researchers concluded that using this oil spill dispersant can help the community to have unpolluted bodies of water.

SUBMISSION ID: R04A-CAVITP-0392

D'BiOStraw (Dalandan Biodegradable Organic Straw): a Construction and Evaluation of a Biodegradable Straw using Dalandan Peel

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ETTMNHS

Abstract

INTRODUCTION

Over the past decades, plastics have been used all over the world for different purposes such as plastic bags, bottles, straws and other personal uses. But high plastic production harms the environment, affecting every one of us. This study aimed to develop a biodegradable straw using Dalandan (*Citrus microcarpa*) peel and to evaluate its effectiveness as a replacement for drinking straw. Furthermore, introducing D'BiOStraw will reduce plastic waste in our country.

METHODS

The researchers used a quantitative approach and an experimental research design. This study contains six phases to the construction and evaluation of D'BiOStraw. Dalandan peel and its pith water were boiled in low heat to collect the pectin present. For the construction, cornstarch, glycerin, vinegar and the extracted pectin were mixed in a low heat pan. It was molded and a day was needed to dry D'BiOStraw. The researchers determined if it was acceptable in solubility, capillarity, appearance, odor and texture test and it was found out that it was acceptable in terms of its physical appearance. Lastly, the biodegradability test was applied to find out if there is a significant difference between D' BiOStraw and commercial biodegradable straw in term of its biodegradability.

RESULTS

Results showed that D'BiOStraw is acceptable in terms of solubility, appearance, odor and texture. Capillarity test showed significant difference in favor of commercial biodegradable straw with a t- value of 6.97 that is greater than the critical value of 2.78. Biodegradability test showed that there is a significant difference in favor of D'BiOStraw as it degrades faster than commercial straw since the t- value of 3.873 exceeds the critical value of 3.182 at 0.05 level of significance.

DISCUSSIONS

Based on the results shown above, it is proven that D' BiOStraw has better biodegradability than commercial biodegradable straw and is acceptable in terms of solubility, appearance, odor and texture. However, D' BiOStraw failed in the capillarity test to commercial biodegradable straw, as the latter has better structure in capillarity as a straw. On the other side, the researchers concluded that the commercial straw can be replaced by D' BiOStraw to lessen plastic waste within our country.

KEYWORDS: D'BiOStraw, Dalandan Peel

SUBMISSION ID: R04A-CAVITP-0356

**The Development and Acceptability of the Project OPlan PAKinabang
sa Basura (OPPA) Worksheet for the Intensified Materials Recovery
Facility in Pililla Elementary School Central**

Cay Vidanes

Abstract

INTRODUCTION

The enactment of the Ecological Solid Waste Management Act prompted educational institutions to incorporate ecological waste management in the school system. This law focuses on reducing, reusing, and recycling material waste, understanding where waste ends up, and exploring how waste issues impact the land, air, water, and other living things in the local environment. This will also help the students to explore and think about their actions, make their own choices, and begin to develop a sense of wonder about the world around them, resulting in understanding the importance of caring for the Earth.

METHODS

In gathering the data, the researchers used the descriptive-quantitative method designs. The quantitative design was employed to determine the extent level of school Material Recovery Facility and the underlying sub-questions. The descriptive design interpreted the responses of the respondents using the Likert's scale where 5 is the highest and one is the lowest.

RESULTS

With respect to different statement, language obtained the first rank with a weighed mean of 4.86 and a verbal interpretation of very much acceptable followed by content with 4.79, then style and presentation with 4.73 and lastly objective with a weighted mean of 4.72 and verbal interpretation of very much acceptable. This implies that the OPPA worksheet is very much accepted by the teacher respondents and may be used as a learning material in teaching and engaging the pupils about Solid Wastes Management.

DISCUSSIONS

The results show that teachers are aware and knowledgeable about waste management in their schools. However, they possess negative waste management practices. There is no significant difference between the extent of implementation of OpPa sa Basura Worksheet and its level of acceptability. Moreover, grade level assignment, is found to be the predictor of teachers' knowledge and practice of waste management. A plan of action was proposed with the hope of enhancing the level of acceptability of Project OPPA.

KEYWORDS: Environmental Awareness; Attitude; Knowledge; Teacher Education; Waste Management

SUBMISSION ID: R04A-RIZALP-0066

An Ecological Assessment of Mangrove Eco-Tourist Spots in Calatagan, Batangas

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(Adviser: Mario Cudiamat)

Abstract

INTRODUCTION

Ecotourism is one of the drivers of the holistic progress of Calatagan and sustainable development in Batangas. Ecotourism locations are rapidly growing in terms of the number of visitors but their sustainability remains unchecked. As a result, the environment is prone to damage from environmental problems such as pollution. In this study the physicochemical characteristics and the carrying capacity of ecotourism locations were evaluated for sustainable tourism management and planning.

METHODS

The study described the physicochemical conditions and tourism carrying capacity of the ecotourist spots in terms of salinity, temperature, electrical conductivity, total dissolved solid, dissolved oxygen, and pH level. Moreover, the Boullon's Carrying Capacity Mathematical Model (BCCMM) was employed to determine the standard number of visitors that can be accommodated. An interview with key informants was used to collect the average number of visitors.

RESULTS

Data gathered from the mangrove eco-tourist spots of Bagong Silang, Carretunan, and Quilitisan showed that it has a non-polluted marine water based on the standard proposed by Imneisi and Aydin (2016) in terms of pH level, electrical conductivity, dissolved oxygen, temperature, and the total dissolved solid as stated by Goel and Sharma (1996). Based on the interview, the average count of the visitors per day are as follows: Bagong Silang with 46 persons, Quilitisan with 48 persons, and Carretunan 52 with persons. Using the Boullon's Carrying Capacity Model, the Real Carrying Capacity (RCC) of the following Barangays was calculated on a daily basis as follows: Bagong Silang with 55 visitors, Quilitisan with 59 visitors, Carretunan with 63 visitors.

DISCUSSIONS

The results demonstrated that the mangrove eco-tourist spots in Calatagan are currently in good ecological condition. Also, it showed that the mangrove eco-tourist spots have high potential for increasing economic yield or income since there is a discrepancy between the real carrying capacity and the actual number of visitors. Hence, developing additional eco-tourism activities and promotion will be beneficial to the community while at the same time conserving the environment.

KEYWORDS: ecotourism, carrying capacity, ecological assessment

SUBMISSION ID: R04A-BATANP-0146

The Ecology and Degree of Utilization of the Species Diversity of Epiphytes in Mt. Isarog Natural Park

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Abstract

INTRODUCTION

This study determined the effects of ecology and the degree of utilization on the species diversity of epiphytes at Mt. Isarog Natural Park (MINP) at different sampling sites. Specifically, the study answered the following questions: What is the ecology of the epiphytes along physical and biological parameters? What is the degree of utilization of the epiphytes in the sampling sites? Is there a relationship between ecology and utilization with species diversity? Are there significant differences in the physical and biological parameters, degree of utilization and species diversity among sampling sites?

METHODS

Descriptive-Correlation research design was used in identifying the epiphytes in the four study sites at MINP: Panicuason, Naga City; Libod, Tigaon; Payatan, Goa; and Cawaynan, Tinambac.

RESULTS

The physical ecology of the epiphytes in the sampling sites had a mean 23.17 atmospheric temperature; humidity, 90.63; Sunlight exposure/Light penetration, 3.25 or Median. Biological ecology of the epiphytes, consisted of 23.75 of floral and 20.5 faunal species. Panicuason has a mean recorded utilization rating of epiphytes of 3.05; 2.75 for Libod; 2.85 for Payatan; and 2.95 for Cawaynan. Test of relationship of ecological parameters with species diversity resulted to R-values of 0.97, 0.781 and 0.683 for temperature, humidity and sunlight exposure, respectively and all values were greater than the critical value of r at 5% level of significance. Meanwhile, the test of relationship of floral and faunal species with species diversity resulted to r values of 0.683 and 0.945, respectively and both values were greater than the critical R-value. The computed F-values for the differences in the degree of utilization among sampling sites were 0.5953 and 24.7546 respectively and top 10 species diversity, among sampling sites were 1.8125 and 5.5954.

DISCUSSIONS

The physical parameters for the ecology of epiphytes were all within the tolerable limits favorable for the growth of the epiphytes and the flora and faunal species were limited in number. Epiphyte utilization in the sampling sites is high, especially in Panicuason, Naga City where the road network provides easy access for MINP visitors to reach the place and extract or gather resources from the place. There is a significant relationship between atmospheric temperature, humidity and solar irradiance with species diversity of epiphytes indicating that the more favorable the ecology of the epiphytes within their tolerance, the better is the species diversity.

KEYWORDS: Diversity and Utilization

SUBMISSION ID: R005-CAMSUR-0108

**The Effect of Liquid Fertilizers Made of *Mangifera indica* (Mango),
Musa acuminata balbisiana (Banana) and *Citrus maxima* (Pomelo)
Peelings in the Growth of *Abelmoschus esculentus* (Lady Fingers)**

Jel Auverry C. Sanado, CLDDMNHS
(Adviser: Liza Brion)

Abstract

INTRODUCTION

The use of chemical fertilizers can lead to soil acidification, resulting in reduced crop yields because of a decrease in organic matter in the soil. Too much utilization of chemical fertilizer can also result in decreased growth, defoliation, wilting and plant death in extreme cases. Hence, much study is needed on organic fertilizer. The main purpose of this study was to determine the effects of foliar application of liquid fertilizer from *Mangifera indica* (mango), *Musa acuminata balbisiana* (banana) and *Citrus maxima* (pomelo) peelings in the growth of *Abelmoschus esculentus* (lady fingers).

METHODS

The fruit peelings underwent pyrolysis to produce liquid fertilizer. Two (2) concentrations of liquid fertilizer (50% and 100%) and commercial fertilizer were tested. Sixty (60) lady fingers were placed randomly in each plant pots. Four ml of each liquid fertilizer was used as foliar spray. Lady fingers were treated with liquid fertilizer that had 100% concentration (Set-up A), 50% concentration (Set-up B) and with Commercial Liquid Fertilizer (Set-up C).

RESULTS

Results indicated that in terms of area of the leaves, 50% concentration of liquid fertilizer was the greatest with 172.2 cm². The controlled group and the 50% concentration of liquid fertilizer has an equal number of leaves and number of branches per plant. The lady fingers treated with the liquid fertilizer of 100% concentration has the heaviest average weight of fresh and dry weight with 15 grams and 12 grams respectively. It also showed that N-P-K analysis of liquid fertilizer showed high phosphorus and potassium content.

DISCUSSIONS

Based on the results, there was no significant difference ($P > 0.05$) in the effect of liquid fertilizer (50 % and 100 %) and commercial liquid fertilizer in terms of the height of plants, area of leaves, number of leaves, number of branches, fresh weight and dry weight of lady fingers. Thus, the liquid fertilizer from fruit peelings can be an alternative liquid fertilizer and promote proper waste disposal.

KEYWORDS: Liquid Fertilizer, Mango, Banana, Pomelo

SUBMISSION ID: R04A-SANPAB-0059

The Effectiveness of a Makabuhay (*Tinospora cordifolia*) with Madre de Cacao (*Gliricidia sepium*) Body Wash Against the Mortality Rate of Brown Dog Ticks (*Rhipicephalus sanguineus*)

Joshua Andrei A. Remolin, Eirand Jan C. Barcelo, Mark Edren G. Dela Cruz, Seanred Gabriel E. Panganiban, Sean Christopher R. Ricafort, & Jude Clark B. Tapales

Abstract

INTRODUCTION

In the Municipality of Carmona, Cavite, one of the major problems of pet owners is the infestation of brown dog ticks. Brown dog ticks (*Rhipicephalus sanguineus*) can infest both animals and humans. Brown dog ticks can be a vector of different diseases which might infect humans such as Lyme Diseases, RMSF, and Tularemia. It has been proven that Makabuhay (*Tinospora cordifolia*) stem extract is parasitocidal and insecticidal, as well as madre de cacao (*Gliricidia sepium*) leaves extract can be effective in terminating parasitic living things.

METHODS

The materials needed were gathered and prepared. The makabuhay extract was collected by chopping and boiling the stem in 1000 ml of distilled water for 10 minutes. The madre de cacao extract was prepared by boiling 500 leaves in a liter of water for 15 minutes. The extracts were added in the solution in making the soap: body wash A with 50% of makabuhay and madre de cacao extract, body wash B with 75% of makabuhay and 25% of madre de cacao extract, body wash C 25% of makabuhay and 75% of madre de cacao extract. One hundred brown dog ticks were extracted which means there are 10 brown dog ticks per trial. The formulations were compared to a commercially-available body wash that have the same trials and repetitions.

RESULTS

After three trials of using the products, body wash A has a mortality rate of 60 in trial 1, 80 in trial 2, and 70 in trial 3, with a mean mortality rate of 70 while body wash B has a mortality rate of 60, 80, and 60 respectively with a mean mortality rate of 66.67. Body wash C has the highest mean of 73.33 having 70 mortality rates in trial 1 and 2, and 80 in trial 3. The same procedure was used in commercially-available body wash to determine the mortality rate of brown dog ticks. In trials 1 and 2, the mortality rate is 80 and for trial 3, is 70. The mean mortality rate of brown dog ticks is 76.67. The mean of the three formulations and commercially-available body washes was compared to determine the significant difference of the products.

DISCUSSIONS

Findings shows that body wash C has the highest mean mortality rate among all formulation having 73.33. It also shows that as the amount of madre de cacao extract increases, the mortality rate of brown dog ticks also increases. Furthermore, all formulations have the same effectivity as the commercially-available body wash. The researchers conclude that the makabuhay stem and madre de cacao leaves extract can be used as an alternative body wash to eliminate brown dog ticks.

KEYWORDS: makabuhay, madre de cacao, brown dog ticks, body wash, extracts

SUBMISSION ID: R04A-CAVITP-1279

Estimates of Carbon Sequestered in the Trees of Sta. Rosa, Laguna

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Students

(Adviser: Miguel Jr. Gomez)

Abstract

INTRODUCTION

The build-up of greenhouse gases has brought a global concern regarding its effects on the global temperature. While the continuous production of carbon increases, and with the statistical record of 32.5 GT of carbon released in the atmosphere, different solutions are being drawn by society to fight against this global problem. In this study, the carbon sequestration potential of Sta. Rosa City, Laguna was estimated and assessed.

METHODS

An Experimental Quantitative Research Design was used to gather the field data that was used in the study. Trees with a circumference of 36 centimeter and above were the only ones measured. The tree species were first identified using several tree identification guides. A meter stick, a clinometer, and a tape measure were then used to measure the height and circumference of the tree. The raw data was then applied to a different formula to find the tree's carbon storage. The sum of the carbon storage measured in all trees was the estimated value of carbon storage for the city.

RESULTS

A total of 9476 trees of 20 different species were measured of its height and its diameter breast height, with smaller trees being excluded due to lower carbon storage. The total biomass production obtained for the whole city was 10318.1387 MT, with total carbon storage of 5159.0689 MT. Brgy. Malitlit was found to have the highest amount of carbon storage, with a value of 755.8892 MT. The species of *Pterocarpus indicus*, *Castanopsis philippinensis*, and *Mangifera indica* were shown to have the highest amount of carbon storage among the different species of trees that were measured along with the city.

DISCUSSIONS

The results show that the amount of carbon sequestration potential provides a good foundation for mitigating the effects of carbon dioxide emission in a city. It also shows that carbon storage of trees depends on many factors, but mainly depends on the Diameter Breast Height of the tree. Larger DBH would give the tree a higher biomass production and higher carbon storage. This study suggests continuing the initiatives of the city to obtain less emission and continue surveying the carbon emission and sequestration in its premises. The benefits of creating different approaches are substantial in mitigating the effects of Greenhouse gases and climate change.

KEYWORDS: carbon emission, climate change, diameter breast height, sequestration

SUBMISSION ID: R04A-STAROS-0010

Eucalyptus and Lemon Grass Paper Charcoal as Anti-Mosquito Cooking Heat Source

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(Adviser: Joanna Marie Yocampo)

Abstract

INTRODUCTION

Eucalyptus and lemongrass materials are abundant in the local community of Tinambac, Camarines Sur. With a locality which households are usually nipa hut using seasoned firewood's, the concern on mosquitoes is not a priority despite being prevalent in the area. Bagacay National High School practices the Reduce, Reuse, and Recycle and after papers have been used on both sides, it could still be converted into paper charcoals. With the ideology of using paper charcoals for cooking and to ward off mosquitoes, the team came up with the Eucalyptus and lemongrass paper charcoal innovation.

METHODS

One kilogram of both eucalyptus and lemongrass leaves were sun-dried for five days and then shredded into small bits. Another kilogram of each was boiled with two litres of water. After the broth was extracted, it was added and soaked with five kilograms of recycled paper for 24 hours. When both were ready, the soaked papers were placed in a mould to remove the residual liquid and place the dried leaves on the centre. The paper balls were then sun-dried for another three days. Three packs of one kilogram of eucalyptus and lemongrass paper charcoal were given to six selected household to test for the time utilization and mosquito effect prevention.

RESULTS

Both eucalyptus and lemongrass paper charcoal lasted enough to cook a kilo of rice, specifically one kilo of the paper charcoal set lasted 30, 34, 38, 37, 33 and 34 minutes with an average of 34 minutes. The smell of lemongrass paper charcoals was balmy. However, it does not ward off enough mosquitoes during the cooking process. On the other hand, all households that used paper charcoals with eucalyptus leaves agreed that it smelled smoky and enticing, and was effective in warding off mosquitoes. Thus, using eucalyptus leaves are more acceptable to household members, especially while they are cooking and eating.

DISCUSSIONS

The result of this research suggests the potential of eucalyptus paper charcoal as a low cost and organic charcoal that could be used by local communities to ward off insects such as mosquitoes and provide a pleasant aroma while at the same time cooking their meals. This innovation can potentially be used in other charcoal derivatives and could be further studied by promoting other local and indigenous materials.

KEYWORDS: paper charcoal, eucalyptus, lemon greass

SUBMISSION ID: R005-CAMSUR-0012

Extraction of Solanine from Eggplant Leaves (*Solanum Melongena*) for Potential Insect Repellent

Jireh Pelina, Royette Acosta, & Vince Joseph Arcena, Students

Abstract

INTRODUCTION

Aphids are also commonly called plant lice or green flies. Although aphids are relatively small, they can usually be seen by our naked eye. Flowers and fruit can become distorted or deformed due to feeding aphids. Some aphid species cause galls to form on roots or leaves. Aphids may transmit viruses between plants and also attract other insects that prey on them. For aphids that cause leaves to curl, once aphid numbers are high and they have begun to distort leaves, it is often difficult to control these pests, because of the curled leaves shelter aphids from insecticides and natural enemies. The solanine can repel the aphids because solanine is a glycoalkaloid poison found in species of the nightshade family. It can occur naturally in any part of the plant, including the leaves, fruit, and tubers. However, the researcher only used leaves, and it is one of the plant's natural defences.

METHODS

Five hundred grams of eggplant leaves were chopped then were put in an empty, clean basin with 250 ml of water. The researcher used water that has no chlorine and 250 ml of molasses. The mixture was set aside for two weeks before squeezing them and transferred to an empty bottle. Three empty liter bottles were then filled with water, and leaf extracts were added to each with the measurements of one, five, and ten tablespoons respectively.

RESULTS

The eggplant leaves extract almost lessened the amounts of aphids in chili and longed bean plants for 50%. Also, the eggplant leaves extract produced a positive reactivity to the organisms.

DISCUSSIONS

Therefore, the following are recommended:

- a) pure extract of eggplant leaves should be processed and made as an insecticide for other plants;
- b) other test organisms may be used to investigate further the effectiveness of the eggplant leaves extract;
- c) instead of using a high-cost insecticide;
- d) to further evaluate their composition on how we could make another related study;
- e) to conduct related studies of varied preparation of eggplant leaves extract to combat the aphids in chili and long bean plants; and
- f) to conduct a related study that will make use of the extract of Eggplant leaves to lessen the number of aphids in chili and long bean plants.

KEYWORDS: solanine

SUBMISSION ID: R04A-CAVTP-1617

Field Evaluation and Behavioral Response of Black Earwig, *Chelisoches morio* (Fabricius) (Dermaptera: Chelisochidae) to the Coconut Leaf Beetle, *Brontispa longissima* (Gestro) (Coleoptera: Chrysomelidae)

Franchesca Lizette D. Ramos, Joseph L. De Oño, & Stephanie Maris Q.
Cosico, Pablo City National High School
(Adviser: Renelyn Banasihan)

Abstract

INTRODUCTION

This study was conducted to know the behavioural response of the predator to its prey. The study included an assessment of the different ways the predator captures its prey, which gender was more productive in eating the prey, its speed of eating the prey. This study was done to reduce the damage of the prey to the coconut trees through field evaluation.

METHODS

Two experiments were conducted. The laboratory experimentation includes the observation of the predator's way of capturing the prey, which gender was more productive in eating the prey, and speed of eating the prey. Also, the field evaluation was used to reduce the damage of the prey that infested coconut trees.

RESULTS

In the laboratory experimentation, the female predator had an average time of 31.75 minutes while the male predator had an average time of 64.88 minutes — the male predator located and captured CLB longer than its female counterpart in both trials. Only about 22.22% of the males were able to capture and preyed upon CLB, the other 77.78% moved back and forth and sometimes towards the prey. However, more females (60%) spent lesser time capturing CLB than males. In the control treatment, from an initial damage rating two, which corresponds to about 21% to 40% damage, this was increased to about 41% to 60%. In the treatment with predator-release, damage of CLB was rated on the average 1.5, which is about 40% reduction from the initial damage. In contrast, damage in the control group was up by about 20% of the initial damage.

DISCUSSIONS

Laboratory observations showed that *C. morio*, mostly females, captured and preyed upon CLB larvae. Female black earwig usually uses their cerci in capturing the prey, and each antenna of the predator separates whenever they eat. Field experiments involving the release of the predator *C. morio* against CLB in coconut palms caused a reduction in damage by the pest by about 40%. These could impact on the recovery of CLB damaged palms in Barangay. Bunga, Nagcarlan, Laguna with continuous release of *C. morio*.

In conclusion, there is a significant difference in the behavioral response of the predator to its prey. Results also show that there is a significant difference in the field evaluation of the predator to its prey. It also showed that the female predator's consumption time was shorter than male predators. Therefore, there is a significant difference between the rates of consumption of male and female predators.

KEYWORDS: field evaluation, behavioral response, biological control

SUBMISSION ID: R04A-SANPAB-0034

Global And Environmental Trends And Issues

Edward Bachoco, Department of Education

Abstract

INTRODUCTION

The study is about the awareness of students from Urdaneta City National High School to global and environmental trends and issues. Results, evaluations, analysis, recommendations, and conclusions were formulated through the data gathered from the following:

- (1) Profile of the respondents regarding age, sex, grade level, strand, religion, family monthly income, and human settlement;
- (2) The Extent on Global and Environmental Trends and Issues along with the vocation energy and environmental security, conflict, and poverty; and
- (3) The significant relationship between the extent of the global and environmental trends and issues across the profile variables.

METHODS

The researchers collected essential data from selected students of Urdaneta City National High School by employing a survey method. The researchers made mathematical operations in providing evaluation, analysis, and conclusion regarding the extent of global and environmental trends and issues in this study: the researchers' read books, some other reviews, journals, and literature as references.

RESULTS

There is a significant relationship between the respondents and the global and environmental trends and issues from the vocation of energy and ecological security, conflict of poverty, and global health crisis. Basing on the results from the data gathered using mathematical operations, respondents of Urdaneta City National High School mainly from the girl students ages sixteen to seventeen are the most aware regarding the global and environmental trends and issues. Specifically, from Grade 11 STEM students who are Roman Catholics settled in rural places having the family monthly income of ten thousand pesos and below.

DISCUSSIONS

The respondents should be more aware of environmental events and issues. They should be more active in promoting the preservation and safety of the environment. The community, including students and teachers, should participate in seminars, lectures, and activities relating to the environment.

KEYWORDS: Awareness, Environment, Trends, Issues

SUBMISSION ID: R001-URDANE-0009

Greening Beyond: A Call for Environmental Revolution

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Teacher/ Education

Abstract

INTRODUCTION

Many years had passed but the dilemma on waste remains unchanged. As people continue to generate and consume more, the end result is more wastes being accumulated. In the Philippine scenery, solid waste for over the past years has remained the most evident, and silently hazardous, environmental problem in the country. When waste ends up to where it is not supposed to be, it becomes worthless, causes pollution, and poses health risks. Thus, this calls for environmental revolution, having a war that is caused by human themselves.

METHODS

The researchers used the mixed method of analyzing the data. Both quantitative and qualitative methods were employed in this study. This study utilized statistical tool for the analysis and treatment of the data that were gathered. Weighted mean was used in computing the level of efficiency of the Republic Act 9003. Analysis of variance (ANOVA) was utilized to determine the significant difference in the teachers' knowledge, practices and attitudes on waste management from the four selected schools in the Division of Cavite Province.

RESULTS

Finding shows that the respondents had moderate knowledge about the proper solid waste management, oftentimes practices it which includes waste disposal practices, dealing with biodegradable and non-biodegradable materials, composting and buying practices and uniformly agreed on the proper attitude towards environmental sanitation/practices and ecological waste management program.

DISCUSSIONS

Results showed that consistent dissemination of information on proper waste management is needed to gain a more positive outcome. It will encourage individuals to habitually practice what they had been learned from the given information.

KEYWORDS: greening, environmental revolution

SUBMISSION ID: R04A-CAVTP-0008

ILAW: A Key to Improve Reading Comprehension Level of Grade 3 Pupils in Pangil Elementary School Amadeo, Cavite

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Abstract

INTRODUCTION

English is a global language and is widely used when seeking employment. All Filipinos, even the young ones, should know the alphabet because of a keypad in the cell phones. However, it was found out from the result of pre-test Philippine Informal Reading Inventory (Phil-IRI) 2018-2019, the Frustrations in the Reading Comprehension Level was higher than the Instructional or Independent level. Indeed, the result showed that in formal schooling, the uniqueness of every learner is one of the prevalent problems faced by every teacher in the classroom. This study aims to determine the effectiveness of ILAW (Inspiring, Local, Attainable and Worthwhile Stories) as a key to improving the reading comprehension level of the 40 Grade 3 pupils in Pangil Elementary School, Pangil Amadeo, Cavite.

METHODS

The descriptive research design is used in the study. Data was gathered through the result from the pre-test of the Phil-IRI to assess reading difficulties of the 40 Grade 3 learners. Frequency distribution and percentage were used. The significant differences between pre-test and post-test of the observed group were noted.

RESULTS

ILAW was notably beneficial in improving the reading comprehension level of the 40 Grade 3 pupils. The results implied that ILAW is like a mother in the family. It is like a fluorescent light that guides, lightens up, and helps to improve the reading comprehension level of the pupils from Kindergarten to all grade levels. It can also be used in all learning areas.

DISCUSSIONS

The pre-test conducted last September 26, 2018, to 52 Grade 3 pupils. The study showed that there were 40 Grade 3 pupils who got the score of lower than 14 out of 20 items using the Screening Test Class Reading. Immediately, ILAW was conducted to 40 GST (Group Screening Test) every 3:30 to 4:00 pm daily. The school project ILAW used colorful LOCAL stories during remediation. On January 11, 2019, a post-test was conducted to 40 Grade 3 pupils. The test showed that there were 25% decreased in the frustration comprehension level, and a 17.5% increase in the instructional comprehension level. Similarly, there was a 7.5% increase in the independent reading comprehension level.

KEYWORDS: ILAW, Reading Comprehension Level, Descriptive Research Design, Philippine informal- Reading inventory

SUBMISSION ID: R04A-CAVTP-0691

Innovative Compost Pit: A Basis for Productive Soil Management

Bruce Marvin Ruaro, IAFOR

Abstract

INTRODUCTION

Little is known about how the culturing, the development, or the utilization of natural revisions are done. Yield deposits influence the perseverance and transmission of harvest biotic dangers. This absence of learning is obstructing our capacity to create a soundproof understanding of how soil administration decides both harvest and wellbeing and efficiency. The direction should be formed on the best way to control soil properties that will upgrade the capacity of soil through feasible soil administration.

METHODS

The researcher used an experimental method of research in this study. It is the most appropriate method that can be used to answer the specified problems. It is a method that involves the control and manipulation of treatments to study the production of biofertilizer. There were four set-ups tested to determine the most effective biofertilizer.

RESULTS

The characteristic of a healthy compost pit is its odour and dryness, while the compost pit with soiled diapers has a foul smell and moist. The materials such as black soil, soiled diapers, dung, and dried leaves were combined to create a bio-fertilizer. All of the articles have the components of biofertilizer and had a medium of decomposition.

DISCUSSIONS

The result shows that the soiled diapers can be used as a bio-fertilizer. It was capable of growing plants quickly. The smaller the number of used diapers in the compost, the quicker the plants will grow. There is a significant difference between the time of growth of plants in a typical compost pit and those of plants that are in a compost pit with the soiled diapers.

KEYWORDS: compost pit, soiled diaper, disposable diaper, soil management, fertilizer

SUBMISSION ID: R001-URDANE-0000

The Lead Adsorptive Property of Synthesized Activated Carbon Out of *Peperomia pellucida* (Pansit-pansitan) Leaves

Cassandra Jane Sarigumba & Catherine Hidalgo, Emiliano Tria Tirona
Memorial National High School

Abstract

INTRODUCTION

Pollution is one of the major problems as of the moment. One of these is water pollution in which harmful substances mix to bodies of water that makes them unsuitable for living things. This study was made to prove that synthesized activated carbon can lower the lead concentration in wastewater and has an objective of determining the lead adsorptive property of *Pansit-pansitan* (*Peperomia pellucida*) leaves. *Peperomia pellucida* was used in this study since it has tannic acid that can adsorb lead.

METHODS

The collected *pansit-pansitan* leaves were dried and burned to open fire to produce charcoal. They were pulverized with a mortar and a piece of cloth. For the activation, bleach was used instead of calcium chloride. Experimental statistics were used in this study in determining the significant difference between commercial activated carbon and synthesized activated carbon in terms of its ability in adsorbing lead. The researchers used an Ultra Violet-Visible Spectrophotometer Analysis in identifying the adsorptive capacity of synthesized activated carbon out of *pansit-pansitan*. During testing, there were two samples with three trials the commercial activated carbon and synthesized activated carbon out of *pansit-pansitan* leaves that were brought to Adamson University Technology Research and Development Center.

RESULTS

With the standard lead solution of 116 mg/g, each sample underwent the UV-Vis Analysis. The commercial activated carbon sample has an average of 79 mg/g while the synthesized activated carbon out of *pansit-pansitan* has an average of 47 mg/g. A T-test independent was used in this study since the researchers were looking for the significant difference between the synthesized activated carbon out of *pansit-pansitan* leaves and commercial activated charcoal.

DISCUSSIONS

Since the computed t-value which 429.24 is higher than the calculated t critical value, which is 3.18, the researchers rejected the H0 and accepted the H1 hypothesis, which means that there is a significant difference between commercial activated charcoal and synthesized activated carbon out of *pansit-pansitan* leaves. The researchers concluded that the synthesized activated carbon out of *pansit-pansitan* is comparable to the available commercial activated carbon.

KEYWORDS: Lead, tannin acid, *peperomia pellucida*

SUBMISSION ID: R04A-CAVITP-0403

Managing Kawit Backyard Poultries: Reducing Carbon Footprint Emission

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Tria Tirona Memorial National High School
(Adviser: Eric Laurence Gandia)

Abstract

INTRODUCTION

The raising of livestock is a significant factor behind the prevalence of greenhouse gases, particularly carbon dioxide, in the atmosphere. (Banaguas et al., 2014) Despite previous discoveries on the significant role of the livestock industry on the carbon footprint emission attributed to climate change, studies on this issue are not yet established, defined, and prioritized nationwide. These lead the researchers to manage the backyard poultries in Kawit, Cavite through the implementation of manure management that is hypothesized to reduce carbon footprint emission.

METHODS

The researchers made use of a quantitative approach and experimental research design to pursue its specific objectives. Purposive sampling method was utilized to select six backyard poultries within Kawit, Cavite. The researchers divided the research procedure into four segments: field profile inspection through interview and survey questionnaire, carbon footprint pre-estimation, manure management implementation, and carbon footprint post-estimation. Default values and formula for the computation of data are based on the International Panel for Climate Change (1996). The data was analyzed through obtaining its mean and standard deviation and conducting T-test of dependent samples.

RESULTS

Results of the post-estimation of carbon footprint showed that backyard poultries emit a total of 72.715 CO₂, which is lower than the pre-estimated 75.051 CO₂. By applying T-Test of dependent means at 0.05 level of significance, the study was able to prove that there was a decrease in the carbon footprint of backyard poultries when manure management was implemented. Since the computed t value of 11.689 is beyond the critical value of 2.776, it can be concluded that the treatment has a significant effect in reducing carbon emissions.

DISCUSSIONS

Based on the findings of the study, it can be said that the potential for carbon footprint emission could only be attained through management changes and adaptation capabilities, specifically by improved manure management. Furthermore, the estimated methane and carbon dioxide emissions imply that the population of the chickens profoundly affect the carbon footprint emission. In light of the previous results, it is recommended for poultry owners or managers within the locality to practice manure management for them to have a more sustainable industry.

KEYWORDS: backyard poultries, manure management, carbon footprint

SUBMISSION ID: R04A-CAVITP-0164

Peanut Shell Briquettes: An Environmental-Friendly Substitution for Wood Charcoal

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Abstract

INTRODUCTION

Failure to curb excessive charcoal production contributes to massive depletion of the country's forests. The removal capacity of forests decreases as forests are lost. People continuously use wood, but they seldom plant trees, making it a less percentage of having it around. The researchers ventured an aid regarding the continuous cutting of trees through the use of peanut shells. The Philippines widely grows peanuts, which produces several residues that may be used in generating energy. The researchers looked into the economic viability of peanut shells as an alternative source of biofuel and to have inexpensive yet environmental-friendly charcoal. It is for long-term, sustainable development, which teaches the proverbial man to fish, instead of just giving one away.

METHODS

The study evaluated an ample amount of materials for the production of peanut shell briquettes and determined the effectiveness of it as a replacement for commercially available charcoal. Experimental design and analysis of variance were used. There are two stages, the preparation (collection of peanut shells, carbonization, binding process, and compression) and testing stages (durability).

RESULTS

Peanut shell briquette 1:3 (one cup of uncompressed peanut shell char is to one tbsp. of tapioca flour) had the highest rate in terms of durability. Peanut shell briquette 1:5 was the best type in terms of flammability, and the recorded time in seconds for the boiling point of water. Furthermore, an increase in compressed density and binder level enhances durability while moisture content reduces it. The more binding agent a mixture has, the more heating capacity will occur, thus making the PSB 1:5 to be the product with the fastest occurrence of flame. Binder types can produce high-quality charcoal briquette with high heating value because the PSB 1:5 has the highest amount of binding agent, it was considered and recorded that this proportion of briquette produced the highest heating value.

DISCUSSIONS

Based on the results, the peanut shell briquettes 1:5 were more fragile than wood charcoal, yet it excelled on the combustion process. It can be concluded that peanut shell briquettes can be an alternative to wood charcoal. At the same time, peanut shell briquettes proved that it had a new purpose so that it would not just be thrown away and can help lessen the wastes in the environment.

KEYWORDS: peanut shell briquettes, wood charcoal, peanut shell char, environment-friendly, tapioca flour, combustion, carbonization, compression

SUBMISSION ID: R04A-BATANC-0174

PECOWWS: Permeable Concrete as Waste Water Management System

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Abstract

INTRODUCTION

The Philippines is known as a tropical country. This feature of the country has been the very reason why the country faces more than 20 typhoons each year. However, excessive rainwater and malfunction of some drainage system cause flood in the community, especially in low lying areas. This problem led the researchers to produce a flood-lessening project from permeable concrete with a water purifier. This study will satisfy the widespread demands of the community for clean water, especially during rainy seasons. The project is significant to the people living in flood-prone areas. It can help the household lessen the flooding for the safety of all individuals. It can also ensure the health of the citizens most notably from the possible diseases that can be brought by the stagnant water. Lastly, it can lessen the negative impact on the environment, such as soil erosion and water runoff caused by too much water.

METHODS

A multiple research methods design was used in the research. The researchers conducted several tests for different setups of the porous concrete in determining the perfect mixture that registered greater effectiveness. Thus, descriptive research was used. Using this approach, the researchers recorded, analyzed, and interpreted the collected data. They also compared the permeable concrete to standard concrete.

RESULTS

The conducted experiment led to different results. After comparing the components and physical appearance of porous concrete, the researchers found out that six kilograms of gravel, two kilograms of cement and one and a half liter of water were the most effective mixture to be used in making permeable concrete. Temperatures also affect the formation of porous concrete. Lastly, the result of the wastewater after passing through the porous concrete showed a Total Suspended Solid of 8 ml/L and Fecal Coliform Count of 920 MNP/100mL which indicates that the water is not advisable to drink but acceptable only for cleaning and other purposes.

DISCUSSIONS

With the results gathered and with the tests performed, the researchers can infer that the water from PeCoWWS is not potable or advisable to drink but is still useful for cleaning and other purposes. The researchers concluded that permeable concrete as wastewater management system could be an alternative to the standard concrete.

KEYWORDS: permeable

SUBMISSION ID: R04A-BATANP-1940

Performance of Aluminum Sulfate and Limestone as an Added Supplement for River Water Filter

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Alyssa Raqueño, Cavite National Science High School

Abstract

INTRODUCTION

Pollution is one of the problems that the government is trying to solve to ensure the cleanliness of the environment. According to the article Pollution in Cavite Philippines (2018), The inaccessibility of water in Cavite is 29.41%. Limestone acts as a base that alters the pH of acidic liquids. Aluminum sulfate is widely used to purify water because it is said to lessen the turbidity of water (Farhaoui, Hasnaoui, Derraz, 2016). This study aims to know if Alum and Limestone are active substances in filtering river water.

METHODS

The main procedures done in the study were the acquisition of alum, limestone, and carbonized filter, making of the alum and limestone-based filter, collection of river water and filtration of the sample water. Twelve liters of river water were collected from Dandan Naic River. The parameters used in the study are pH Level, Turbidity, and Settleable Solids. The samples were tested under the Department of Science and Technology (DOST) in Trece Martires, Cavite.

RESULTS

The results showed that the computed F value, 0.588618, for pH level, Turbidity, and Settleable Solids are less than the alpha of 0.5. With this, the null hypotheses state that there is no significant difference between the pH level, turbidity and settleable solids of river water and the filtered sample water. Thus, the null hypotheses are accepted. The average of the turbidity of the filtered water is 41.33 is higher than the turbidity of the raw river water. With the average pH level of 4, the pH level of the filtered water is lower than the pH level of the fresh river water, 6.6. The average of the settleable solids for the filtered water, 0.43, is higher than the result of the raw river water, 0.1.

DISCUSSIONS

in comparison to a related study by Affam (2013) entitled Operational Performance of Vertical Upflow Roughing Filter for Pre- Treatment of Leachate Using Limestone Filter Media. The result of the study showed that the pH level of the sample water increased after the filtration in a limestone-based filter, which shows that the two studies show opposite results, due to the difference in the quantity of the limestone and study did not use aluminum sulfate.

KEYWORDS: Aluminum Sulfate, Limestone, Water Filter, pH Level, Turbidity, Settleable Solids

SUBMISSION ID: R04A-CAVITP-0329

Pesticidal Property of Siam Weed Leaves (*Chromolaena odorata*) on Houseflies (*Musca domestica*)

Abegail Alfar, BNHS Student

Abstract

INTRODUCTION

Houseflies are some of the hated and the most problematic pests in the Philippines because they could transmit bacteria and disease to the local citizens. Siam weed (*Chromolaena odorata*) locally known as hagonoy or hagonoi is a highly invasive plant species which is poorly studied even though it's hard to eradicate, a nuisance in plantations and known to harm agriculture farm and commercial plantations. It contains bio-active chemicals suitable and alternative biocontrol substance and also contains phytochemicals that serve as repellent or may kill insects. In this study, we extracted the Siam weed leaves and created a solution to minimize this problem since there is no existing alternative in the locality.

METHODS

An experimental method was used to test the pesticidal properties of Siam weeds leaf. Three trials were conducted to three treatments to test the effectivity of Siam Weed leaves extract. The same amount of solution was measured, and houseflies were tested during the trials on Baygon (Positive control), Siam Weed (Experimental group), and water (Negative control).

RESULTS

Table 1 Comparison of Time of Survival of Houseflies in different treatments.

Two treatments had an effect in eradicating the insects. In terms of the time survival of houseflies they have different results. However, tap water treatment indicated no effect.

DISCUSSIONS

There is a significant effect on the trials applied using the extract of Siam Weed leaf on houseflies. It implies that it can be an alternative pesticide. It is more convenient since it is available in our surroundings, less expensive and organic.

KEYWORDS: Houseflies, Siam Weed, Pesticidal Property

SUBMISSION ID: R012-SARANG-0033

Phytodegradation Effect of *Leucobryum glaucum* (Pincushion Moss) in a Source of Wastewater

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Abstract

INTRODUCTION

Nowadays, human activities are mostly dependent on water sources. Along with these, people tend to neglect their value and cause changes in physical, chemical, and biological properties of water, which can make residents ill and damage the environment. Therefore, it is known that much of the water supply ends up as wastewater, which makes its treatment very important. An effective way in removing pollutants in wastewater is through phytodegradation, the breaking down of contaminants taken up by plants through metabolic processes and turning the absorbed contaminants into food. *L. glaucum*, from the family of Bryophyta (moss), has a physical structure that can absorb metals. Therefore, it is used as an active filtering and adsorption agent for the COD and BOD treatment of wastewater. This study was conducted to perform the phytodegradation process using *L. glaucum* in lessening the chemical oxygen demand and biological oxygen demand of a wastewater source.

METHODS

Parallel - Group Design was used in the study to compare the two sample groups. In this design, the experimental groups are the wastewater that underwent phytodegradation using 75 grams, 95 grams, 115 grams, 135 grams, and no amount of *L. glaucum*. The control group was the wastewater that didn't receive any form of ministration. The researcher compared the groups by analyzing their water quality. This study used only one process-phytodegradation. The effectiveness of the process was manifested on the result of the water quality tests after a month of incubation.

RESULTS

T-test was used in testing the significance between the pre-test and post-test of BOD having 35 mg/L, decreasing up to 7 mg/L, and COD having 72 ppm depleting up to 21 mg/L. Salient findings from the COD, BOD, and Water Quality tests such as TSS, TDS, Conductivity, pH & Salinity revealed that *L. glaucum* is effective in photodegradation wastewater. The wastewater that underwent phytodegradation with the most number of *L. glaucum* had the lowest chemical and biological oxygen demand.

DISCUSSIONS

It was proven that *L. glaucum* could decrease the COD and BOD of wastewater. Absorption of pollutants with the photodegradation ability of *L. glaucum* is a new efficient, environmental-friendly, and cost-effective alternative method in reducing contaminants on sewage. Escalating pollution on local canals should be stopped with the use of *L. glaucum* because plants and fishes harvested from such contaminated waters contain significant levels of the heavy metals that can impair human health.

KEYWORDS: wastewater, phytodegradation, biological oxygen demand, chemical oxygen demand

SUBMISSION ID: R04A-GENTRI-0014

Phytoremediation of Heavy Metal Contaminated River Water Using Bamboo Reinforced Sunflower

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CNSHS

Abstract

INTRODUCTION

The rapid increase in the urban population caused water pollution to the bodies of water in the Philippines. This problem dramatically affects Cavite due to its high dependence on water resources. Of all the chemical pollutants, heavy metals such as nickel, lead, cadmium, and zinc quickly became the most abundant and harmful substances due to the health hazards they can cause when consumed by unaware locals. The research study aimed to test whether bamboo-reinforced sunflower absorbs heavy metals from the contaminated soil and become an eco-friendly way of cleaning the river waters.

METHODS

The treatments were placed in the contaminated river water sample for seventy-two (72) hours. The treatments were transferred to a different location every six (6) hours to maintain the right amount of sunlight that the plant needs. After the experimentation process, the water samples were brought to Jefcor Laboratories inc. to undergo inductive Coupled Plasma Mass Spectrometry (ICP-MS). Three (3) trials were done for each test. The results were gathered and analyzed using One-Way Analysis of Variance.

RESULTS

After testing the samples, it was shown that the amount of nickel in the sample was reduced from 0.24 mg/L to 0.03 mg/L, the amount of zinc was decreased from 0.06 mg/L to 0.02 mg/L. On the other hand, the amount of lead remained unchanged at 0.05 mg/L, the amount of cadmium also remained unchanged at 0.01 mg/L. The F-value of the uptake of nickel and lead were 51.8481 and 72, respectively, which are both more significant than their corresponding F-critical value (21.1977). This means that there is a substantial difference in the amount of nickel and zinc on the treated and control sample. On the other hand, the F-values for Cadmium and Lead, which is 0 is less than their F-critical values, which are both 7.7086. This means that there is no significant difference in the amount of cadmium and lead between the treated and control setup. These results were obtained using the One-way Analysis of Variance (ANOVA).

DISCUSSIONS

Based on the results, the bamboo reinforced sunflower system is effective in reducing the amount of nickel and zinc in the contaminated water samples. However, the system is not effective against cadmium and lead, which is due to the different properties of heavy metal samples.

KEYWORDS: Phytoremediation, Bamboo, Sunflower, Heavy metals

SUBMISSION ID: R04A-CAVITP-0532

Plastic Bricks: A Waste Management Innovation

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Nadyn Mae B. Godoy, & Norgelyn M. Cantos
(Adviser: Lita De Castro)

Abstract

INTRODUCTION

Plastic is also one of the main concerns in waste management. The most common waste disposal method in Sto. Nino National High School is compost pitting. With the growing school population, the volume of solid waste continues to rise despite the school's efforts to regulate the amount of trash it disposes to the waste management system. This worsening problem has encouraged researchers to look for other ways to monitor and innovate the school's waste management for the benefit of the school and the community.

METHODS

Two methods were utilized to use plastic wrappers as an ingredient in brick production. The plastic wrappers were shredded. For the first set-up, a portion of the shredded plastics that were collected are liquefied and molded again. For the second set-up, partially liquefied plastic was allowed to harden and was pulverized. Some of the shredded plastics were used without undergoing the melting process. The crushed and the shredded plastics were individually mixed with binders and allowed to dry.

RESULTS

This study shows that shredded and melted plastics have great potential in brick production, particularly with plaster of Paris, which exhibited characteristics similar to the standard bricks in the market. Plastic can be utilized as either the main ingredient or an alternative aggregate in brick production. Plastic could be liquefied, hardened and pulverized, shredded to be used in alternative brick production. Liquefied plastic wrappers can be molded purely, or mixed with a binder to produce bricks. Partially liquefied plastics that have hardened are also pulverized and can be bound by an adhesive (either cement or plaster). The same with the shredded plastic, when linked with plaster and cement, produces bricks alternatives. Brick products created from different variables and conditions can be utilized in specific purposes upon which these products are most suitable. The alternative bricks lessen the plastic wastes in the community and at the same time, have particular characteristics similar to standard brick used in construction.

DISCUSSIONS

The researchers concluded that used plastic could be utilized as either the main ingredient or an alternative aggregate in brick production. Plastic wrappers can either be melted then hardened to form bricks, making it the central part. It could also be pulverized once cooled after partial melting or shredded, making plastic an aggregate in brick production.

KEYWORDS: Plastic bricks, Waste Management innovation, Experimental, Recycling

SUBMISSION ID: R04A-BATANC-0416

Powdered Mahogany (*Swietenia macrophylla*) Seeds Against Drywood Termites (*Cryptotermes cavifrons*)

Angelica D. Amores, Charlotte Mendieta, Cseth Marcus A. Martillano, Leanne Heart L. Dizon, Ma. Leighla Ysobel Canton, & Roel A. Mandala, Angelo Levardo Loyola Senior High School

Abstract

INTRODUCTION

Termites are a prominent problem to Filipinos everywhere - residents and the community in general. Drywood (*Cryptotermes cavifrons*) termite is a type of termite mainly found on wooden objects. These pests mostly feed on dead plant material and cellulose, which makes wood their primary source of energy and nutrients. Mahogany (*Swietenia macrophylla*) seeds have always been prominent in the municipality of Carmona. Its property flavonoids have the potential to be an effective termite killer but have not been tested further. This study aims to discover an alternative termiticide using mahogany seeds.

METHODS

The materials needed were gathered, 2 kg of mahogany seeds, 100 units of drywood termites, one bottle of commercial termiticide (Termex) and 10L of distilled water. After drying the seeds, these were crushed using a mortar and pestle. One hundred twenty-five grams of the powdered seeds were mixed with 350 ml of distilled water. The product was placed in a spray bottle and stored in room temperature. The mahogany seeds solution was sprayed in a container with 15 termites using the time interval of 5, 10, 15, 20, 25, and 30 minutes. The same process is applied using commercial termiticide, and all trials were replicated thrice.

RESULTS

Using the commercial termiticide, the mortality rate of each trial resulted in 15. Thus, the mean mortality rate of the trials is also 100. However, using the alternative termiticide, the mortality rate of each trial are as follows: 100, 73.33, and 93.33, which resulted in a mean mortality rate of 88.89. The alternative termiticide took a longer time interval to eliminate most of the Drywood termites while the commercial termiticide took about five minutes to remove all the termites in each trial. The results showed that on the first 4-time intervals, there was a significant difference in the mean mortality rate of termites treated with the two products. However, after the 25-minute time interval, it showed no significant difference between the mortality rates using the two products, which implies that the alternative termiticide is also active like the commercial product.

DISCUSSIONS

Based on the data, commercial termiticide is indeed effective as it is. It showed its effectivity within minutes after application. Although the mahogany seeds solution did eliminate the termites, it showed its effectivity after 25 minutes. Thus, it can be concluded that the mahogany seed solution can be used as an alternative termiticide, but it is not as effective as the commercial termiticide.

KEYWORDS: Drywood termites, mahogany seeds, mortality rate, termiticide, termex, two-tailed t-test

SUBMISSION ID: R04A-CAVITP-1283

The Management on CFC-Producing Energized Electrical Equipment for the Rehabilitation of the Ozone Layer

Geraldine Obina, Department of Education

Abstract

INTRODUCTION

The management of chlorofluorocarbon (CFCs) helps to decrease ozone depletion and global warming all over the world. CFCs react with the ozone layer, creating a hole that exposes the surface of the earth to stronger UV radiation. Unfortunately, CFCs are used for various purposes and are used in refrigerants, aerosols, and solvents. It is essential to know the things that produce CFC to understand how to reduce CFC production.

METHODS

For analyzing the management of CFC, the researchers developed a questionnaire study. By using random sampling, a sample of 150 senior high school students was selected from Urdaneta City National High School (UCNHS) of Urdaneta City, Pangasinan. Based on the study, the majority of the respondents had a refrigerator at home. Based on their statements, their refrigerators had the most extended average usage (in years).

RESULTS

By using analysis of variance, results of this study show that there is no significant difference in the reduction management of CFC in the implementation of CFC-producing products, equipment usage and consumption, and recycling management. Based on the given statements, the overall ANOVA is 110.793, the Sig (p-value) is 0.478, the interpretation is significant, and the decision is to accept the hypothesis.

DISCUSSIONS

The results illustrate that students of UCNHS can reduce the usage of appliances that produce CFCs. The school should integrate into the curriculum the teaching and reducing the usage of appliances that produce CFCs.

KEYWORDS: reduction management, CFC, equipment, rehabilitation

SUBMISSION ID: R001-URDANE-0015

Reefcyclables: Innovating the Existent Artificial Coral Reef Design by Harnessing the Latency of Industrial Pollutants

Currie Exekiel D. Pariñas & Dan Francis A. De Castro
(Adviser: Louie-Zel Pedro)

Abstract

INTRODUCTION

The province of Cavite is widely known for its extensive coral reefs, encompassing a fifth of a square kilometer (0.20 sq. km.) in Maragondon, Cavite alone. The vicinity of the area is under the coverage of the "coral triangle." Out of nine coral reef stations are found in the region of Cavite, six are marked of good health (25-49.99% healthy) and, the remainder is described of poor health, corresponding to 0-24.99% coral quality. What if there is a way to reduce the impact of pollution and, help the marine ecosystems of the city to replenish in one fell swoop? Such is the reason why the researchers have formulated the "Reefcyclable," a structure which aims to harness the capability and potential of industrial waste and, reuses them as materials to construct an artificial coral reef design.

METHODS

This project was designed and formulated to be a general solution to these two problems, reducing the pollution that humanity causes while at the same time, provide substrate and nourishment for the recovery of coral reefs. The Reefcyclable, constructed from cement, Styrofoam chunks, and organic refuse such as Calcium carbonate (CaCO_3) derived from eggshells were built innovatively, being durable and large despite the use of minimum resources.

RESULTS

The researchers for assumptions highly expected the data results were based on a few studies conducted regarding coral reef as well as logical analyzations and correlations of specific phenomenon such as the composition of eggshells and coral. It was found out that the Reefcycleable formed with industrial waste is of more significant strength and sturdiness contrasted to a robust cement model. Also, the addition of Calcium Carbonate on the Reefcycleable promotes the increase of water alkalinity to 7.7 or higher, positively revitalizing coral and countering rising water acidity. The Reefcyclable also successfully contains stable plastics until the time of its degradation essentially acting as a safe storage unit preventing water pollution.

DISCUSSIONS

The ACR was seen to effectively increase the alkalinity of acidic seawater from a pH level of 5 to 9, which is needed by corals to thrive and build their exoskeletons. The Reefcyclable can also withstand and resist complete obliteration despite being dropped from a height of 150 cm, being only reduced to large pieces. Finally, the Reefcyclable was seen to alleviate the difficulty of transportation due to its lighter weight of 51.2 Kg compared to the 68 Kg of solid cement.

KEYWORDS: Artificial Coral Reef, Recycling, industrial Pollutants

SUBMISSION ID: R04A-CAVITC-0134

Removal of Iron in Aqueous Solution Using Coconut (*Cocos nucifera*) Husk as Adsorbent

April O. Castillo, Angelo Levardo Loyola Senior High School
(Adviser: April O. Castillo)

Abstract

INTRODUCTION

Carmona, Cavite is known for its agricultural settings beside of its growth and development regarding technology and industry. With this in mind, admittedly, there are large numbers of agricultural wastes that can be found in this municipality and one of them is the coconut husk. in this case, coconut (*Cocos nucifera*) husk as a large-numbered waste byproduct, was utilized as a potential adsorbent in the removal of iron in an aqueous solution or in addressing the problem of iron contamination on drinking water.

METHODS

Materials needed for conducting the study were gathered and prepared. Coconut husk underwent washing, sun drying for two days, and the coir and shell were separated. It was then powdered and sieved into particles and kept in bags containing the respective mass of adsorbents. The aqueous solution was prepared by contaminating a liter of distilled water using 25 mL of 1000 ppm iron chloride solution. There were a total of nine 100 mL water contaminated with iron that underwent column chromatography, together with 20 grams of the adsorbent, either coir, shell, or a proportion, for each trial.

RESULTS

Each set-up had three trials each with 11.536 ppm as initial concentration of iron in the solution. Atomic Absorption Spectrophotometer (AAS) was used to pre-test and post-test the aqueous solution. for set-up 1, the treatment of solution using 20 g of coconut coir gave an average concentration of 2.005 ppm of iron left in the contaminants. Using 20 g of coconut shell only as an adsorbent presented 2.228 ppm as an average concentration of iron left in the aqueous solution. for the last set-up, a proportion of both coconut coir and husk was used in the treatment and led to 2.502 ppm of the average concentration of iron left in the solution. By percentages, 82.62% of iron was adsorbed by the coconut coir, 80.69% of iron for the coconut shell, and the proportion of both adsorbed 78.31% of the iron in the solution. The data above were statistically treated using mean average and f-test of the two-way analysis of variance.

DISCUSSIONS

Findings show that there is a significant difference between the amount of iron present in the aqueous solution before and after the treatment of the adsorbents. in terms of the adsorptive property of iron, coconut coir had the highest, followed by the coconut shell, and lastly by the proportion of both coconut coir and shell.

KEYWORDS: iron contamination, coconut husk, adsorbent, coconut coir, chromatography, Atomic Adsorption Spectrophotometer (AAS)

SUBMISSION ID: R04A-CAVITP-1226

**Sodium Polyacrylate and NPK Resources as Alternative Soil for Okra
(*Abelmoschus esculentus*) Plant**

Dixie Aerica Sisracon & Yasmin Angon, Bucal National High School

Abstract

INTRODUCTION

Soil is essential for plant growth because it provides support for plant roots and serves as a medium for the uptake of minerals and nutrients. But nowadays, agricultural uses of soil seem to have declined due to rapid urbanization and land conversion, which results in the compelling need to find alternatives. Hence, the researchers investigate the use of sodium polyacrylate with NPK resources as an alternative for growing okra.

METHODS

This study was investigated using two set-ups with five replicates each. Set-up A, which served as the control, uses an ordinary loam soil. Set-up B, which is the experimental set-up, was prepared using 640g of sodium polyacrylate mixed with 12g of powdered squash seeds, 12g of goat manure and 12g of sweet potato peelings using a predetermined ratio.

RESULTS

Results revealed that in terms of height, sample okra plants were grown in natural soil has a mean height of 23.29 while those grown in alternative soil has a mean height of 30.26 cm. in terms of the mean length of leaves sample okra plants grown in natural soil have a mean value of 7.56 while those grown in alternative soil has a mean value of 7.67. Furthermore, 5 leaves were absorbed from sample okra planted in natural soil while the mean obtained for sample planted in alternative soil is 5.5.

DISCUSSIONS

Result shows that okra plants grown in the experimental set-up are significantly taller.

KEYWORDS: Okra, alternative soil

SUBMISSION ID: R04A-CAVTP-1615

Sound Harvesting And Collecting (SOHACO) Device: As An Alternative Source of Generating Electricity

Josep Russell Paez

Abstract

INTRODUCTION

The rise of a different kind of pollution now is alarming - especially, noise pollution that can be heard wherever you go. In line with this, the researchers come up with a device called "Sound harvesting and collecting (SOHACO) device." It helps to make noise pollution as an advantage that can benefit society. The researchers created the device for sound energy. Correctly, noise can be used as an alternative source of generating electricity. This research aimed to convert sound energy that depends on its intensity level concerning the amount of voltage that can be generated.

METHODS

Researchers used experimental design when conducting the study by testing the device in a highway along Gensan Drive and KCC Mall of Marbel, specifically in the World of Fun. The effectiveness of the method was measured based on durability and capability when harvesting and collecting sound waves and its efficiency in converting it into volts.

RESULTS

The findings we've gathered has emerged as follows: 1) 2.43v is the grand mean of highway that gathered in 3 consecutive days. 2) 3.43v is the grand mean of the mall that gathered in 3 successive days. And 3) mall has a higher grand mean compared to the value of volts that accumulated in a highway.

DISCUSSIONS

It was found out that the effectiveness of the device was based on the highness or lowness of the sound waves collected considering the number of electric currents. But the amount of voltage can still be beneficial to all.

KEYWORDS: sound harvesting; electricity generation

SUBMISSION ID: R012-KORONA-0007

Species Vulnerability of Mangroves to Climate Change in Calatagan, Batangas

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(Adviser: Mario Cudiamat)

Abstract

INTRODUCTION

Mangroves are amongst the most vulnerable ecosystems to the threats of climate change worldwide. Considering its ecological, social, and economic benefits to coastal communities; anthropogenic pressures and extreme climatic events still influence its overall vulnerability. In this study, the species vulnerability was assessed in terms of exposure to stresses, sensitivity, and adaptive capacity to develop conservation and management program for the mangrove species.

METHODS

The study utilized the Mangrove Species Vulnerability index (MSVI) proposed by Cudiamat (2018). The vulnerability assessment made use of 16 measurements, which specifically evaluated the species' exposure, sensitivity, and adaptive capacity through the ranking method. These include determining mangrove forest health, adjacent ecosystem resilience, the extent of effects of human impacts, and the environmental conditions of different mangrove species in ten (10) 10m x 10m quadrats.

RESULTS

Seven (7) mangrove species were identified taxonomically namely: *Sonneratia alba*, *Rhizophora mucronata*, *R. apiculata*, *Avicennia marina*, *Bruguiera cylindrica*, *Aegiceras corniculatum*, and *Ceriops decandra* in the ten quadrants. *S. alba* has the lowest vulnerability with an MSVI of 2.31, followed by *A. marina*, *R. mucronata*, and *B. cylindrica* with an MSVI of 2.38, 2.50, and 2.50 respectively. The results showed that these mangrove species have high resiliency, which attributes to its structural and adaptive capacity. On the other hand, *A. corniculatum* and *C. decandra* have an MSVI of 3.19 and 2.69 respectively, which showed moderate vulnerability. The findings revealed that *S. alba*, followed by *A. marina* is climate-resilient mangrove species. From the result, it was found out that *A. corniculatum* and *C. decandra* are vulnerable to climate change.

DISCUSSIONS

Based on the results of the MSVI, mitigation and adaptation measures to better conserve and manage these mangrove species should be done, specifically for *A. corniculatum* and *C. decandra*, which is a threatened species declared by international Union for Conservation of Nature (IUCN). Programs for future mangrove conservation and reforestation that will empower the local community for the mangrove species management should be considered.

KEYWORDS: mangroves, species vulnerability, climate change

SUBMISSION ID: R04A-BATANP-0147

Synergistic Effect of Seaweed (*Phylum ocrophyta*) and Water Lily (*Nymphaeaceae alba*) Extract as Catalysts for the Rapid Germination of Mangrove Seeds

Jones D. Impuesto & Ace Brylle I. Lina
(Adviser: Jomel Montero)

Abstract

INTRODUCTION

The mangrove forest is the home of a thousand species of marine organisms on earth. It provides a range of ecosystem services, including coastal protection, carbon sequestration, and marine diversity conservation. One of the undying problems worldwide is on the non-stop deforestation of mangrove forest. In the Philippines, the government implemented several projects on mangrove reforestation; however, mangrove seeds require a long period of germination. Since there were limited studies conducted on germinating mangroves using catalysts, this study was conducted to explore other mediums for the high rate of germination using locally available seaweeds and water lilies.

METHODS

An experimental research design was employed using a parallel-group design. A total of 18 samples of mangrove seeds were submerged to 50 percent concentration of seaweed and waterlily extract (experimental variable) while there were 18 samples treated under 100 percent concentration of brackish water (control variable). After one-month observation, data were collected using the ruler to measure the length of the longest roots sprouted from the mangrove among the experimental and control group. Afterward, the data was analyzed using mean values and a T-test.

RESULTS

Results revealed that the average difference between the initial and final roots of the control variable gained 24.77 mm while the experimental obtained 30.72 mm out of 18 mangrove seeds sprouted. The study also revealed that there is a significant difference between the initial and the final roots of the experimental and control group at 0.05 level of significance.

DISCUSSIONS

The overall results imply that the tandem of seaweed and waterlily extract has a vast potential to be a catalyst for the rapid germination of mangrove seeds, since, the average length difference (final-initial roots) of the experimental group is higher than the control one. The significant difference in the results confirmed that there is a vast difference in the experimental group compared to the control one in terms of their root length difference, which implies that the tandem of the seaweed and water lily extract rapidly germinate the mangrove seeds.

KEYWORDS: Synergistic Effect, Seaweed, Water Lily, Rapid Germination, Mangrove Seeds

SUBMISSION ID: R013-SURSUR-0158

**The Extent of Environmental Sustainability and Stewardship Practices
of Junior High School Students in Looc National High School: Inputs to
the Disaster Risk Reduction and Management Plan**

Bryan Hernandez, Teacher 1

Abstract

INTRODUCTION

Environmental sustainability and stewardship play a vital role in the advancement of the understanding of students regarding ecological awareness. Relative to this, the researcher conducted this study, which aimed to assess the extent knowledge and awareness of Junior HS students in Looc National High School as regards to environmental sustainability and stewardship practices.

METHODS

The study employed the descriptive research design, which made use of survey-questionnaire in gathering the necessary data. The respondents of this research were fifty (50) students every grade level for the Academic Year 2017-2018. Tree-planting activities, waste reduction, and segregation recycling and composting, freshwater/marine conservation and forest management while reforestation programs, solid-waste, and resilience-based ecosystem management were the indicators to assess environmental sustainability and stewardship of school.

RESULTS

The study revealed that recycling and composting got the highest weighted mean, while tree-planting activities received the lowest weighted mean. In terms of environmental stewardship, resilience-based ecosystem management received the highest weighted mean, while reforestation programs got the lowest weighted mean. Thus, there is a significant correlation between sustainable school communities and the practices done in terms of environmental sustainability and stewardship. However, there is a substantial difference between the environmental sustainability status and stewardship as assessed by the students.

DISCUSSIONS

A Disaster Risk Reduction Management Plan was designed and served as an input to strengthen environmental sustainability and stewardship in the school community.

KEYWORDS: environmental sustainability, stewardship, Junior HS students, disaster, risk reduction

SUBMISSION ID: R04A-BATANP-0052

The Effectiveness of Generating Electricity Using a Dynamo Connected to the Wheel of Tricycle

Guerra, Eisen G. & Laurito, Danilo Ds.

(Adviser: Roxanne Maglaya)

Abstract

INTRODUCTION

Tricycles are abundant and are used as a means of transportation in the daily lives of citizens in Carmona. These vehicles generate mechanical energy that came from chemical energy that makes the wheels turn. The mechanical energy that it generates can be used aside from transportation. With this, the researchers came up with the idea of creating a device that will generate electrical energy from the mechanical energy of the wheels while the vehicle is used for transportation.

METHODS

The study used parallel-group design wherein it has three experimental groups; charging in a tricycle at 25 kph for 10 minutes, 20 kph for 10 minutes, and ten kph for 20 minutes; and one control group; charging in the socket for 10 minutes. Since tricycle is the most common means of transportation in the locality, the researchers chose it as the vehicle to be tested. The device has been made using the materials. Then the device was attached to the wheel of the tricycle. The tricycle was run to generate electricity. The data, which is the percentage of the battery, was then collected. This study used t-test as a statistical tool.

RESULTS

According to the results, there is a significant difference between the mobile phone charged in the socket for 10 minutes and the one electrically charged in the tricycle at 25kph for 10 minutes. There is no significant difference between the 25kph for 10 minutes and 20kph for 10 minutes. Same with ten kph for 20 minutes and 20 kph for 10 minutes.

DISCUSSIONS

The researchers concluded that the generator used was not useful in charging the mobile phone. The researchers recommended to use a different dynamo and to increase the duration of the experiment.

KEYWORDS: Tricycle, Mechanical Energy, Dynamo, Electrical Energy

SUBMISSION ID: R04A-CAVITP-0616

The Effectiveness of Tinik Bamboo (*Bambua Blumeana*) Charcoal in Adsorbing Harmful Compounds in Smoke Emitted by Tricycles

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(Adviser: Roxanne Maglaya)

Abstract

INTRODUCTION

Tricycles are three-wheeled vehicles, which are the most common means of public transportation in the provinces of the Philippines. With such big numbers, these vehicles have been one of the main contributors to a large amount of smoke in the country. Carbon dioxide (CO₂), Carbon monoxide (CO) and Hydrocarbons (HC) are the major chemical components present in the smoke emitted by tricycles. The researchers aimed to reduce these harmful compounds in the smoke emitted by tricycles by using a filter made out of Tinik bamboo.

METHODS

The researchers made charcoal out of Tinik bamboo by carbonizing it. The charcoal was then inserted into a cylindrical container made out of metal screen and wires. Ten tricycles underwent smoke test without filter; they have tested again with the filter. The researchers recorded the initial smoke test result and compared it with the result after the treatment. T-test for the correlated sample was used as a statistical tool to compare the results before and after.

RESULTS

The computed T-value of Carbon dioxide was 4.06, while the computed T-value of Carbon monoxide was 2.70. Carbon dioxide and Carbon monoxide are beyond the t-critical value of 2.262 at .05 level of significance with 9 degrees of freedom proved that there is a significant difference between the data of the two pollutants before and after the treatment. The computed T-value of Hydrocarbon was 2.02. Hydrocarbon is below the t-critical value of 2.262 at .05 level of significance with 9 degrees of freedom proved that there is no significant difference between the data of Hydrocarbon before and after the treatment.

DISCUSSIONS

The result showed that there is a significant difference in the amount of CO₂, and CO before and after the treatment wherein the amount of harmful components found in smoke decreased. While Hydrocarbon showed no significant difference before and after treatment; thus, the filter was proven to be effective in adsorbing CO₂ and CO only.

KEYWORDS: Tricycles, Tinik bamboo, charcoal, chemical components, adsorption, filter

SUBMISSION ID: R04A-CAVITP-0573

The Efficacy of Clam Shells and Coconut Spathe Fibers as Adsorbent of Carbon Monoxide (CO) in Tailpipe of Gasoline Powered Vehicle

Samantha Bantilan, Student

Abstract

INTRODUCTION

Economic development is required to lessen the country's poverty. Along with this progress are the investments in transportation. However, the rapid development of the Philippines, particularly in transport, also leads to the increase of greenhouse gasses (GHG) pollution. They are given that as the country's economic developed, there is an increase of GHG. Thus, methods for mitigating the atmospheric release of CO needed to be developed. Therefore, the researcher aims to test the efficacy of clamshell and coconut spathe fiber (CSF) as an adsorbent of carbon monoxide (CO) in the tailpipe of gasoline powered vehicle.

METHODS

The research study used the experimental method using two-group design. The Clam Shell and coconut spathe fiber were utilized in the entire study. The selected tailpipes are categorized into two (2); group 1 named CC (clamshell and coconut spathe) and group 2 called GAS. Both of them have undergone first on the emission testing to determine the amount of CO emitted by the combustion of gasoline- powered vehicle. The CC group was applied with Tailpipe Air Filter within three weeks and served as the experimental group while the GAS group remained the same and did not receive any treatment.

RESULTS

The vehicle that remained constant and did not use the tailpipe air filter, it has the percentages of 0.67, 0.66%, 0.70%, and the average is 0.68%. While for the vehicle with the application of tailpipe air filter, it has the percentages of 0.48%, 0.25%, 0.51% and it has an average of 0.48%. The result indicated that there was a highly significant difference between the emission of carbon monoxide from the exhaust of gasoline-powered vehicle with the application and without the use of tailpipe air filter with the p-value equals 0.0338.

DISCUSSIONS

The results revealed that clamshell and coconut spathe fibers are useful as adsorbent of carbon monoxide (co) in the tailpipe of gasoline powered vehicle. Based on the study, it was revealed that the calcium carbonate content of the clam shell and the potential of coconut spathe fibers (CSF) as bio-filter against air pollution emitted by the gasoline-powered engine was proven. There was a high amount of carbon monoxide emitted from the exhaust of gasoline-powered vehicle without the application of tailpipe air filter, and there was a low amount of carbon monoxide emitted from the exhaust of gasoline-powered vehicle after the implementation of tailpipe air filter within 21 days.

KEYWORDS: clamshell, coconut spathe fibers, carbon monoxide, gasoline-powered vehicle

SUBMISSION ID: R04A-CAVITP-0677

**The Level of Implementation of the National Greening Program (NGP)
in the Division of Cabuyao, Calamba, and Laguna; An Input for School
Improvement Plan**

Ronnie Traballo, Mamatid Elementary School

Abstract

INTRODUCTION

The Philippines face different environmental issues and problems; it includes pollution, illegal mining and logging, deforestation, dynamite fishing, landslide, coastal erosion, wildlife extinction, global warming, and climate change. Hence, the Philippine government established the NGP by Executive Order No. 26. Department of Education issued a Memo No. 58, s. 2011 entitled Creating the Task force on NGP. Issuance of the Implementing Guidelines on the integration of Gulayan sa Paaralan, ESWM, and Tree Planting. The school plays a vital role to help the government to lessen the environmental problem and attain the goal and objective of the NGP. The program envisioned the learner in different learning aspect. Educating children on modern educational and refined technology may offer a prospective solution to environmental issues and problem.

METHODS

A descriptive-evaluative study was conducted to assess the extent of implementation of the NGP. The respondents were teachers, NGP Coordinators, and 8 CENRO Personnel in the research locale. The validated research-made instrument highlighted the components and areas for evaluation of NGP, which include Gulayan sa Paaralan, Ecological Solid Waste Management, Tree Growing, and Caring. Mean, Standard Deviation, One-Way Analysis of Variance (ANOVA), and t-test were used as statistical tools in treating the data.

RESULTS

The analysis revealed that the teachers, NGP coordinators, and CENRO personnel have a comparable mean assessment in all components of NGP. No significant difference was found between the mean evaluation of NGP coordinators and CENRO personnel in the level of implementation of the assessment of NGP.

The null hypothesis stating that there is no significant difference in the level of implementation of the NGP was accepted. NGP coordinators and CENRO personnel comparably assessed that the program appropriately implemented in all its areas for evaluation.

DISCUSSIONS

The administration, school head, and NGP coordinators need to sustain the provided implementing guidelines of the NGP in the school. Build up resources and mobilized the implementation of the program and request the support of the community. It must encourage private sectors, LGU's, NGO's, industries, and other stakeholders to participate in every school activities, especially under the NGP. All public schools must include NGP program components in the formulation of enhanced School Improvement Plan (SIP) to strengthen the implementation and sustainability of the program.

KEYWORDS: National Greening Program (NGP), Monitoring and Evaluation, School Improvement Plan (SIP)

SUBMISSION ID: R04A-CABUYA-0037

Tri-Bin: Constructing and Evaluating Fishpond Water Waste Filtering System

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Abstract

INTRODUCTION

The need for clean water in the environment has been a significant problem in society. Fishponds, as part of the urban community, became a waste disposal place nowadays. The presence of different water wastes and harmful chemicals in water source may leave a threat to the lives of aquatic animals as well as the community. Therefore, as a response to this situation, researchers constructed an enhanced product named as Tri-Bin that can collect and filter lead for cleaner water quality.

METHODS

The Tri-Bin has three layers: plastic collector, water filtrate, and way-out. In constructing a Tri-Bin, the process is divided into four phases. First, a gathering of materials then construction. The third phase, testing of the product in actual set up, involves three tests. First, an acceptability survey, which is answerable by yes or no rubrics, was administered to random respondents. The results were interpreted using the Likert Scale. Second, the product was tested in the pond to determine its ability to collect plastics. Using a t-test independent, researchers evaluated the waste collected and if Tri-Bin was able to filter lead content.

RESULTS

Researchers found out that seven (7) out of ten (10) respondents agrees that it is acceptable in terms of appearance, stability, and durability. In determining lead content, two were tested using Ultraviolet Spectrophotometric equipment. The mean 91.32 lead content in initial and 60.71 in the filtered sample showed a decrease of lead content. Furthermore, the test of dependent means proves that there is a significant difference between the two samples since the computed value of 2.91 is higher than the critical value of 2.215.

DISCUSSIONS

The research was able to prove that there is a decreasing amount of plastics and filtering of lead from the water with water sources having plastic collecting and filtering system both in one product, Tri-Bin. The present study found out that it can filter lead in water. Also, the acceptance of Tri-Bin has adequate and satisfactory rate to ten respondents. Lastly, the evaluation of research outcomes shows that Tri-Bin can collect plastics even after several used. In conclusion, these results clearly show that the constructed Tri-Bin is approved to public & standard and recommended as a water filtering system for fishponds.

KEYWORDS: tri-bin, ultraviolet spectrophotometer, activated carbon

SUBMISSION ID: R04A-CAVTP-0233

Used Diapers and Waste Papers as Alternative Fertilizer: A Comparative Study

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Abstract

INTRODUCTION

in some agricultural fields, fertilizers were being used to supplement the required elements that were found naturally in the soil. These were materials that provide one or more nutrients that plants need, helping to improve soil's physical and chemical properties, and raising soil fertility. on the other hand, papers and diapers were material which was commonly used by humans in their daily living. in this study, we wanted to lessen the environmental waste and at the same time, produce an effective organic fertilizer to be an alternative to expensive fertilizers in the market.

METHODS

This study used an experimental research design for gathering, analyzing, and interpreting data. The study focused on the significant differences in terms of efficiency on the growth of pechay plants (*Brassica Rapa*) between three soil mixtures ($\frac{3}{4}$ loam soil and $\frac{1}{4}$ waste paper vermicompost, $\frac{3}{4}$ loam soil and $\frac{1}{4}$ hydrogel, and $\frac{3}{4}$ loam soil and $\frac{1}{4}$ ammonia). Specific data was collected using mechanical tools, specifically ruler, weighing scale and SpeakColor, a smartphone application developed by RamelTec in determining the exact color of the leaves.

RESULTS

A five-week long experiment was conducted and, specific characteristics were observed, such as the height, weight, color of leaves, and several leaves. After the experiment, in terms of height, weight, and several leaves, hydrogel had the most extended average value, most massive and had the most number of leaves followed by commercial fertilizer then lastly the vermicompost. Therefore, it was concluded that there was no significant difference in using waste paper vermicompost, hydrogel, and commercial fertilizer in concern with the growth of the pechay plant. However, the color was recorded by the aid of observation, and the researchers obtained the different intensity of colors. Hydrogel extracted from diapers had the darkest shade of green followed by commercial fertilizer then vermicompost.

DISCUSSIONS

This research study concluded that hydrogel had the highest mean but, vermicompost and hydrogel had almost achieved the same result as the commercial fertilizer. Therefore, hydrogel and vermicompost can be considered as an alternative fertilizer with low cost, but with the same efficient result as the commercial fertilizer.

KEYWORDS: *Brassica rapa*, hydrogel, vermicomposting

SUBMISSION ID: R04A-BATANC-0175

Utilization of Mahogany Fruit Shell (*Swietenia Mahogany*) as a Material for the Production of Cork Board

Jamaica M. Hernandez, Student
(Adviser: Anabelle Hernandez)

Abstract

INTRODUCTION

Mahogany is a kind of wood that is straight-grained, reddish-brown timber of tree tropical hardwood species of the genus *Swietenia*. Cork boards allow the showcase of notes, art, and reports. It is easy and quick to post items on a cork board. Schools and businesses can post and cycle announcements, decorations, lists, and reports quickly and frequently using cork board. The essential of mahogany fruit shell is the basis of the researcher for conceptualizing the study titled "Utilization of Mahogany Fruit Shell as a material for the production of cork board.

METHODS

in order to produce an eco-friendly board, I pulverized the mahogany fruits in a small basin and set aside. Dissolved the corn starch in hot water then mixed the mahogany fruit shell. Flattened the mixture in the molder and dried it up under the heat of the sun. The study used different types of experimental research. Series of observation were made from different trials and setups. These studies undergo phytochemical analysis at industrial Technology Development institute- STD at the DOST last August 24-25, 2018.

RESULTS

Different trials and setups helped the researchers to find the efficiency and durability of Mahogany fruit shell as an Eco- friendly cork board. The mahogany fruit can hold an object, which is the same as the ability of the commercial board. The product can be served as an alternative board for the instructional materials used by the students, teachers, and some office workers in organizing documents and files. The chemical compounds that are present in the mahogany fruit that can be used in making an alternative Eco-Friendly Cork Board are alkaloids and saponin that is known to have activity against pathogens and therefore aid the antimicrobial activities, as alkaloids can protect the plant from certain insect species.

DISCUSSIONS

This study entitled "Utilization of Mahogany Fruit Shell (*Swietenia Mahogany*) as a material for the production of Cork Board" aims to produce less expensive, safe, efficient, and Eco-friendly product that is made with natural materials. The experiment proved that this product is competent, efficient, and safe from any harmful insects. The researchers recommended doing further research to find more innovative technologies to improve the quality of the product. The researcher also suggested to promote and encourage to used this product in the community, to the company who manufacture board to test its effectiveness.

KEYWORDS: eco - friendly, utilization, conceptualization, cork board, essential, mahogany fruit shell

SUBMISSION ID: R04A-BATANC-0313

Utilization of Ripe Carabao Mango (*Mangifera indica*) Peel Extract as a Biostimulant for Rice Plant (*Oryza sativa*)

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(Adviser: Maria Cristina Miranda)

Abstract

INTRODUCTION

Population growth has exceeded rice yield growth since the mid-1990s and the gap has been growing steadily larger, creating a significant imbalance between supply and demand. Moreover, total factor productivity has been declining, meaning that farmers now have to use higher amounts of inputs to obtain the same yields as before. Widespread hunger and malnutrition, especially in Asia, made it clear that production of rice needed to increase to avoid famine. The purpose of this study is to assess the capability of ripe carabao mango peel extract in increasing rice yield.

METHODS

Mango peels were washed, dried, cut to pieces, and soaked in 95% ethanol for 8 hours. The mango peels were then wrapped in filter paper and loaded in the main chamber of a Soxhlet extractor. The ethanol with the extract was collected and evaporated using an evaporating dish in a water bath. Four setups with three two-month-old rice plants in each setup were then prepared. Finally, the obtained extract was diluted for 0%, 25%, 50%, and 75% concentration, and was applied to the rice plants.

RESULTS

After two weeks of application, data was gathered and analyzed. Analysis of Variance (ANOVA) was used to interpret the results for rice height and weight. Both F values were higher than the critical values for rice height and weight, so the null hypotheses are rejected, which means that there is a significant difference between rice height and weight at different levels of extract concentration. Greater height and weight were observed at higher concentrations. The relationship of these to rice yield was then interpreted using the Pearson-R Correlation Test. The obtained correlation coefficient was positive and higher than 0.7, showing a robust positive correlation between rice height and weight, and rice yield. As the height and weight increases, yield also increases.

DISCUSSIONS

The results demonstrate that ripe carabao mango peel extract is an effective biostimulant for rice plant. It is recommended, however, to apply the extract during the early growth stage of the rice plant and for a more extended period; to see its effects more clearly. Further study for improvements will allow the extract to be utilized both agriculturally and economically.

KEYWORDS: Biostimulant, *Mangifera indica*, *Oryza sativa*, Peel Extract, Rice Yield, Soxhlet Extraction

SUBMISSION ID: R04A-STAROS-0014

Utilizing *Citrullus lanatus* (Watermelon) Rind Extract to Reinforce Cement

Allysa Marielle Caintic, Angelo Antonio, & Charlie Milaya, ETTMNHS

Abstract

INTRODUCTION

Nowadays, houses are made up of concrete because of its risk-less when it comes to disasters, yet they may have cracks in a long time. For the improvement of the cement, this study focused on the potential of the watermelon rind as an eco-friendly and safe cement reinforcer. The present research extremely aimed at the examination of utilized watermelon rind to reinforce the cement, whether it is comparable to the commercial ones or not.

METHODS

This study used an experimental research design for the strength of two types of cement. The procedure of the study involved authentication, gathering of materials, extraction, and testing. We used improvised compression stress consisting of the block of cement, wood, and a tricycle for the testing phase. We used a Likert scale as a rating for the appearance and odor of the cement in response to 5 different people. We used t-test of independent samples because the two variables, namely the reinforced cement and the commercial cement, do not influence each other.

RESULTS

The results are that the strength of the reinforced cement had a mean of 17, while the commercial one had a mean of 15.33. With the calculated t-value of 2.5 compared to 3.18 as the critical value, it is concluded the there is no significant difference between the two types of cement. For the appearance, a mean of 3.6 for both types of cement was obtained. Due to this, it had been concluded that there is no significant difference between two types of cement (0 as calculated t vs. 2.45 as the critical value.) For the odor, we got a mean of 2.4 for the reinforced cement and 4 for the commercial cement. With the calculated t-value of -4 and the critical value of 2.61, it is concluded that there is a significant difference between the two types of cement but in favor of the commercial one.

DISCUSSIONS

Based on the results obtained, we found out that the extract does not strengthen the commercial cement, acceptable in terms of its appearance but unacceptable for the odor of the reinforced cement. This study made and used only improvised compression stress, so it is recommended for the future researchers to used constant compression stress to become their research study more reliable than that we made.

KEYWORDS: watermelon rind, cement, Likert scale, fiber

SUBMISSION ID: R04A-CAVTP-0397

**Vegetation Analysis, Assessments of Blue Carbon and Stakeholders'
Mangrove Awareness and Understanding (MAU) in Calatagan,
Batangas: A Basis for a Proposed Model for Mangrove Conservation**

Dino Busilig, Department of Education Batangas- Calatagan NHS

Abstract

INTRODUCTION

The continuous conversion of mangrove ecosystem to coastal development into aquaculture area, land conversion to the residential and commercial area have a tremendous impact in the release of carbon dioxide in the atmosphere. This event is one of the primary causes of worsening the impact of climate change. The roles of mangrove forests to sequester substantial amounts of "blue carbon" and store in its biomass and sediments considered as "super carbon storage" can make a significant change. The importance of the mangrove ecosystem was neglected and overlooked for hundreds of years resulted in drastically decreased in mangrove areas all over the world. This study assessed the vegetation and carbon stock of mangroves on five coastal barangays in Calatagan, namely: Bagong Silang, Balibago, Carretunan, Quilitisan, and Sta. Ana.

METHODS

This study made use of the descriptive comparative method of research, transect plot technique and reconnaissance survey, allometric equation of determining total biomass and carbon stock, and ANOVA for the mangrove awareness.

RESULTS

The study revealed that *Avicennia marina* occupied the greatest number of species in Bagong Silang, Carretunan, Quilitisan, and Balibago with Importance Value Index of 84.49%, 51.70%, 97.53%, and 112.81% respectively. The MPA of Sta. Ana has the highest aboveground biomass with 113357.21 kg, belowground biomass with 43485.56 kg, and total biomass of 156842.76 kg. In terms of organic carbon storage, the MPA of Bagong Silang has the highest carbon stock of 12557.60 t/ha. Bagong Silang also has the highest CO₂e, equivalent of 46086.41 t/ha. Diversity indexes of Bagong Silang (1.6864) Balibago (2.1891), Carretunan (2.2062), Quilitisan (1.2404) and Sta. An, (1.2408). Carretunan has the highest diversity index. The study found out that the students compare to parents and teachers has the lowest awareness in terms of ecological, economic, and social aspects of mangroves. Using ANOVA, a p-value of 2.015×10^{-16} means that there is a significant difference in the awareness of the respondents. This result rejected the hypothesis.

DISCUSSIONS

Overall, it revealed that all the sites have shallow species. The researcher concluded that there was a significant difference in the mangrove vegetation and carbon stock in the five sampling sites. Species diversity shows that there a significant difference in the sampling sites. The researcher proposes that ecological conservation for sustainable development should be developed.

KEYWORDS: Blue carbon, Stand structure, Carbon sequestration, Conceptual model, Species diversity, Stakeholders

SUBMISSION ID: R04A-BATANP-1645

Water Analysis of the 402-meter Zapote River Located at Springville I to Nazareth Subdivision Molino III, Bacoor, Cavite

Andrea Gail G. Mercader, Ma. Ashley Ann M. De Leon, & Rheanne Earnestine N. Fajardo

Abstract

INTRODUCTION

Most diseases around the world involve water and sanitation. To prevent this, improvement in water quality is a must. As the year's pass, the population grows bigger which causes fecal pollution of water that increases the risk of infection of various diseases to those who use the river water as their life-supporting water source (Rand Water, 2019). This study "Water Analysis of the 402 meters Zapote River located at Springville I to Nazareth Subdivision Molino III, Bacoor, Cavite" aims to determine the water quality of the Zapote River and identify if the river passed the standard water quality from the Department of Environment and Natural Resources Administrative Order No. 2016-08 (DAO 2016-08) for a class C river.

METHODS

The river water was collected in three sampling points (upstream, midstream and downstream) to determine the values of the parameters: pH, biological oxygen demand (BOD), dissolved oxygen (do), total suspended solids (TSS) and fecal coliform. After collecting the water samples, it was submitted to the Cavite Water and Wastewater Testing Laboratory located in Provincial Capitol Compound, Luciano, Trece Martires City, Cavite.

RESULTS

Results showed that total suspended solids and BOD of the upstream, midstream and downstream of Zapote river and the standard water quality from DAO 2016-08 for a class C river have a significant difference. These parameters did not pass the standard value of the standard water quality from DAO 2016-08 for a class C river, while the parameter pH indicates that there is no significant difference between the standard value and the actual value of Zapote river which means that it passed the standard water quality of DAO 2016-08 for a class C. Since the parameters DO and fecal coliform gained a perfect data, statistical analysis is not applicable. Although pH and TSS passed the standard value, the other parameters did not. Thus, the null hypothesis was rejected. It can be concluded that the Zapote river is not a class C river. This river is not advisable to be used for agricultural and recreational use.

DISCUSSIONS

Zapote river did not qualify the water quality guidelines of DAO 2016-08 due to improper sewage management. The quality of water is not advisable to use for agriculture and fishing since it is notably polluted. The results showed that the river now belongs to the Class D river which its intended beneficial use is only one of the navigable waters of the Philippines.

KEYWORDS: water analysis, zapote river, pH, total suspended solids, biological oxygen demand, dissolved oxygen, fecal coliform

SUBMISSION ID: R04A-CAVITP-0173

Water Distillation and Preservation System of Ulupong Falls Using Solar Energy and Water Controller

Franceise Bhien Almirol & Russ Ian Bernardo

Abstract

INTRODUCTION

Water is one of the most considerable current and future global challenges. The researchers conduct this study in order to make the Ulupong Falls potable for the residents of Barangay Sawang. They will fabricate a device that distills and preserve water from Ulupong Falls using solar energy to distill the water and a water controller to detect the level of the water inside the container.

METHODS

This study used the experimental method to conclude its effectiveness. To obtain the desired product, 17 x 25 inches and 30 x 30 inches plywood, 30 inches pipe, 2 elbow pipes, 5 inches clear hose, 300 ml of black and clear silicon, 17 x 25 inches glass, 1/2 L of white paint, 40 ml of wood glue, 1.5 m of wires, 3 BC 547 Transistor, 220 K Ohm, 5.4 K Ohm resistor, 1N4007 Diode, 12 V relay, three-pin and 2 two-pin PCB connector, and Printed Circuit Board (PCB) are used. The Bacteriological test was conducted on each type of water to test the presence of bacteria before and after distillation.

RESULTS

After thorough observation, all water samples were clear. Tap water was odorless, and both groundwater and water from Ulupong falls were damp due to the environment it came from. Before distillation, the HPC of tap water was 2, and none for the latter. The Total Coliforms of tap water was <1.1, and >8.0 for the others. Fecal Coliforms of all water samples were <1.1. Tap and groundwater passed the Philippine National Standard for Drinking Water. After the solar distillation, the HPC of tap water was 134, 2 for groundwater and <1 for water from Ulupong Falls. The Total and Fecal Coliforms of all the water samples were <1.1. All water samples passed the Philippine National Standard for Drinking Water. The collected water from the water distiller flowed to the pipe that was connected to the water deposit. When the tank is out of the water, the water controller automatically fills the tank and stop filling when it reached the high sensor.

DISCUSSIONS

The findings revealed that before distillation, the water from Ulupong falls failed the Philippine National Standards for Drinking Water and passed after the solar distillation using the Bacteriological Test (Multiple Tube Fermentation Technique), which will significantly lessen the expenses of an average Filipino citizen. The use of a water controller makes the work convenient because it automatically takes the water inside the container. The combination of the outputs dramatically enhances the health protection of an average citizen, especially those living in rural areas.

KEYWORDS: Distillation, Preservation, Ulupong Falls

SUBMISSION ID: R04A-BATANC-0281

ECONOMICS

The Demographic Profile of Small-Scale Business Consumers and its Relation to Consumer Rights in Poblacion, Rosario, Cavite

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Abstract

INTRODUCTION

The market is growing faster due to technology where all products are free and fast-moving with fewer restrictions. These make consumers often fail to choose the right one. In this generation, fake products, scams, hoaxes, and false advertisements are also growing due to the lack of information that a consumer has. This study would like to determine the factors that affect the level of understanding of small-scale business consumer with regards to consumer rights in Rosario, Cavite. These will reveal the factors why most of the consumers often fall into it.

METHODS

This study is a Quantitative Non-Experimental Descriptive Design used a Quantitative Correlational Study utilizing the chi-square test for the nominal and ordinal variables. The samples are 60 respondents that were drawn through random sampling in Poblacion, Rosario, Cavite that was answered through self-administered approach, specifically the paper and pencil surveys.

RESULTS

The result shows that there is a significant relationship on several demographic profiles, precisely the economic status, educational background, and occupation on the level of understanding of small-scale business consumers with regards to consumer rights. Were the factors under, except low-income earner, college and university graduates and government employees, shows a low level of understanding in consumer rights in Rosario, Cavite. The researchers proved that the level of understanding of the consumers is affected by some demographic profile of the respondents.

DISCUSSIONS

Based on the result, consumers with a low level of understanding about consumer rights are still abundant. Therefore, researchers recommend the need to tighten and give more attention to the education of consumer rights consistently in various ways like on authorized media for optimum result. These will increase consumer awareness when it comes to their rights that will significantly reduce consumer problems.

KEYWORDS: Quantitative Non-Experimental Descriptive Design, Small-Scale Business Consumers, Quantitative Correlational Study, Self- Administered Approach, Poblacion

SUBMISSION ID: R04A-CAVITP-0619

The Economic and Social Effects of Flagship Project on Rubber Development in Makilala, North Cotabato

El Rey Legaspi, Teacher

Abstract

INTRODUCTION

The rubber development flagship project is rooted from a notion of giving free rubber seedlings to Makilala farmers who wished to convert idle lands into a productive one. Community leaders are expected to be more creative in crafting reformative interventions to address the perennial issue to mitigate poverty. This study presents the economic and social effects of the agricultural enhancement program as a flagship project in rubber development under the Makilala rural and urban development initiative in North Cotabato, Philippines.

METHODS

The descriptive-correlational analysis was used to test the significance of the relationship of beneficiaries' gross monthly income from rubber farming to family monthly income, household expenses, and family savings, also, to family dwelling, social status as "rubber farmer," and quality of life. Due to security, time, and budget constraints, the researcher follows a pre-qualification system and convenient sampling, which means beneficiaries who have already started rubber tapping and those within the market area were conveniently sampled and answered the self-made questionnaire.

RESULTS

The study reveals that additional monthly income between P3000 to P5000 derived from rubber farming improves the economic status and social life of the beneficiaries. It also found out that the flagship program can create local employment in Makilala. Most of them have a rubber experience between 1-10 years and utilized around 1-5 hectares for the flagship project with at least 1000 rubber trees grown. The beneficiaries were aware as to the selection process of the flagship program. Rubber seedlings and Training/Workshop were the inputs received by them. They were satisfied as to delivery, timeliness, appropriateness, and quality of all inputs received. Hence, there is a significant relationship between the income earned from rubber farming and the socioeconomic status of the beneficiaries.

DISCUSSIONS

The results demonstrate the need for further cohort research study as part of the monitoring and evaluation plan of the project. There is a need to implement governmental interventions to ensure the high and stable price of rubber cup lump in the regional market. Provide intensive training in producing high-quality rubber cup lump, especially with the integration of technological rubber farming practices. Hence, over the 30 years' productive lifespan, inclusive returns are expected more to be felt in the next five years depending on the rubber market price and quality produced.

KEYWORDS: Rubber farming, rubber development, descriptive-correlational analysis, Philippines

SUBMISSION ID: R012-COTABC-0000

Factors that Contribute to the Increasing Price of Fish in Barangay Poblacion Dimasalang

Emilyn Arregadas & Mary Joy Borinaga Coles, Dimasalang National High School

Abstract

INTRODUCTION

The increasing prices of fish is a significant economic problem in Barangay Poblacion Dimasalang. Due to the negative economic impact, the residents experienced financial difficulties. We determined different factors and effects of the increasing price of fish. We want to call the attention of the local government unit officials of the Municipality of Dimasalang to develop interventions for solving the said issue. Through this, the residents will be relieved of the problem of buying fish at higher prices.

METHODS

Using a phenomenological research approach and convenience sampling, we conducted a face-to-face interview with the selected ten residents of Barangay Poblacion, including some fisherfolks and fish vendors who responded to a set of semi-structured questions. The answers were recorded to the prepared answer sheets — the data collected through qualitative analysis at the households of the residents and the public market.

RESULTS

The residents who participated in the face-to-face interview stated that ventures of retail, inflation rate, the high price of fuel and environmental change are the major factors that contribute to the increasing price of fish affecting the family budget of the households. It contributes to a higher cost of their daily living, in which they expressed their sentiments. They suggested that local and barangay officials should lower the tax of the fish vendors, implement price control, and assign officials that will strictly monitor the pricing in the public market and check the weighing scale used by the fish vendors.

DISCUSSIONS

The results reveal that the problem in Barangay Poblacion Dimasalang causes a decrease in the amount of fish consumption. The price problem also causes insufficiency in the family budget of some of the average and low-income households. Moreover, the significant factors that contribute to the increasing price of fish are ventures of retails, inflation rate, the high price of fuel, and environmental change. The other factors such as the background of the fishing industry, how the rate of the price of fish increases and the quality of the fish product were not included and given emphasis in the study that might contribute to the increasing price of fish in Barangay Poblacion Dimasalang. The results show the need for the action of the Local Government Unit to regulate the prices of the fish product in the public market in order to avoid multiple price mark-up that causes the sky-towering price of fish.

KEYWORDS: Factors that Contribute to the Increasing Price of Fish

SUBMISSION ID: R005-MASBAP-0024

**Inflation and Career Choices of Grade 12 Students in Cabarroguis
National School of Arts and Trades**

Carmina A. Calarion
(Adviser: Lovely Edelweiss Hao)

Abstract

INTRODUCTION

Inflation is an economic term that refers to an environment of generally rising prices of goods and services within a particular economy. Inflation affects students' life about their living, their study, and their spirit. Student's living becomes difficult because of the rapidly rising price (S. Lakshmi, 2018). This research about the effects of inflation on the career choices of Grade 12 students is essential to determine the common problems and the effect issues. The result of this study could serve as a useful tool to help the Grade 12 students for them to realize the importance of choosing the right career in the future despite inflation.

METHODS

This research used the descriptive survey method. A total of 164 Grade 12 students of Cabarroguis National School of Arts and Trades served as the participants of the study. Frequency and percentage were used to describe the profile of the participants in terms of specialization, sex, and section. Mean was also used to describe the effects of inflation on the career choices of Grade 12 students of CNSAT in terms of choice of school and choice, of course. One-way ANOVA was used to determine the significant differences in the effects of inflation to the career choices of Grade 12 students of CNSAT in terms of the choice of school. The participants were grouped according to specialization. Data was gathered through interviews and questionnaires.

RESULTS

It has been found out that participants prefer to enroll in schools within their budget or allowance. They prefer to study in nearby universities with affordable tuition fees to save transportation cost and to save money. Moreover, participants want a course within their parents' budget, either it is a short-term course or 4 or more-year course. They also want a course that has a high-income during employment.

DISCUSSIONS

The results show that participants are being affected by the high inflation rate in terms of choice of school and course. Whatever section the participants are in; they all consider inflation as a factor that affects them in choosing their school and future careers. Part-time-job and seek for scholarships are recommended for students to lessen their problem about inflation.

KEYWORDS: Inflation, Choice, of Course, Choice of School, Career Choice

SUBMISSION ID: R002-QUIRIN-0003

ELECTRICAL AND TELECOMMUNICATIONS ENGINEERING

"I Give, You Read Program": A Strategy to Decrease Frustrated Readers among Grade III Pupils in Gamuton Elementary School

Princess Rotche O. Elizalde, Teacher

Abstract

INTRODUCTION

One of the problems Gamuton Elementary School is facing right now that needs instantaneous action is the low or poor reading capability of learners that resulted to an increase in number of frustrated readers or frustration reading level based on the Reading results during the first day of class specifically in Grade III. Some pupils have difficulty in recognizing sounds, words and names which resulted to low performance in reading. As a result, these identified pupils can't read in chorus with their classmates, unable to participate in class discussions and find it difficult to read faster with comprehension that can highly affect their academic performance. In this view, the researcher proposed a program that can help motivate pupils to read.

METHODS

This study used descriptive method. Data collection was based on the conduction of Reading Test Assessment tool. The implementation of the intervention was during the second quarter (September, October, and November). The intervention integrates every time they have their enrichment activities. The post-test follows on February to check if their reading level has improved after they have undergone "I Give, You Read" Program using Reading Test and Evaluation. The teacher should correct every miscued word to make sure that pupils could identify and read words fluently. It also determines its efficiency and at the same time evaluates their improvement on word recognition skills.

RESULTS

When implementing "I Give, You Read" Program, the researcher has observed a decrease in number of pupils that belongs to frustration level. The percentage of frustration level before the intervention was 63.15%. After the intervention, it went down to 31.58 %. Therefore, the intervention has a huge impact in reducing the frustration level percentage. It helps pupils to read faster with comprehension. Thus, "I Give, You Read" Program was effective in helping learners having difficulties in reading and decrease the number of frustrated readers.

DISCUSSIONS

The results demonstrated that the Program decrease the number of frustrated readers in school. It helps enhance the vocabulary and reading skills of the pupils as well as the quality teaching-learning process. This "I Give, You Read" Program provides fun in reading.

KEYWORDS: Frustration Readers

SUBMISSION ID: R013-SURSUR-0081

A Quest of Teleworks: A Phenomenological Study on the Lived Experiences of Broadcast Engineers in using Information Communication Technologies in Telecommunication Industry

Aira Atas

Abstract

INTRODUCTION

Technologies are rapidly evolving; thus, broadcast engineers find their way to cope with the progress of society. This study entitled, A Phenomenological Study on the Lived Experiences of Broadcast Engineers in using Information Communication Technologies in Telecommunication Industry determined and addressed the problem to cope up in the evolution of technologies used in broadcasting.

METHODS

This study involves broadcast engineers that has 10 years of experience in their field. The researcher conducted a semi structured interview with the participating broadcast engineers. This study showed the challenges they have encountered in using information technology skills and traditional broadcasting techniques and their coping strategies to address the challenges. The interview was recorded in a voice clip for data analysis.

RESULTS

The results showed that the broadcast engineers encountered challenges like having a disruption of operation of an electronic device within the vicinity and radio frequency spectrum, OPEX or an additional cost for running the product, technological changes, technological development and the unstable connection on distance covered from different places while having an outside broadcast. As they encountered these challenges, they found a way to resolve it like having an excess component in case of system failure, organizing, planning and having a backup plan when they have an outside broadcasting and in case of system failure, they perform a trouble shoot to continue the communication from a place to another.

DISCUSSIONS

Therefore, the different challenges encountered by broadcast engineers in using communication technology were addressed. Thus, the coping strategies they used like having excess component, organizing, planning, and having a backup plan when they have an outside broadcasting was proven effective.

KEYWORDS: OPEX, outside broadcast, radio frequency spectrum

SUBMISSION ID: R04A-CAVITP-0681

Application of Piezoelectric Transducers on the Bus Stop as Source of Electricity for Charging Station

Dunn Beaver Quitangon, Harvey Keithel Celiz, & Jan Mathew Santos, Cavite
National Science High School

Abstract

INTRODUCTION

Per the continuously growing number of electricity consumers worldwide, it can be delineated that limitation in usage has now become necessary (Department of Energy, 2018). Aside from security of the resources through limitation, the potential of piezoelectricity in harvesting energy in an environment friendly manner was seen effective. Thus, the research study aimed to utilize piezoelectric transducers in electricity production for charging stations in finding alternative source of energy for daily use through experimentation.

METHODS

The experimentation was conducted at a laboratory in Emilio Aguinaldo College. The piezoelectric prototype consists of piezoelectric transducers, wire, voltage doubler, LED, printed circuit board, and power bank. The piezoelectric transducers were placed on cement road model to receive mechanical pressure from passing wheels, simulating a vehicle passing or stopping at the bus stop. The voltage outputs were measured using a digital multimeter tester.

RESULTS

The study focused mainly on 1) average voltage output of piezoelectric transducers, 2) influence of wheel mass on voltage output, and 3) capacity of transducers to handle varying weight. The piezoelectric transducers generated an average voltage output of 4.15 V, higher compared to voltage output by running and walking in the study of Mehrotra (2016) which is said to produce an average output of 2.558 V. Moreover, using the same model, the piezoelectric transducers showed difference in voltage output of varying wheel masses showing the influence of mass on the produced voltages. The model showed that the greater the mass, the greater the voltage produced by the transducer. Furthermore, the piezoelectric road model accommodated varying wheel masses.

DISCUSSIONS

The results showed that piezoelectricity can power up a charging station. However, results revealed the need for improvement in the road model to provide better energy harvesting prototype. Moreover, the study was limited to the influence of wheel mass, excluding influence of duration of mechanical stress on the transducers. Hence, the research has room for improvement for further study.

KEYWORDS: electricity, piezoelectricity, piezoelectric transducers, prototype, charging station, road model vibration

SUBMISSION ID: R04A-CAVITP-0127

Electricity-Generating Rug using Piezoelectric Transducers

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Abstract

INTRODUCTION

One of the necessities in conforming to the modernized world is electricity. Electricity, on the other hand, has many uses and applications that its supply and demand are observed separately from primary sources. The US Energy Information Administration (EIA, 2018) concluded that in the future, there will be a higher increase in demand for electricity. Renewable energy is a sustainable way to generate power and electricity, and it is very important to develop such various technologies. Electrical energy can be harvested from piezoelectric material (Riyaz, 2016). This research study aimed to construct a device that would generate electricity through application of mechanical pressure.

METHODS

in creating the device, the piezoelectric transducers were soldered together with stranded wires. The red wires were soldered on the inner layer of the transducer, and the black wires were soldered on the outer layer of the transducer. It was then placed between two rugs to create a protective barrier for the transducers to not easily break. The device was tested in persons having three varying weights with different steps.

RESULTS

The device was tested with three persons having different weights (30 kg, 40 kg, and 50 kg). The voltage produced were recorded and tabulated. The average of trial 2 is 7.96 while the average of trial 1 is 7.49, which means that trial 2 is 0.47 more effective in producing electricity than trial 1. Using one-way ANOVA as statistical test, it was concluded that the device produced the highest amount of voltage when the person having the biggest weight applied pressure on it. The statistical test showed that there was a significant difference because the P- values should be less than the significant level. Seeing that was the case, it was then declared that there is significant difference between the data values and the null hypothesis was rejected.

DISCUSSIONS

The Experiment 1 shows that there is a directly proportional relationship between the voltage produced and the mass of the person. This research can help everybody because electricity is part of our daily lives now, living without it would be very difficult. and it would help many households to save on their monthly expenses by just using this because they don't really need to do lots of work to obtain electricity, they just need to walk on it.

KEYWORDS: piezoelectric transducers, electricity, voltage

SUBMISISON ID: R04A-CAVITP-0207

Generation of Electrical Energy through Wind Turbine for Application on Community Garden Sprinkler System

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Abstract

INTRODUCTION

Many people are demanding for a high supply of electrical energy and along with this, there is also an increase in the production of devices in the field of technology. Nowadays, the use of traditional non-renewable resources is already decreasing. Everyone knows that using renewable energy like wind is eco-friendly, cheaper and more convenient. As a result, the researchers contrived a prototype that can harness wind using wind turbine for the community garden sprinkler system.

METHODS

The prototype was constructed following a pre-designed specifications with emphasis on the use of wind turbine that enables the conversion of wind energy to electrical energy. The device was tested by measuring the wind speed and the voltage(s) produced. The data collected was analyzed and evaluated.

RESULTS

Results revealed that, in the first trial, the wind speed which was 1.5m/s was too low, producing only 9 volts of electricity was not enough to activate the aquarium pump. The same thing happened on the second trial with 1.7m/s wind speed which is converted to 10 volts. On the final trial, the wind speed is now enough to make the aquarium pump work with the measure of 2m/s which is converted to 12 volts. When the researchers are conducting the test, they discovered that the wind speed must be fast enough to convert enough electricity to activate the aquarium pump. The speed needed to activate the prototype is 2m/s.

DISCUSSIONS

The results revealed that the higher the voltage produced, the bigger the chance that the prototype will work.

KEYWORDS: Wind Turbine, Electrical Energy

SUBMISSION ID: R04A-CAVTP-1565

Lowcost Single Phase Power Analyzer with Automated Data Acquisition and Monitoring System

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Abstract

INTRODUCTION

Many consumers are not aware of the electrical consumption of their appliances because they have no idea or background in electrical theory for measuring watt-hour. Power Analyzer was developed to measure the current, voltage and power rating of electrical appliances. The researcher came up with this study to design a low-cost single-phase power analyzer, to make consumers aware of their electrical consumption in order to save electrical power by means of data monitoring system.

METHODS

The methodology used technical investigation processes and implementation procedure for the project. Both descriptive method and New Developmental Product Process were applied in the design and cost of materials. The target is to develop a product with a simple design and low-cost materials. The device is economical but with state-of-the-art technology.

RESULTS

The power system analysis when plugged-in with additional electrical load, the current increases. and reducing other electrical load denotes that power is also decreasing. For every cycle, the power value is updated which means that the value of power varies from time to time based on the behavior of the current entering the load side. When you disconnect all electrical loads, data acquired in the analysis value of power in watts is always zero. The results of LCD and CRT monitors are different. At the CRT monitor, power value is greater than the value at the LCD monitor with the same system unit. When CRT and system units are switch off but still plugged-in the power output still register a consumption. Even if the appliances are turned off but not removed in convenience outlet with the gadget still connected to the electrical load side, it still registers a consumption.

DISCUSSIONS

A low-cost single-phase power analyzer is a measuring device used to measure real time data of electrical parameters such as current, voltage and power rating. This technological innovation helps electrical consumers to be aware about their power consumption. This study focused on hardware and software applications that other researcher can use as a guide for Research and Development. It only means that this is not the end of the research but rather a step towards exploring on the innovations and other capabilities of Single-Phase AC Power Analysis.

KEYWORDS: RESEARCH ADVISER: RHODA SHIELA SUGANOB. COBALLES

SUBMISSION ID: R005-CAMSUR-0056

Manual Fan - Light through Magnet as an Alternative Energy Charger

Anacely Datinguino, Anselmo A. Sandoval Memorial National High School

Abstract

INTRODUCTION

Electricity is one of the most important things in our daily life. It is a fundamental form of energy expressed in terms of the movement and interaction of electrons. In this study, the researchers explored alternative forms of energy to lessen the electric bill of consumers.

METHODS

This study used experimental research design. The researchers conducted several trials to determine the length of its charging period for its' functionality as alternative charger of fan light.

RESULTS

The results of this study indicate that the use of alternative charger is effective to minimize consumption of electricity. After three trials the fan - light charger is stable to use for two hours.

DISCUSSIONS

The results demonstrated that magnets can be used as alternative energy charger.

KEYWORDS: manual fan - light

SUBMISSION ID: R04A-BATANP-1400

Pencil Graphite, Carbonized Eggshells and Corn (*Zea mays*) Husk as Components in Power Banks for Mobile Phones

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(Adviser: Maria Cristina Miranda)

Abstract

INTRODUCTION

Power banks nowadays are very helpful to mobile phone users. They allow storage of electrical energy for later purposes. Charging without a wall outlet became possible with this new technology (Power Bank Expert, 2016). Power banks use lithium-ion batteries or Li-ion batteries which are the same batteries used in mobile phones. This new technology may be flawless however, it tends to charge too long to provide a long charging capacity. It is also made up of chemicals which are harmful to the environment. Ergo, with this research, we focused on creating a power bank that can charge fast while still providing good charging capacity and is environment-friendly. We used pencil graphite due to its capability of electrical conduction, carbonized eggshells because of its porous structure, which therefore provides plenty of surface area to hold electrical charge (Savage, 2012; Blair, 2013), and carbonized corn husk because of its high nitrogen content.

METHODS

Complete Randomized Design (CRD) was used. We created seven (7) ratio of pencil graphite, carbonized eggshells and corn husk (1:1:1, 1:5:3, 1:3:5, 5:1:3, 5:3:1, 3:5:1, 3:1:5) which were applied to a paper then triplicated. Those served as the battery of the power bank. The resulting paper batteries were introduced to coconut water which served as the electrolyte of the battery. The voltage outputs of the paper batteries were measured under 10-minute time intervals (for one hour). Multimeter was used to measure the voltage outputs of the different sets of paper batteries while a mobile phone was used to test if the power bank was capable of charging.

RESULTS

The paper battery with the ratio of 3:1:5 showed the best voltage output among the other ratio. However, we used the 3:5:1 ratio because aside from having a high voltage output (3rd among the others), it also showed longer electrical energy storage. The different ratio of paper battery exhibited significant relationships and differences with their voltage outputs.

DISCUSSIONS

The results showed that the pencil graphite, carbonized eggshells and corn husk can be used as components in power banks for mobile phones. Different ratio of the materials offered different strengths and weaknesses which allowed room for improvements of the study.

KEYWORDS: pencil graphite, carbonized eggshells, corn husk, power bank, mobile phone

SUBMISSION ID: R04A-STAROS-0013

Production of Conductive Paint Using Graphite, Glue, and Three Different Liquid Conductors

Jan Daryl Torres

Abstract

INTRODUCTION

Paint coating is regarded as one of the most economical and widely used methods of protecting metal. Conductive paint is a type of paint coating that is produced by adding various types of electrical conducting materials into the binder such as graphite, liquid conductors, etc. to be used as an anti-static agent for reduction or elimination of buildup of static charges. There are no scientific researches yet which determines the best liquid conductor for producing conductive paints. Thus, this study aimed to fill in the gap by using vinegar, lime juice and water and determine which treatment is the most effective in terms of voltage drop and amperage.

METHODS

This study used a quantitative type of research; specifically, an experimental research design which involved the manipulation of the three different liquid conductors namely vinegar, lemon juice and water. Controlled treatment is the graphite and glue. These three different liquid conductors were mixed with graphite and glue and is used to produce conductive paint, while two parameters such as voltage drop and amperage were assessed using voltmeter and ammeter.

RESULTS

in determining the most effective liquid conductor as an ingredient in producing conductive paint using graphite and glue in terms of voltage drop and amperage, T1 which is water is rated low with a mean score of 3.00 T2 which is lemon juice is rated mid with a mean score of 3.00 and T3 which is vinegar is rated low with a mean score of 2.33. Using the modified 3-point Likert scale, the conductive paint with the lowest mean has the most effective liquid conductor. Thus, the most effective liquid conductor is Lemon (T2). Testing the difference of each liquid conductor in terms of voltage drop and amperage using the one-way ANOVA test, a P-value of 0.0699 was obtained which means that there is no significant difference on the effectiveness of different liquid conductors in conductive paint.

DISCUSSIONS

Hence, this study found out that the most effective liquid conductor is Lemon Juice, compared to water and vinegar. Therefore, the researchers concluded that it is Satisfactory, which means it achieves the expected performance level. Thus, this study proved that liquid conductors can be an ingredient in producing conductive paint.

KEYWORDS: production, conductive paint, graphite, glue, liquid conductors

SUBMISSION ID: R04A-CAVITP-1014

Proposed Design of Micro-Hybrid Power Distributor as a Mini Power Station for San Pascual Senior High School 1

John Mandy G. Tiongson, San Pascual Senior High School 1

Abstract

INTRODUCTION

Hybrid systems are needed to achieve economic and ecologic targets while at the same time, ensuring an increasingly independent, decentralized, grid - connected power supply that industries, utilities, municipalities and private individuals are aiming for. Providing rural electrification programs, catering to the rural power requirement has been challenging due to technical, administrative, financial and management constraints. As such, this study aimed to create a hybrid power distributor which implements the two known efficient systems: solar and windmill distribution system. The said system will be installed at San Pascual Senior High School 1, San Pascual, Batangas where sunlight and wind power can be harnessed.

METHODS

The model included three (3) components; the description of the micro hybrid power distributor and the level of effectiveness of the two hybrid power generation systems; the researcher-made questionnaire; and the proposed design. The subjects of the study were the 30 students of EIM 12 Volt. From a total of 48 students, 30 respondents were chosen by convenience sampling, under purposive sampling. The researcher used a self - constructed questionnaire as data gathering instrument. The statistical tools used which correspond to the research questions were frequency and weighted mean.

RESULTS

Data revealed that the design implemented a standalone micro-hybrid power distributor using solar photovoltaic and windmill power; consists of a horizontal axis wind turbine; with interconnected grid systems with battery as power bank; connected to AC/DC load; had a shifting of power distribution and had an optimum combination of solar PV-wind hybrid system that lie between 0.70 and 0.75 of solar energy to load ratio. in terms of its level of effectiveness, the respondents agree that the micro hybrid power distributor was eco-friendly and reliable in operation, requires low maintenance and has long lasting feature with 3.71 as its weighted mean.

DISCUSSIONS

The proposed design implemented a standalone micro hybrid power distributor with battery/power bank consisting of a vertical axis wind turbine and rotary PV modules with sensors. It is connected to AC/DC load only. It has a shift of power distribution since the solar panels can detect the light from the sun during the day and the light from the moon during the night. With the combination of these two renewable energy sources, the study was able to make the most efficient power distribution system that people can rely on.

KEYWORDS: Micro-Hybrid, power station

SUBMISSION ID: R04A-BATANP-2274

Proximity-Detecting and Object Identifying Device for the Visually Impaired

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Abstract

INTRODUCTION

An estimated 253 million people live with vision impairment: 36 million are blind and 217 million have moderate to severe vision impairment (WHO, 2017), this means that many among us have difficulty in participating on many activities that we perform. Frequently, blindness impacts a person's ability to perform many job functions, which can limit their career options (Sminkey, n.d.). This may dramatically affect their finances and their self-esteem. In this study, we sought to construct a device that would heavily aid those with visual impairment.

METHODS

A device equipped with ultrasonic sensors and a GPS was used. The device was constructed using various sensors and modules that revolved around the workings of an Arduino Nano microcontroller. The device had the ability to warn its user about an incoming obstacle and identify the obstacle itself. Additionally, the device was designed for indoor use. An Arduino microcontroller was used as the microprocessor of the device and was programmed with the Arduino IDE. Data was collected through quantitative means of functionality tests and evaluation forms.

RESULTS

The device was subjected to functionality tests with 10 trials and 3 repetitions. Additionally, it also underwent evaluation from its users with criteria such as: Design, Functionality, and Innovation. The functionality tests gave results of a) 80% for its detecting function and b) 70% to its identifying function. The evaluation of its users gave an output of 3.58 which indicates a rating found between "Neutral" to "Satisfied". The device showed greater performance towards its functionality and design when compared to its innovation aspect. The results also gave off a discrepancy in connection of its functionality tests and evaluated functionality which calls for a review concerning the features of the device.

DISCUSSIONS

The results demonstrated that the device performed above average, regarding its functionality and evaluation however, the need for many improvements is still present, especially its evaluation from its users. Therefore, it is seen as a fact that certain components of the device could possibly be improved or substituted with better alternatives.

KEYWORDS: Vision impairment, blind, moderate to severe, difficulty, ultrasonic sensor, GPS, Arduino Nano, Arduino IDE, indoor use, obstacle

SUBMISSION ID: R04A-CAVITP-0198

Self-Powered Mobile Charger with Configurable Hydropower Generator

Earl Justin Catibog, Gwyneth Vera Bendo, & Philip Zymon Linezo

Abstract

INTRODUCTION

Mobile phones play an important role in communication. However, mobile phones face the difficulty of battery charging while traveling from one place to another, especially in rural areas that have insufficient source of electricity. So, this necessity is being conceptualized in this paper. A hydropower mobile charger that may be self-powered with a hydro-generator. A flow of liquid may be used to rotate the turbine of hydro-generator to generate electric power that is enough to charge a mobile phone.

METHODS

The idea of the prototype was to generate electricity thru flowing water, it can be free flowing or induced flow enforced in water to generate flow. The fan blade was attached to the DC generator. The aluminum rod was attached to the fan blade to extend the attachment between the motor and the fan blade. to avoid the water to interfere the rotation of the aluminum rod, it was enclosed with a PVC pipe. to allow the rotation, bearings were added. Heat gun was used to soften the PVC pipe and allow the bearing to be placed inside the pipe. Polycarboard was used to make the water guide plate and was placed at the end of the pipe. A foot-long PVC pipe was cut and attached to the Y-tee coupling and it will be the body of the whole system. The pipe guide was placed inside the Y-tee PVC pipe assembly where the water guide end of this assembly was placed at the far end of the Y-tee coupling. The other end of the pipe guide was fixed using a polycarboard. A coupling was attached to allow the rotation of both shafts. A simple wiring, connecting the DC generator to the DC-DC Boost Converter. Since the idea and the production of electricity is based on the water flow, the device was tested in a river in Tulay A, Maragondon, Cavite. A voltage- measuring application was used to measure the voltage and current electricity produced by the device.

RESULTS

Results reveal that the amount of voltage produced averages an amount of 4V in terms of changing and consistent flow and fall of water. It will take 120 minutes to fully charge mobile phones.

DISCUSSIONS

Results show that falling water has higher amount of pressure than flowing water thus producing higher amount of voltage. This means that the higher the pressure, the higher the voltage is produced. The prototype is effective in charging mobile phones and power banks.

KEYWORDS: MOBILE CHARGER

SUBMISSION ID: R04A-CAVITP-1636

Simplified Electrical Wiring Installation System (SEWIS) Board and Its Effect on SHS Tech-Voc Students' Perception, Academic Performance, and EIM NC II Assessment Passing Rate

Bobby De Jesus, Calamba Bayside Integrated School

Abstract

INTRODUCTION

The Simplified Electrical Wiring Installation System (SEWIS) Board, is an intervention facility used to provide an INTRODUCTION to electrical wiring techniques. It faithfully reproduces a residential environment where students can develop their skills in the installation and wiring of residential electrical equipment. The knowledge and skills students gain from these activities will enable them to identify and demonstrate proper wiring of common electrical fixtures, as well as the skills to wire some of the most common electrical circuits. The system can also be used to teach how to adjust and maintain electrical equipment, as well as enforce the safety rules to be followed when working.

METHODS

Mixed method of research was employed in this study. Quasi-experimental design was used in determining the significant effect of using SEWIS board on the academic performance of 46 purposively-selected EIM NC II students of Calamba Bayside IS for SY 2017-2018. Pre-posttest was used as instrument and t-test was used to treat the data. Qualitative design was employed in determining the perception of students on using SEWIS board and thematic approach was used in data analysis.

RESULTS

The study revealed a significant difference between the respondents' pre-test and post test scores during the SY 2017-2018, which indicated an improvement in their academic performance. Based on the thematic analysis, all respondents (100%) strongly agreed that SEWIS board was helpful to easily understand how electrical circuit works; SEWIS board was easy to manipulate; and helped in preparation for EIM NC II assessment. Likewise, 100% passing rate was attained during the March 2018 Assessment, which proved that using SEWIS board was effective in preparing students for assessment.

DISCUSSIONS

Due to its modular design, SEWIS BOARD can be configured to fit various training needs. A versatile, mobile workstation is the basis of the system. As students learn more about electricity and wiring, they will become more confident and would serve as their first step towards a successful career as electricians.

KEYWORDS: SEWIS Board, electrical installation and management, academic performance, EIM NC II assessment, student perception

SUBMISSION ID: R04A-CALAMB-0203

Standalone Solar-Wind Hybrid Energy System with the Integration of Supercapacitors

Benjamin Pedrosa, IECEP

Abstract

INTRODUCTION

People located in off-the-grid areas do not have access to electricity, while most people living in areas with access to the electrical network do not have alternative source of energy during power outages. Solar panel and wind turbine were combined to form a hybrid energy system to provide power to off-the-grid households and alternative energy source to on-grid households. This system utilized the capabilities of supercapacitors to receive and store energy. A selector circuit was created to select which energy storage will supply the household.

METHODS

Prescriptive Research design was used in this study. The design process includes, the system design, hardware and software implementation and system testing. The system design process was undertaken to come up with the block diagram of the system which will serve as guide in the creation of the prototype. Hardware implementation is the creation of the schematic diagram and the actual circuit. Software implementation is the creation of the program code inputted to the microcontroller which will provide the action of the selector circuit. Testing was done to determine if the system is providing the desired output.

RESULTS

The selector circuit automatically switches from one energy storage to another depending on the voltage levels of the batteries connected to the energy sources. It selects which energy storage will provide power to the inverter. The selector prioritizes solar battery. When its voltage level is below 10.5 V, the selector selects the wind turbine battery provided its voltage is greater than 10.5 V. When the voltage of the solar panel battery is greater than 10.5 Volts the selector selects this battery again. When both voltage levels of the solar panel and wind turbine batteries are below 10.5 V, the selector selects the supercapacitor bank to supply the inverter. Actual test showed that the hybrid energy system can supply a typical off-the-grid household loads such as LED bulbs, TV and electric fan.

DISCUSSIONS

One of the challenges encountered in this study is the accurate state of charge determination when the battery is being used by the system. A circuit that will accurately monitor the state of charge (SOC) of the batteries will improve the hybrid system. Another improvement is the placement of voltage and current level indicators for the user to have a better sense of what is happening in the system.

KEYWORDS: Supercapacitor, Hybrid Energy System

SUBMISSION ID: R04A-TANAUA-0082

Utilization of Validated Mechatronics Module to Improve the Performance of Developing Grade 12 Electromechanics Students

Criselda De Chavez, MTAP

Abstract

INTRODUCTION

Calamba City Senior High School (CalSen), a premier senior high school in Calamba, only offers Science, Technology, Engineering, and Mathematics (STEM) in its academic track and Mechatronics in its Technical -Vocational track. Since it is the only senior high school in the entire district of Calamba that offers Mechatronics, it is constantly monitored. The academic performance of learners in Mechatronics during the past three semesters only average to 83% which is far below compared to 89% academic performance of STEM learners. Hence, the Continuous Improvement Program (CIP) team of CalSen implemented Project Mechatronics which aims to improve the competence of low performing students in their major subject, Mechatronics.

METHODS

Using quasi-experimental design, participants were selected by enumerating all the students belonging to the low performing group or those under developing skills in the Mechatronics subject. Research questions to determine the effectiveness of module were answered after the intervention time was given for nine (9) days in the Mechatronics laboratory. Seven (7) low performing students were selected from the sole section of Mechatronics during the 2nd semester SY 2017-2018 under the technical vocational track.

RESULTS

Project Mechatronics in its implementation successfully raised the academic performance of students in Mechatronics subject from developing performance level to proficient performance level. The academic performance during the 4th quarter as exhibited by 7 developing students after having the intervention, leaped to 85%. Three out of seven achieved approaching proficiency level and four out of 7 achieved proficiency level. The target was only an approaching proficiency level, but the result revealed a proficient level with 7% increment. The status of students' academic performance has improved using the supplementary materials at the end of the semester SY 2017-2018 after the completion of the project.

DISCUSSIONS

Results demonstrate the need to bring out the problem about lack of very costly equipment to the proper authorities. Program dissemination is needed to gain stakeholder's support. Subject teacher should: conduct a summer week - long lecture to provide students with strong fundamentals in Electricity; diagnose students' knowledge before the semester begins; arrange schedule for optimum student use of laboratory equipment; and provide, if possible, weekly continuous four (4) hours of laboratory time.

KEYWORDS: Mechatronics, intervention, approaching proficiency, developing proficiency, strand, stand-alone

SUBMISSION ID: R04A-CALAMB-0184

Voltage Generating Prototype Road Plating Equipped with Piezoelectric Transducer

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Abstract

INTRODUCTION

Renewable energy is energy that can be generated from natural processes and can be renewed. Piezoelectricity is a renewable energy that can be produced with the use of the piezoelectric transducer (Piezo Technology, n.d.). This research study aims to test the capability of Voltage Generating Prototype Road Plating Equipped with Piezoelectric Transducer to produce a voltage output from three different pressure. The research aims to produce electrical energy through the use of piezoelectric transducers.

METHODS

Two concrete plating with piezoelectric transducer, in series connection, were made. The plating had rubber bands, which will provide support for the pressure applied to the piezoelectric transducer. The other concrete was placed on top of the other concrete in which the object will apply the pressure. Three set-ups were used: concrete plating, concrete plating with man, and concrete plating with man on a bike. Three (3) trials with 3 replications was conducted for each set-up. The voltage output produced by the prototype was measured using a multimeter.

RESULTS

The results show that the man that walked across the concrete plating had the highest amount of voltage produced with an average of 239 mV. After the data analysis using one-way ANOVA, the data showed a p-value of 0.0000000000116. The p-value of the gathered data was less than 0.05. This means that there is a significant difference between the average amount of voltage produced by the piezoelectric transducer circuit for each setup in each trial.

DISCUSSIONS

From the gathered results, it was concluded that using piezoelectric transducers under road plating is applicable as an alternative source of electrical energy. The pressure from people walking above or riding a light vehicle can be converted into electrical energy. Thus, this study can be used at sidewalks and bicycle lanes where the mass of moving people can be used as an alternative electrical energy source.

KEYWORDS: piezoelectric transducer, multimeter, voltage

SUBMISSION ID: R04A-CAVITP-0193

Voltage Optimization of Nickel Metal Hydride Batteries through Motorized Direct Current Generator

Joshua Consas

(Adviser: Kareen Marie Palines)

Abstract

INTRODUCTION

Rechargeable batteries are useful in various electronic gadgets. However, prolonged usage of these batteries is limited due to their power capacities, i.e. the amount of charge they can hold for a certain amount of time. The purpose of this study is to create a device, the motorized direct current (DC) generator, which could significantly extend the usage of 4 Nickel Metal Hydride (Ni-MH) batteries under static and dynamic loads. This device has potential applications for gadgets that use Ni-MH batteries especially during emergency situations.

METHODS

This study focused on the construction of a motorized DC generator that uses 4 Ni-MH batteries. It utilized an experimental research design where observations and measurements of Voltage, Current, and Power output of the batteries with and without the generator were made every 10 seconds for 5 minutes. The device performance to power static and dynamic loads were also observed for 15 trials, where each trial lasted for 2 minutes. The discharge rates of a fully charged 4 Ni-MH batteries were compared under two set-ups: (1) loads are directly connected to the batteries without the generator and (2) loads are connected to the batteries while the generator is on.

RESULTS

The results showed that the device output was at steady levels of 4.5 Volts, 0.75 Amperes, and 3.38 Watts, with 2,080 milli Amp- hours (mAh) as its total charge. Series connected 9 LEDs with 9 resistors induced 12,606 lux illuminances when powered by motorized DC generator. On the other hand, the 9 LEDs powered by the batteries without the assistance of the generator produced an illuminance of 10,974 lux. All 3 DC motors in parallel connection ran when powered by the motorized DC generator. However, only 2 out of 3 DC motors in series connection was ran by the generator. The batteries also had a discharge rate of 0.6 Volts when used directly on loads compared to batteries assisted by the device that resulted to 0.2 Volts discharge rate.

DISCUSSIONS

The motorized DC generator satisfactorily achieved the desired Voltage output that is greater than half of the Voltage input. Thus, power output (in Amp-Hours) used is relatively low and the batteries generate less heat. This implies that the generator will increase the battery life of Ni-MH batteries. The device can also power static loads like LEDs and dynamic loads like parallel or series connected DC motors. Lastly, the results indicate that the device slows down the discharge rate of Ni-MH batteries up to 33% efficiency.

KEYWORDS: voltage optimization, battery capacity, charge, static loads, dynamic loads, discharge rate

SUBMISSION ID: R04A-LAGUNA-0039

ENGINEERING DESIGN

Improved Water Filter for Lessening Fecal Coliform in River Water

Benedick E. Binungcal, Ken Jabby Rosete, & Reynald Ace M. Pilpil, Bucal National High School

Abstract

INTRODUCTION

It is common knowledge that most of river waters from urban and some rural areas are already polluted with countless wastes. Also, high levels of heavy metal contaminants and fecal coliform was detected from water samples. Hence This makes the water sample from such rivers not potable to drink. For this reason, the researchers thought of a way to purify water and make these free from fecal coliform.

METHODS

The water filtration device was constructed following an approved design with sand, charcoal, cotton balls, and Aluminum sieve as filters. Water samples from Pasig River, Zapote River, and Kawit River were collected. Amount of fecal coliform per 100ml of sample was determined. Water samples were then filtered using the filtration device. Then, these samples were again tested for the presence of fecal coliform. The amount of fecal coliform present in water samples before and after filtration were compared.

RESULTS

Laboratory test before filtration, confirms the presence of fecal coliform for water samples from Pasig River, Zapote River, and Kawit River amounting to 3300 MPN/100mL, 2200 MPN/100mL, and 1400 MPN/100mL fecal coliform respectively. On the other hand, the amount of fecal coliform for the three samples after filtration are 1300 MPN/100mL for the sample from Pasig River, 700 MPN/100mL the sample from Zapote River and 560 MPN/100mL Kawit River.

DISCUSSIONS

Results reveal that the amount of fecal coliform from the water sample from Pasig River was reduced by 61%. On the other hand, the amount of fecal coliform from the water sample from Zapote River was reduced by 68% while the fecal coliform from water sample from Kawit River was reduced by 60%. This means that the filtration device can reduce the amount of fecal coliform by an average of 60%.

KEYWORDS: Fecal Coliform, River Water, Improved

SUBMISSION ID: R04A-CAVTP-1553/ R04A-CAVTP-1563

Mariwasa: Quality Assessment Review Focusing on Reduced Mechanical Cracks

Norita Areza, Looc Integrated School

Abstract

INTRODUCTION

The most common type of distress in tiling in commercial and industrial areas is cracked tiles at movement joints. Tiles are selected for flooring in heavy traffic areas because of not only their appearance but also their superior performance characteristics. Thus, the study aimed to assess the quality of tiles developed by Mariwasa in terms of mechanical crack. to identify the problem encountered by the company, the researchers requested data needed in assessing the product quality of tiles in terms of mechanical crack.

METHODS

The proponent adapted the Quality assessment and improvement processes and techniques authored by Montgomery, J. D. in 2000. With the permission of the company, Quality Assessment process starts with an assessment engagement. The proponents requested a quality assessment of the company's quality process. This request commenced planning activities that resulted in a written approach on how and when to proceed with the assessment. At the end of this study, the proponents will have the output of the quality assessment to find out if there are flaws in the process that need corrective action to improve the quality of products and services.

RESULTS

From the data gathered, it was found out that the main problem of the company focuses on the mechanical crack. Thus, a replacement of 4 PLS Roller RPM conveyor was suggested.

DISCUSSIONS

The results showed that to prevent mechanical crack, checking of parameter every day on NUE, AER, RPR conveyor and regular monitoring is recommended.

KEYWORDS: quality assessment, mechanical crack

SUBMISSION ID: R04A-CALAMB-0286

MEDICON: A Microcontroller-Based Medicine Intake Reminder

Jomel Aron Magpantay, Department of Education
(Adviser: Benjamin M. Pedrosa)

Abstract

INTRODUCTION

People who are taking maintenance drugs need to take their medicine at the scheduled time to maximize their effectiveness. Due to certain reasons, people tend to forget the scheduled time of their medicine intake. to address this problem, the researchers created a prototype of a Microcontroller-Based Medicine Intake Reminder which will remind people to take their maintenance drugs at the scheduled time.

METHODS

Prescriptive Research Design was used in the creation of the prototype in this study. The researchers designed the hardware and software of the system as well as the flowchart of the execution of the alarm. The prototype was subjected to five test alarms and an audibility test to identify its accuracy and range.

RESULTS

From the conducted tests, the prototype functioned according to its program code. As a result, the system alarms on the scheduled time and it terminates when the button is pushed. The audibility test showed that the alarm can be heard up to five meters of radius from the system.

DISCUSSIONS

The results showed that the Microcontroller-Based Medicine Intake Reminder functions properly as a reminder for medicine intake. This system will aid those who take maintenance medicines, the hospital staff who administer the taking of medicines of patients, and those who are fond of electronics and would like to create their alarm.

KEYWORDS: medicine, microcontroller, prototype, reminder

SUBMISSION ID: R04A-TANAUA-0044

Micro Hydroelectric Powered Streetlights

Jan Andrei Del Rosario, John Rafael Lirio, & Kirck Ryan Merano, Bucal
National High School

Abstract

INTRODUCTION

Some barrios here in the Philippines don't have access to electricity. It happens when the barrio is too far from the town. Here in the Philippines, the main source of energy came from fossil fuels like the Malampaya power plant, but fossil fuels are a kind of non-renewable source of energy. In this country, the people should use renewable source of energy just like geothermal, solar and hydroelectric energy. Thus, the researchers conducted a study using micro-hydroelectric power for streetlights.

METHODS

The micro hydroelectric powered prototype streetlights were constructed following pre-designed specifications. The device consists of PVC pipes, dynamo, mini-turbine, etc. The parts were attached to the other parts using epoxy glue. Water was allowed to flow in the device to move the attached turbine creating mechanical energy. This energy is converted to electrical energy by a dynamo. The device was tested by allowing a certain amount of water per trial to flow in the device. The generated electricity was measured by liter of water.

RESULTS

Results show that in the first trial the device can generate 6 volts of electricity per 4 liters of water, then 9 volts of electricity per 12 liters of water and 13 volts of electricity per 20 liters of water. In the second trial, 6 volts of electricity per 4 liters of water, then 8 volts of electricity per 12 liters of water and 12 volts of electricity per 20 liters of water. In the third trial 6 volts of electricity per 4 liters of water, then 9 volts of electricity per 12 liters of water and 13 volts of electricity per 20 liters of water.

DISCUSSIONS

The result revealed that the amount of energy produced is based on the amount of water used. In other hands the more the water passing through the impeller the more the energy is produced.

KEYWORDS: micro hydroelectric

SUBMISSION ID: R04A-CAVTP-1637

Microprocessor-Based Gas Leak and Water Level Detector

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Negros Occidental High School
(Adviser: Russell Gorre)

Abstract

INTRODUCTION

LPG or Liquefied Petroleum Gas has been known as one of the causes of fire due to a gas leak or due to an unclosed gas valve which results to fire, deaths of various people, loss of houses, etc. in Malabon, a suspected leak in a hydrogen gas tank triggered the explosion of an LPG that led to a fire that injured two persons and consumed five houses (Javier, 2017). Same with gas tanks, water tanks have been also linked with explosion due to water pressure. For example, in San Jose Del Monte, Bulacan 4 was declared dead including a 1-year old baby and 41 were injured (Layug, 2017). Because of these tragedies, this study was conducted to invent a Household Resource Monitoring System with Computer Interface and Data Logging for Gas Leak and Water Level Detection.

METHODS

The Household Resource Monitoring System main device was primarily made of acrylic glass, while the gas valve box was made with plywood and since the water tank is only a prototype and is made of a clear plastic box. Descriptive Research Method and an employed survey were used to determine the acceptability of the Household Resource Monitoring System with Computer Interface and Data Logging for Gas Leak and Water Level Detection.

RESULTS

The average time for the device to analyze the data and then send the notification by the indicators regarding the gas leak feature of the device is 61.9 ms. While the average time of the GSM Module to send the notification is 5.8 s (dependent upon signal strength). The maximum range of distance that the gas sensor can still detect the smoke is 150 cm. The accuracy of the notification sent by the GSM Module is 90%. The device can detect the water level and send the notification when if it's full and empty in 64.2 ms and 65.1 ms respectively. Meanwhile, the weight sensor of the HRMS was also able to successfully monitor the content of the gas tank through its weight. The moment when the gas tank was placed on the weight platform, the sensor automatically processed the data and then send it to the LCD and for data logging.

DISCUSSIONS

Therefore, the HRMS is accurate in terms of its function and is acceptable to people in terms of its accuracy and response time of the indicators and the GSM notification.

KEYWORDS: Household Resource Monitoring System with Computer Interface with Data Logging for Gas Leak and Water Level Detection, Response Time, GSM and LPG.

SUBMISSION ID: R006-NEGROS-0011

PROJECT VOLTS (Ventilation with Light Power Generator during Typhoon and Severe Weather Condition)

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(Adviser: Marie Eugenie Soriano)

Abstract

INTRODUCTION

The Philippines is visited by an average of 19 typhoons annually and during these calamities, we often experience electrical shut down for safety purposes. With this scenario, where typhoon occurs during night time, people are immobilized because of darkness in the surroundings, making everybody unable to move to safer ground. The use of solar panels is much recommended but due to its cost, an ordinary family cannot afford to own one. The assembly using the motor of an electric fan and powered by the wind speed of at least 30 kph can be used to light a 3 watt LED bulb. This can be used specifically during typhoons.

METHODS

The experimental method was used in the assembly of the project. The ventilation motor of a ceiling fan is a single phase induction motor that has a similar component with that of a generator. The electric motor of an electric fan (3 phase motor) was replaced and modified to become a single phase motor. The resulting motor was used both as a fan (when connected to AC) and a power source (when exposed to a wind speed of at least 30kph) that can light up a 3 watt LED bulb.

RESULTS

The assembly is of dual purpose. Since it reverses the function of a single phase motor, it is used as a fan when plugged to AC current, and when unplugged and exposed to a wind speed of 30 kph, it is a source of power that is enough to light a 3 watt LED bulb. The latter is used during typhoons when electricity is shut down and the source of light is inevitable. When unplugged and exposed to a 30 kph wind speed, it can generate an electric current of 100 Volts enough to light a 3 watt LED bulb which is sufficient to light a dark place in times of typhoons.

DISCUSSIONS

The single phase motor connected to a stand fan and with some modifications on its connections functions as a regular electric fan when connected to AC and a generator when power is out. As a generator, it generates electric current when exposed to a minimum of 30 kph wind speed enough to light a bulb. The converted fan is easily assembled and recyclable materials can be used.

KEYWORDS: generator, wind, single phase induction motor, LED bulb

SUBMISSION ID: R002-QUIRIN-0011

Protection and Armour for Noxious and Alarming Mosquitoes Around (P.A.N.A.M.A.)

Astrid Medina, Clara Francesca Dela Cruz, & Julian Caleb Dela Cruz, Cavite
National Science High School

Abstract

INTRODUCTION

According to the World Health Organization, the incidence of dengue fever has "grown dramatically," with some 390 million dengue infections estimated to occur every year. In the Philippines, dengue is certainly prevalent especially in the province (Devonshire, 2016). This investigatory project designed and constructed a device that can attract and kill mosquitoes.

METHODS

Establishment of the device started with the formulation and fermentation of the attractant made from Muscovado sugar and yeast. It was followed by designing and constructing the octagonal body of the device made up of acrylic plastic sheet. Construction of internal mechanism inaugurated by the installation of zapper and fan. Afterward, the fan was programmed using Arduino 1.8.5. to function during the said time settings. Accuracy tests regarding its killing, attracting, and charging ability were tested. Z-test and one-way ANOVA were performed to analyze the data.

RESULTS

Results showed that all accuracy tests performed by the device acquired a 99% accuracy rate in performing the general operations. The f-value, 0.077, was less than the f-critical level, 3.220, which indicates that there was no significant difference between the number of mosquitoes attracted and killed by the device during the said time settings, which signified that the device would be functional regardless of the time. Z-test can't be performed due to the variance of the second group, which is 0. There was a significant difference between the number of mosquitoes attracted and killed by the device with and without attractant.

DISCUSSIONS

Through this means, the objective of the project was to attract and kill mosquitoes, therefore, resulting in a safer environment for the benefit of all. It was concluded that P.A.N.A.M.A. is a device that can attract and kill mosquitoes by its Muscovado sugar and yeast solution.

KEYWORDS: Device, Systems, Mosquito, Dengue, Electronics, Attractant

SUBMISSION ID: R04A-CAVTP-0951

Students' Attendance Monitoring System for Students at Risk of Dropping Out

Angel Hsien Dimaisip, Jeanne April Merlan, & Karla Mae Rodrigo

Abstract

INTRODUCTION

Stakeholders in school are doing their best to key students in school with the end in mind of seeing them progress to another grade level. One hindering factor in realizing this goal is the incidence of absenteeism in class that greatly contributes to a high rate of dropping out. Hence, the school has identified students and tagged them as SARDOs' or Students at Risk of Dropping Out. in an attempt to help monitor the SARDOs' the researchers investigated the use of a computer program designed to monitor the attendance of SARDOs' and possibly lower the incidences of their absenteeism.

METHODS

A computer application named "SAMS" was programmed such that it enables the intended users to access the attendance records of attendance in the morning and the afternoon.

The number of absences of SARDOs is determined before engaging them in the use of the program for a grading period. Then they were monitored for 10 weeks using the program. The number of absences incurred during the testing period is likewise noted. Then a comparison between the no. of absences of SARDOs before and after responses to the computer application was determined.

RESULTS

Results of the 10 trials on accuracy, effectiveness, functionality, punctuality, and efficiency reveal the following results: sensors-10 out of 10 and programming of the device- 10 out of 10.

DISCUSSIONS

Results show the success rate of 100% in all components of the program management system. This is due to the fact that during programming, efforts were applied to ensure a 100% success rate for each part of the program.

KEYWORDS: MONITORING SYSTEM, STUDENTS, AT RISK

SUBMISSION ID: R04A-CAVTP-1692

Suitability of Solar-Powered Aquaponics System in Naic, Cavite

Nina Ricci Gutierrez & Rose Allisson Untiveros, CNSHS

Abstract

INTRODUCTION

Agriculture is a sector of the economy that plays a major part in a country's wealth and survival. Since this sector supplies most of the basic needs of the citizens, this cannot be neglected by any country. Aquaponics is the practice related to agriculture wherein this system farms with the use of fishes' wastewater for the cultivation for the crops. This kind of method is popular in some countries like the United States. In the Philippines, agriculture is one of the main sources of livelihood. This investigatory project aimed to create a device applying the concepts of aquaponics and test its suitability in Naic, Cavite.

METHODS

The body of the device was made from polycarbonate plastic, fiberglass and angle bars. The upper part measures 29 x 30 x 23 inches and the lower part having a dimension of 30 x 35 x 24 inches. It was designed to use an Arduino UNO Microcontroller, temperature sensor to monitor the increasing or decreasing of the temperature inside the device and the pH sensor to monitor if the acidity level would change. A pump was installed to let the water flow throughout the system. A solar panel was also attached which served as the source of power. It was programmed and debugged before the functionality of each part was tested for thirty times. Mean and percentage were used to analyze and record the data.

RESULTS

Results showed that the recording every time the device turns on the exhaust fan whenever the temperature sensor detects high temperature and turns the fan off when the sensor detects low temperature. An exhaust fan was used to manipulate the temperature that the sensor read. A pH sensor was also tested based on its functionality. When the pH value was low, baking soda was added in the water and when the pH value got high, phosphoric acid would be added. The experiment yielded positive results. The device has a 100% accuracy rate in turning on and off the exhaust fans whenever the temperature sensor detected high or low temperature inside the device and also, the detection of the pH value by the pH sensor for water inside the device.

DISCUSSIONS

This concluded that the device was effective to be used by the local farmers based on the results gathered from the conducted experiment. This device can change the traditional method of farming that can be more economical for farmers.

KEYWORDS: Aquaponics, Arduino UNO Microcontroller, Farming, Agriculture, pH sensor, temperature sensor

SUBMISSION ID: R04A-CAVITP-1641

Synergistic Photosensitization of Mixed Dye Extracts from Gumamela (*Hibiscus rosa-sinensis* L.) Flowers and Banana (*Musa acuminata* L.) Leaves in a Dye-Sensitized Solar Cell

Ron Michael Acda, Santa Rosa Science and Technology High School

Abstract

INTRODUCTION

Dye-sensitized solar cells (DSCs) "photovoltaic cells with a dye photosensitizer anchored on a semiconductor" are known for their ease of manufacture, design simplicity, and adaptability in lighting conditions. Recent studies suggest that organic pigments, in replacement for costly synthetic dyes, show remarkable potential in DSCs. In this study, the illuminated current –density-voltage (J-V) characteristics of DSCs with ethanolic dyes from gumamela (*H. rosa-sinensis* L.) flowers, banana (*M. acuminata* L.) leaves, and a 1:1 mixture were determined.

METHODS

The electrodes were prepared by screen-printing titanium nanoxide (anode) and a platinum precursor (cathode) on fluorine tin oxide doped glass. The DSCs, after soaking the sintered photoanode layer in the dye solutions (1g: 6 mL concentration) for twelve (12) hours at a temperature of 30 °C, were injected with an iodide-triiodide liquid electrolyte. All setups were subjected under 50 mW LED (4.5 lumens) illumination at an ambient temperature of 30 °C. The corresponding J-V and power - voltage curves (P-V) were constructed across varying resistances.

RESULTS

The DSC with 1:1 mixture of gumamela flower and banana leaf dyes exhibited J-V parameters ($J_{SC} = 22.5 \text{ } \mu\text{A}/\text{cm}^2$, $V_{OC} = 228 \text{ mV}$, $FF = 0.693$, and $\eta = 0.11\%$) higher than the gumamela flower ($J_{SC} = 4.75 \text{ } \mu\text{A}/\text{cm}^2$, $V_{OC} = 183 \text{ mV}$, $FF = 0.513$, and $\eta = 0.014\%$) and banana leaf ($J_{SC} = 16.4 \text{ } \mu\text{A}/\text{cm}^2$, $V_{OC} = 205 \text{ mV}$, $FF = 0.577$, and $\eta = 0.062\%$) solar cells' alone.

DISCUSSIONS

The results of the study show that the mixture dye exhibited higher efficiency and better J-V parameters over the unmixed dyes alone, which may be attributed to the superimposition of the absorption peaks of the single dyes in the mixed dye. Hence, photosensitizers of relatively higher efficiencies can be prepared by suitably mixing dye sensitizers in order to absorb light over a wider range of frequencies.

KEYWORDS: Dye-sensitized solar cells, *Hibiscus rosa-sinensis* L., *Musa acuminata* L., Synergistic photosensitization

SUBMISSION ID: R04A-STAROS-0002

USS SHAWT (Urbanized Small-Scaled Spiral Horizontal Axis Wind Turbine)

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(Adviser: Rowena Angela Raymundo)

Abstract

INTRODUCTION

Innovative devices are made to resolve some issues and utilize natural resources to lessen the effect of climate change. Adopting the usage of renewables could help lessen the utilization of fossil fuels which is the leading contributor of carbon dioxide emissions. A lot of researches have been conducted to find an efficient yet affordable way of harnessing renewable sources of energy. These ideas about the wind turbines inspired the proponents to create a small-scale horizontal axis wind turbine with spiral blades that could be used in urban areas that have low prevailing winds.

METHODS

Wind energy was collected by USS SHAWT in affirmation to the scope of delimitation of the study. The average wind speed was attained from the anemometer for comparison of results. Every error of the program was debugged with the use of Arduino Uno. The voltage of the charged battery was measured using the voltmeter and was compared to the results of the programmed voltage regulator.

RESULTS

Obtained results proved the efficiency of the prototype which was able to convert and produce a significant amount of electricity. First, the Standard industrial fan's low rpm of 673 produced 1.1 V, medium rpm of 869 produced 3.2 V. and the high rpm of 1054 produced 5.6 V. The turbine generated an average of 3.3 V when it was placed in front of a Standard industrial fan for 5 mins. Second, when the turbine was placed on the grounds, it produced 1.3 V in 30 mins, 4.5 V in 60 mins, 6.8 V in 120 mins, and a maximum of 8.1 V in 360 mins. When placed in the parking lot, the turbine produced 1.0 V in 30 mins, 4.0 V in 60 mins, 6.2 V in 120 mins, and a maximum of 7.8 V in 360 mins. When the turbine was placed in the garden, it produced 0.8 V in 30 mins, 3.6 V in 60 mins, 5.9 V in 120 mins, and a maximum of 7.1 V in 360 mins. Lastly, the most efficient location where the turbine must be installed is at the school grounds of Pasig City Science High School. The turbine garnered an average of 4.7 V from 8:00 - 9:00, an average of 4.3 V from 12:25 - 13:25 and an average of 5.0 V from 15:15 - 16:15. The sum of the average voltage produced is 14.0V, the highest among the three locations.

DISCUSSIONS

USS SHAWT had successfully converted wind energy into electricity even with varying rpm, time, and location. USS SHAWT can be a precursor in the harnessing energy from the wind source of the Philippines that could help mitigate the effects of global warming and could also contribute to the betterment of the economy.

KEYWORDS: spiral blades, renewable energy, horizontal axis wind turbine

SUBMISSION ID: NCR1-PASIGC-0013

The Performance of Green Muffler With Eggshell Tailpipe Exhaust Filter

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(Adviser: Adelma Topacio)

Abstract

INTRODUCTION

This research paper is about a Green Muffler (GM), which is a muffler designed to reduce carbon emissions of a vehicle, specifically made for motorcycles and tricycles. The GM was designed to have the capability of adsorbing carbon emissions. Inside the GM were two containers meant to contain cracked eggshells which act as the adsorbent of Carbon emissions emitted by the engine. GM is 30.48 cm long (12") and 10.16 cm wide (4"). The containers measure 8.89 cm long (3.5"). The silencer is in the middle which is 7.62 cm long (3"). The GM is not an entire tailpipe, it's only a muffler, which is attachable to a tailpipe modified to have a replaceable muffler.

METHODS

The performance of the green muffler was established by: (1) computing the percentage decrement of the emitted specific carbon emission using the existing muffler as the basis; and (2) comparing specific carbon emission using the GM with the Euro IV Standard.

RESULTS

A 71 percent decrease in carbon monoxide (CO) and 77 percent decrease in hydrocarbon (HC) were achieved. in comparison to the Euro IV standard given by the emission center, the total emission with the Green Muffler was brought down to 11.6 percent CO in volume and 1.2 percent HC in ppm.

DISCUSSIONS

These data have proven that the use of Green Muffler effectively decreased the carbon emission of motorcycles. The ground eggshell utilized as adsorbent in the designed exhaust tailpipe filter was effective. The green muffler therefore could be recommended for commercial use.

KEYWORDS: motorcycle, muffler, carbon emission, air pollution, transportation innovation

SUBMISSION ID: R04A-DASMAR-0008

Wind as Source of Power of Self-Energy Producing Electric Vehicle

Cyreon C. Silva, Tagaytay City Science National High School
(Adviser: Mark Anthony Rellores)

Abstract

INTRODUCTION

Transportation sectors powered by fossil fuel are major contributors to pollution. Smoke emissions mean that the vehicle is wasting fuel and engine damage is probably occurring. These smoke emissions can harm human's health and damage our biodiversity. A 2018 World Health Organization (WHO) report found that Philippines ranked third (3rd) in the world as having the greatest number of deaths due to air pollution. The health risks of air pollution are extremely serious as twenty-five percent (25%) of deaths in the Philippines are attributed to air pollution. According to the website page of Union of Concerned Scientists (www.ucsusa.org), electric cars actually help reduce pollution. When the electricity comes from renewable sources, all electric vehicles produce zero emissions. This study aims to lessen the contribution of smoke emission to pollution and the long-term use of electricity, offering a better product than normal electric cars.

METHODS

There are several method designs used in this study. Aerodynamics was the first one to consider; we conducted experimentations by designing propellers, so it matches any kind of wind direction. In the conversion of kinetic energy to electricity; the joint idea of mechanical and electrical was also performed to gather enough ideas and the capability to use turbine as a charging device.

RESULTS

The study went in several trial and error events, from fitting the size of the turbine to the size of the car; from the size of the propeller to the desired amount of electricity to be generated and the size of the car to the capacity of it.

DISCUSSIONS

The results demonstrate the effectivity of using turbines as charging device and as well as in choosing ECV.

KEYWORDS: aerodynamics, kinetic energy, batteries, air resistance, diodes

SUBMISSION ID: R04A-CAVTP-0355

AIRDUINO: Arduino-Based Airborne Particulates Monitoring Robot Equipped with IOT Database

Eadrian Basila, Jurie Mae Castronuevo, & Miguel Adrian Lubag, Cavite
National Science High School

Abstract

INTRODUCTION

Air pollutants pose a huge health threat with the Philippines considered as the second deadliest for household air pollution wherein a total of 3.3 million deaths were recorded (World Health Organization [WHO], 2018). Extreme exposure to the huge number of airborne particles leads to health problems and might cause disturbances to lifestyles. This study aimed to design, construct, and test the performance of the airborne particulates matter monitoring robot programmed using ARDUINO Â® Sketch and IOT database software running in C++ and SQL mark-up language.

METHODS

The conceptualization, sensor calibration, sensor simulation, fabrication, robot construction, programming, preliminary testing and debugging, and testing. The functionality of the robot was done at Analog Devices Inc. AIRDUINO's system is composed of Arduino, Elegoo microcontrollers, and an air quality sensor in line with High Efficiency Particulate Arrestor (HEPA) Filter technology. These components were contained in an acrylic and aluminum casing. The robot was programmed using the Arduino programming software, subjected to testing and was debugged for errors in the program. Percentage was used to determine the accuracy of the processes.

RESULTS

AIRDUINO has a) 100% accuracy in detecting the current air quality condition of a specific point location as defined by the DFRobot open source hardware (2016), air quality sensor uses laser technology to count the present particles in the area; b) 100% accuracy in logging its reading in SD card module since memory card is a type of storage device which do not possess any moving parts (Ronald, 2016); and c) 90% accuracy in sending readings and data to cloud database. Due to the good connection and fast internet speed, the robot has no problem in uploading information. However, the 10% failure of the robot can be connected to the encountered difficulties in sending out data because of moderate to slow signal reception that hinders it from establishing secured connection over the internet using the WiFi module. AIRDUINO needs a constant 1mbps internet speed in order to perform IOT database logging.

DISCUSSIONS

With the results obtained, AIRDUINO can perform series of tasks programmed to perform with high accuracy. This robot can alleviate the alarming problem which is indoor air pollution, specifically in well-established institutions. These institutions have cleanrooms where tight monitoring is essential. AIRDUINO is a robot that helps in filtering harmful airborne particulates and monitors indoor air quality. Through further development, AIRDUINO can be used in hospitals and factories where the avoidance of harmful substances is of utmost importance. Avoiding diseases in the workplace and worsening of diseases in hospitals will also be ensured.

KEYWORDS: Air pollutants, Arduino, AIRDUINO, High Efficiency Particulate Arrestor (HEPA) filter, IOT database, Air Quality, Micro SD card, WiFi module, Elegoo microcontroller, Indoor air pollution

SUBMISSION ID: R04A-CAVITP-0342

Anti-Thief Alarm System: Improvisation and Manipulation of Arduino to Develop a Security Device

Fritz Tuazon & Marlon Rey Bernal

Abstract

INTRODUCTION

Nowadays, security demands are rapidly increasing. It is without a doubt the never-ending need of the society today. People spend lots of money in the market trying to secure their own homes. The objective of this study is to provide a fully functional and highly reliable security device at an affordable price.

METHODS

The researchers formulated a design or a schematic diagram for their device. The researchers ordered the materials to be used in their research such as Arduino platform, human body sensor, piezo buzzer, power supply, led lights, jumper wires, and bread board. After the researchers received all the materials, the researchers assembled it according to their schematic diagram. After assembling, the researchers created a code to be programmed in the Arduino platform, which will serve as an Artificial Intelligence (AI).

RESULTS

The researchers then tested the device for its functionality. After assuring that the device was in its optimal condition, the researchers then tested and recorded the data that the device had given them that answers their SOP.

DISCUSSIONS

The main findings emerging from the study were summarized as follows:

9V battery can sustain the device not longer than 2 hours and 28 minutes. There is no significant difference between the time delay intervals of the sensor detecting body induction. There is a significant difference between the range of the sensor actively detecting body induction and the range of the sensor not detecting body induction.

KEYWORDS: Arduino platform, anti-theft, body induction detection

SUBMISSION ID: R012-KORONA-0009

Comparison of Bamboo Fibers and Bamboo Reinforcement Bars as Sustainable Material in Constructing Concrete Pathways

Jay Andrew B. Miñon, Norman Aaron V. Paglinawan, Rowvellyn D. Panganiban, & Vince Allen R. Paña, Batangas State Univeristy
(Adviser: Jed Tolentino)

Abstract

INTRODUCTION

Climate change has been the problem of the world since the dawn of the Industrial age. Today, the construction industry is one of the major culprits behind the lack of environmental sustainability. This problem concerning unsustainability in the construction industry needs to be resolved. Therefore, there is a need to find a suitable alternative for such non-renewable materials. This research seeks to assimilate the strength of bamboo fibers and bamboo reinforcement bars as a reinforcement material in the structure of concrete and identify which of the two mentioned materials is more applicable for construction.

METHODS

An experimental and quantitative research design was used to gather and analyze data in this study. An experimental method was used to determine the flexural and compressive strength of bamboo fiber-mixed concrete, bamboo bar-reinforced concrete, and standard concrete without reinforcement. This study utilized concrete testing cubes 150 mm in length, with a concrete grade of M15. A compression machine was used to measure the compressive strength, and the IS 456-2000 approximation was used to measure the flexural strength. One- way ANOVA test was used for the analysis of data.

RESULTS

The results showed that the compressive strength of the control group has a mean of 1949.50 psi, while the flexural strength has a mean of 372.025 psi. The results also showed that compressive strength of the test group treated with bamboo fibers has a mean of 1583 psi, and the flexural strength has a mean of 355.04 psi. Furthermore, it also showed that the compressive strength of the test group treated with bamboo reinforcement bars has a mean of 2132 psi, and the flexural strength has a mean of 389.43 psi. The concrete with bamboo reinforcement bars exhibited the highest mean compressive and flexural strength. It is followed by the concrete without reinforcement, and the concrete with bamboo fibers displayed the lowest mean compressive and flexural strength.

DISCUSSIONS

It was revealed that there are significant differences between bamboo fiber-mixed concrete, bamboo bar-reinforced concrete, and standard concrete without reinforcement in terms of compressive and flexural strength. The use of untreated bamboo fibers can decrease the strength of concrete, while bamboo reinforcement bars can increase the strength of concrete. Thus, the use of bamboo reinforcement bars as a sustainable alternative to steel reinforcing bars is applicable as a sustainable solution.

KEYWORDS: Bamboo, Construction, Concrete Pathway, Fibers, Reinforcement Bar

SUBMISSION ID: R04A-BATANC-0171

Design and Evaluation of Microplastic Filtering Device

Carl Jazmine Baldoz, Carla Isabell Ojascastro, & Gaila Mae Caculitan

Abstract

INTRODUCTION

Water pollution is a major problem in the Philippines that killed marine organisms. Pieces of plastics that have been worn down by the elements into tiny fragments called microplastics caused the contamination of marine life leading into their untimely demise. Reports show that marine organisms were harmed because of ingesting micro plastics. For this reason, the researchers thought of designing a microplastic filtering device so that these pollutants can be collected and removed from the bodies of water to lessen the water pollution.

METHODS

One liter of sample water pollutant with microplastic was tested to determine the amount of microplastic before filtration. Then, the water sample was filtered using the device with sand filter. The water sample was pre-tested and post tested for turbidity before and after filtration. The researchers tried to find out if there is a significant difference in the amount of micro plastics before and after filtration.

RESULTS

The result of the filtration of microplastics using sand filter showed that 26g micro plastics were present before filtering the water sample. The result showed that 8g micro plastics were present after filtering the water sample.

DISCUSSIONS

Results reveal that there is a difference of 18 grams in the two values leading to the belief that the filtering device was able to filter this much microplastics. This means that the device has reduced the microplastic pollutant from the sample water by 31%.

KEYWORDS: glow1715

SUBMISSION ID: R04A-DASMAR-0038

Development and Evaluation of Microplastic Filtering Device

Adrienne C. Evangelista, Jonathan V. Roceta, & Kirk Rafael G. Diquit, Bucal
National High School
(Adviser: Riza Soberano)

Abstract

INTRODUCTION

Water pollution is one of the worst environmental problems confronting man. With the widespread use of plastic products, there is a growing concern on contamination of marine life by micro plastics. Recent reports show different organisms ranging from small fishes to big whales meeting their death because of ingesting microplastics. For this reason, the researchers thought of designing a filtration device that could filter very small plastics so that these water contaminants can be collected and separated from bodies of water.

METHODS

The micro plastic filtering device was constructed following an approved design with features of filters with 1.00mm and 1.50mm openings. It was tested for functionality and efficiency by measuring and noting down the amount of micro plastics in the sample liquid before and after filtration using the device. The researchers tried to find out whether there exists a significant difference in the amount of micro plastic before and after filtration.

RESULTS

Results of the 10-trial functionality and efficiency test reveal that when the 1.50mm filter was used, the amount of micro plastics before filtration significantly decreased after filtration. On the other hand, when the 1.00 mm filter was used, all micro plastics present before filtration can no longer be detected after filtration.

DISCUSSIONS

Results show that the micro plastic filtration device is effective in filtering the micro plastic contaminant in the sample liquid with 100% success rate when the filter used has 1.00 mm opening and 85% success rate when the filter used has 1.50mm opening.

KEYWORDS: Microplastic, Filtering Device

SUBMISSION ID: R04A-CAVITP-0768

Electrical Circuit Analyzer with Monitoring and Control System

Aira Mae V. Blancada & Ira Mae Blancada, STEM Student
(Adviser: Engr. Antonio M. Coballes Jr.)

Abstract

INTRODUCTION

Monitoring systems are evolving into market over the years. Technology has revolutionized our perspective of the world with this innovation. The previous frameworks of monitoring systems are limited due to its inefficiency and complicated design. Since, 21st century has advanced the risk of this technological advancement such as leaving electrical loads unattended increasing the risk of potential accidents. Commonly, leads to fire that occasionally endanger establishments and lives at all cost. For these reasons stated, the researchers used the concept of wireless monitoring and control system in order to create an innovative electric system device that will efficiently and effectively benefit the users.

METHODS

The researcher gathered the materials for the construction of the framework and the circuit. The framework was constructed through the pre- designing of the circuit diagram. The circuit was constructed by connecting the components and sensor in the Arduino microcontroller. The software used was created to run as Server in order to communicate with the client-hardware.

RESULTS

Electrical loads such as fans, bulbs, and other devices are tested and controlled wirelessly by GSM module and Bluetooth technology by sending command keys on the System Administrator that will control the client-hardware. The command is transmitted to the hardware that is being controlled. The system administrator replies as soon as the command has taken its effect. Then, checking the status of electrical loads will also be transmitted through SMS. It indicates the loads that are running and at the same time the time and date of the analysis that comes at the last part of the message. The use of the electric circuit analyzer with GSM-Based Monitoring and Control System is effective and efficient core tool in monitoring and controlling the electric system device.

DISCUSSIONS

The study varies on the reception of signal and the range of Bluetooth technology as the result demonstrated. to prevent electrical fluctuation, proper execution of wiring is necessarily needed. It is very much commendable to have a provision for operation without a main power supply such as solar panel and inverter. It is also a must to modify the program of the switch to make it functional.

KEYWORDS: RESEARCH ADVISER: ENGR. COBALLES JR.

SUBMISSION ID: R005-CAMSUR-0060

Home Security System with Closed-Circuit Television (CCTV) Camera and Audio-Visual Alarm using Inductive and Photo Sensors

Ken Alfaro, Nikki Mariel Pugeda, & Reine Reyes, CNSHS

Abstract

INTRODUCTION

Intrusion is a common concern especially in urban areas in the Philippines. Consumers who want to invest in home security systems are also increasing. According to a survey led by Numbeo (2011), 66.02% of respondents are afraid that intruders might try breaking into their homes. In 2012, NSO and other government and private agencies reported a total of 26,988 robberies. and in 2013, the top three most common crimes reported to local authorities were theft, physical assault, and robbery. This study aims to produce an effective and fully functional prototype of home security system which serves as an environment protector and crime regulator that is necessary for house and business establishment.

METHODS

The structure and design of the home security system prototype was analyzed well before making a prototype house. The prototype house itself is made up of wood (for base support) and Styrofoam (for whole wall structure). Different devices are installed sufficiently to fit in the prototype including the photo sensor in the outside ceiling and the inductive sensor in the window area. For data analysis, Function and Reaction test were conducted to test the efficacy of the program.

RESULTS

The home security system, based on the researchers standards and qualification in 1)accuracy of the photo sensor which senses the presence and motion of an object in front of the door; 2) accuracy of the inductive sensor which detects the presence and absence of a metal in the window of the prototype; 3)accuracy of the duration of audio and visual alarm and 4)accuracy of the automatic activation of the system garnered an average score of 1 point based on the statistical test used. These variables, based on the results of 50 trials is said to be effective, fully functional and operational. As a whole, the home security system was able to perform its purpose and showed efficiency.

DISCUSSIONS

The results of the test, as evaluated by the researchers, showed a positive efficiency and capacity of the program to secure the safety of the users.

KEYWORDS: Prototype, inductive sensor, photo sensor

SUBMISSION ID: R04A-CAVTP-0170

HSE (Hydro and Soller Energy) Hybrid Multi-Purpose Charging Station

Diane Angeline Paredes, Genesis Martinez, & Kirsten Therese Lim, Cavite
National Science High School

Abstract

INTRODUCTION

According to the 2016 Philippine Power Situation Report of the Department of Energy, the most common source of electricity are coal-powered plants which utilizes a non-renewable resource. The number of smartphone users in the Philippines was estimated at 30.4 million in 2017 and was expected to rise by 40 percent in the next year (Statista.com). Since electricity is included in the usage of fossil fuels, the use of fossil fuels will also increase. This investigatory project aimed to build a charging station that would utilize water and solar energy as alternative sources of electricity that could charge four Android mobile phones or Android tablets, power banks, rechargeable mini fans, AA batteries, and an emergency light.

METHODS

The body of the device was made from blue and white acrylic plastic sheets. Two LED light bulbs were placed at the first and second racks that would automatically turn on when the light sensor detected that the surroundings are getting dim and vice-versa. Four USB charging ports were mounted in the front of the device. An ATX2 microcontroller was stationed inside the emergency light's shelf together with AA charging tool. Pipes were stationed between the valve, crossflow turbine and vortex turbine for water to flow and turbines to generate electricity. Solar panels were placed at the top of the charging station. Solar panels and generators were connected to the power bank. Thirty trials were conducted to test the functionality of each part. Percentage and One-way ANOVA were used to analyze the data.

RESULTS

Several tests were conducted such as: a. functionality of charging ports to ensure that these charge several devices; b. sensitivity of sensors and actuators to ensure that they worked as they were programmed; c. functionality of solar panels; d. functionality of solar panel C in supplying power to the emergency light; e. functionality of AA battery charging tool, and; f. the overall function of the charging station. Each test resulted into 100% functionality. The calculated F of 3.220354 and p-value of 0.06 with a level of significance of 0.05 indicated that there was no significant difference between the number of gadgets being charged using HSE and wall outlet, and the time needed to charge 300 mA of power on gadgets.

DISCUSSIONS

It was concluded that the device works using water and solar energy as sources of electricity. Therefore, HSE can significantly contribute to energy conservation since water can be reused to generate electricity.

KEYWORDS: Solar, energy, water, power, robotics, charges

SUBMISSION ID: R04A-CAVITP-0336

Impacts of Nepotism in PSTMNHS :A Basis for an Ideal School Management

Daisyrie May Ebreo & Irene Manalo

Abstract

INTRODUCTION

Nepotism is a term used when several members of the family are working or serving as a leader in a certain area or community. It is not transmitted but inherited. This issue may occur anywhere, at a company, in the government or even in schools. The term nepotism is usually associated to favoritism. It is giving special or preferential treatment to their relatives depending on their relationship instead of their qualifications and their skills. This is a process of appointing their relatives on a position that does not suit their skills and knowledge. Nepotism is mostly seen on areas where there are strong family ties. It is a term that originally connotes the concept of family ties however it is also a term used for favoritism. The researchers chose the topic "Impacts of Nepotism in PSTMNHS: A Basis for an Ideal School Management" to give awareness of its existence and its effects to the students and to the school.

METHODS

Descriptive design was used to examine the impacts of nepotism in achieving an ideal school management. It allows an in-depth analysis of variables and elements of the population to be studied and as well as the collection of large amounts of data in a highly economical way. A total of 100 respondents participated, comprised by 8 teachers, 42 Junior High School students and 50 Senior High School students.

RESULTS

in this study, the researchers found out that there is an existing nepotism in PSTMNHS. The results explained that the effects of nepotism helps the leaders to facilitate the school, it causes great feeling of resentment and decision for the school is easily made. It also leads to gossips and unfair treatment. Few respondents agree that it is a form of corruption. The main causes of nepotism are the great feeling of resentment, willingness to be guided, and expectation of having a high position.

DISCUSSIONS

Data were analysed to identify, describe and explore the relationship of nepotism among the students and teachers of PSTMIS. The respondents are aware that there is an existing nepotism and they agreed that there are both positive and negative effects of it. It may be useful to the management as long as they know their limitations.

KEYWORDS: NEPOTISM, IDEAL MANAGEMENT, FAVORITISM

SUBMISSION ID: R04A-BATANC-0156

ENGINEERING

A.R.M.S. (Apparatus for Reliable Military Surveillance)

Mark Daniel Perlas & Teolo Raphael B. Nieto, Cavite National Science High School

Abstract

INTRODUCTION

A military operation is a mission assigned to the military personnel wherein they are to perform suitable tasks such as surveillance of the area, finding enemies, and search and rescue operations. In these operations, the soldiers encounter different problems such as limited information about the area and vision of their surroundings that can cause casualties. The objective of this study is to create a device that could possibly aid these people through detecting heartbeats within areas even with the presence of obstructions. The device may also be utilized in search and rescue missions since the Philippines is known to be a disaster-risk country.

METHODS

The HST-S1M-SE Radar Module Evaluation Kit was assembled then programmed using a laptop to test its functionality to detect human heartbeat. After assessing its performance, it was then transferred to a windows tablet, placed inside a poly carbonate box then programmed. Before the actual testing, functionality testing and debugging were conducted to assure the compatibility and functionality of the device to the setup. Thirty trials were conducted on 6 different types of obstructions; wood, concrete, glass, plastic, soil, and water, which represent the common types of obstructions in our community. Per setup, a 10-meter distance was measured, and a mark was placed per 1 meter. The data was gathered and recorded.

RESULTS

The data was gathered by recording positive response of the radar through its monitor. This method was repeated thirty times for every obstruction per mark to guarantee the accuracy of the data of the device. The results gathered for each type of obstruction were binary, meaning that the data is only 1 or 0, with "1" as a success and "0" as a failure in detecting human heartbeat. Mean was used to analyze the results. The mean of data gathered on wood and concrete wall, glass, plastic, soil, and water were 1, meaning that per obstruction used in the experimentation, the device showed 100% accuracy. The results showed that the device has a 100% accuracy rate on detecting human heartbeat through the 6 different types of obstructions; wood and concrete wall, glass, plastic, soil, and water.

DISCUSSIONS

This concluded that the device is a tool to potentially help the military surveillance and search and rescue missions. The device does prove to be promising but may be limited to batteries to 1 ½ hour with a charging time of 3 hours but this problem was solved by a power bank.

KEYWORDS: Radar, Obstruction, Military, Disaster, Surveillance, UWB, Human presence

SUBMISSION ID: R04A-CAVTP-0338

Acceptability of Prototype Renewable Source of Light: Proving Concept of Gravity Light

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(Adviser: John Raymond Ledesma)

Abstract

INTRODUCTION

Nowadays, the world is so dependent on electricity and fuel consumption. Yet, the abovementioned socio-economic factors remain on top of the most common source of energy used by Filipino consumers. In connection, light is one of the necessities in every home. However, due to absence of electricity in far flung areas, not everyone is fortunate enough to have access to this resource. This social issue motivated the researcher to conduct a study in order to develop and determine the acceptability of an innovated light source to provide safer and eco-friendly source of light for communities which don't have access to electricity.

METHODS

The device was an inspired piece of art from Deciwatt. The building and assembling of the localized Gravity Light as a renewable source of light was done. Respondents were selected randomly and purposively. Both the household and expert group of respondents answered validated survey containing the different factors. Data was collected, analyzed, and treated with appropriate statistical tools.

RESULTS

The result showed that the prototype renewable source of light is accepted in terms of portability and durability. It is highly accepted in terms of eco-friendliness, cost, and physical appearance. Based on the results of the survey, the prototype will be beneficial for people living off the energy grid to have safer, eco-friendly, and limitless source of light.

DISCUSSIONS

It was shown in the results that Gravity Light is interpreted either as Accepted or Highly Accepted as a prototype renewable source of light based on the answers of the respondents. The study implies that millions of people in Southeast Asia such as in the Philippines, lack access to electricity that pushes them to use alternatives like candles and kerosene lamps which are fire and health hazard. Therefore, prototypes that produces light in a safer and eco-friendly way is much accepted by the respondents. People around the world are becoming environmentally concerned and this research will send a message that renewable type of energy, not only is limitless but more importantly, ecologically and economically sustainable.

KEYWORDS: Deciwatt, eco-friendly, Gravity Light, prototype, renewable, sustainable

SUBMISSION ID: R04A-RIZALP-0053

Arduino Temperature Controlled Fan for Energy Conservation

Vinz Klayzon L. Diangkinay, CLDDMNHS
(Adviser: Liza Brion)

Abstract

INTRODUCTION

Technology affects people all over the world, both positively and negatively. Advances in technology have brought us online banking, smart cars, smart TVs, and lightning fast computers. Such advances cannot be achieved without the use of electricity. Since the very old days, electricity has always been a necessity for everyone. But such things will not last forever, it will also run out. This paper offers a new method in conserving electrical energy with the use of Arduino temperature and humidity sensor, and a developed application (CMDf) that will serve as a remote control to the device to make it more accessible and easier to use.

METHODS

The device consists of three sections. One senses the temperature by using humidity and temperature sensor namely DHT22. Second section reads the DHT22 sensor modules output and extracts temperature value into a suitable number in Celsius scale and control the fan speed by using PWM. The last part of the system shows humidity and temperature on LCD and fan driver. The CMDf application made by the researchers will be the one responsible to control and monitor the temperature of the surroundings as the numerical value and the fan status was written on it. The device was used for one month and compared the electric bill with the previous month to test how much energy was conserved.

RESULTS

The difference in temperature monitored by DHT11 sensor and thermometer indicates that the sensor was accurate. The results also indicate that the energy consumption of the fan with the device has lesser usage of electrical energy than the fan without the device. Computed values resulted from the experimentation indicates that the device has a high percentage of accuracy and proven to conserve electricity.

DISCUSSIONS

Based on the results the device is effective in conserving electrical energy as observed in the electric consumption of the house. in terms of the accuracy of the device, there is not much difference in temperature between the wall thermometer and the temperature in the application as there was only an average of 0.59 difference. Other observations also show that the use of the device doesn't affect the performance of the appliance where it is attached.

KEYWORDS: Arduino, conservation, temperature

SUBMISSION ID: R04A-SANPAB-0067

Arduino-Based Prototype Engine-Stopper System (Press 2.0) for Overloading Prevention in Vehicles

Niel Albert B. Gapusan
(Adviser: Michelle Dulay)

Abstract

INTRODUCTION

Overcapacity in land transportation vehicles has become a major challenge as the transportation industry grows. Research results reported that an overcapacity in vehicles contributes to the increasing carbon dioxide emission, thus compromising the environment. To solve such problem, the Philippine Senate filed Bill 1446: Anti-Overloading Act of 2017, penalizing Public Utility Vehicles (PUV) that is proven to exceed the prescribed gross weight for PUV's (Senate of the Philippines, 2017). However, the determination of overcapacity under the Senate Bill is done manually by designated officers. The study was conducted to develop a prototype engine-stopper system for the prevention of overloading in vehicles. Specifically: a) to design an engine-stopper system using basic programming, control and automation principles; b) to establish an engine-stopper system through optimization studies; and; c) to determine the economic viability of the engine-stopper system using cost analysis.

METHODS

The digital load sensor system was attached to the Arduino Uno R3's motherboard coupled with HC-12 wireless module. A DC LED bulb, connected to the board, will act as the alarm. Calibration was done in replications by weighing 1.0 kg of load. The computer, using the Arduino's software stored the data gathered by the weight sensor and monitored the accuracy of both the program and the system. A fixed weight of 3.0 kg was programmed to trigger the LED alarm system, as it is set as the maximum weight limit, and 5.0 kg for overloading based on the methods stated by SparkFun Electronics. The LED is programmed to flash as the load weight aligns or exceeds the allowed weight of 3.0 kg of a minimum of 10.0g. The sensitivity of the engine-stopper system was set to detect an increase in weight as low as 10.0g.

RESULTS

Results revealed that the engine-stopper system was developed using the basic principles of programming, control and automation using Arduino.

DISCUSSIONS

Further, based from the optimization studies conducted the following were recorded: a) the system is not a passenger-counting system (Hassan, Sam and Machuve, 2013; Ye and Wang, 2017); b) it is a system that successfully opened the circuit automatically while past designs such as the device designed by Shanzhen and Qian (2011) are limited to monitoring the weight of the passengers. Unlike the system developed by Shanzhen and Qian (2011) that only rely on alarm system, c) the prototype system consists of two warning system the LED alarm system, and the engine-stopper; d) It is vehicle-independent which unlike other similar designs that are limited to freight vehicles by Yuan and LI (2013); and e) the engine-stopper system is smaller, cheaper and easier to set-up compared to more complex bulky weight-monitoring systems (Reddy, 2015).

KEYWORDS: Overloading, Vehicle, Engine-Stopper, Load, Weight

SUBMISSION ID: R04A-CAVTP-1691

Automated Water Sprinkler System

Janelle Caringal

Abstract

INTRODUCTION

Water is essential in our daily lives, but it is not being consumed properly and is being wasted. This leads to a bigger problem of water shortage. Meanwhile, over watering is unhealthy for the plants. It is one of the main causes of the death of plants. With the stated problems, an automated sprinkler system equipped with a soil moisture sensor was developed. The device will be of benefit to the following; farms, community, environment, and future researchers.

METHODS

The device created used primary materials, namely; Arduino Uno, soil moisture sensor, single-bridge 5V relay module, and water pump. When all the materials needed was gathered, the construction of the device, plant pot, and the programming came next. After the device was created, data gathering followed. It was divided into two, test for functionality and test for acceptability. Qualitative data was obtained for the test of functionality. Meanwhile, quantitative data was obtained for the test of acceptability.

RESULTS

in testing the functionality of the device, the soil moisture sensor was put in dry soil and in moist soil. It was seen that the Automated Water Sprinkler System released water when the soil is dry, and it stops when the soil is already moist. This made the conclusion for the functionality of the device as well as the program. For the qualitative data, eight randomly selected respondents answered the prepared survey questionnaire about the acceptability of the device. It was evaluated using central tendency. The responses were interpreted using a Likert scale and showed 4.75 overall mean for the design, 4.78 for the criterion of performance, 4.60 for cost-effectiveness, and 5.00 for overall perception of the device.

DISCUSSIONS

The results showed that the Automated Water Sprinkler System is fully functional and has a high acceptability rating. Upon the stated results, there are still some recommendations that can be applied to further develop the said device. Determining the accurate moisture needed by the plants and the utilization of solar energy as its power source were among them.

KEYWORDS: Arduino Uno, soil moisture sensor, automated

SUBMISSION ID: R04A-CAVITC-0100

Automated Watering System using Arduino Microcontroller for Gardens

Angelo M. Torres, Angelo Levardo Loyola Senior High School
(Adviser: Angelo M. Torres)

Abstract

INTRODUCTION

Water is very essential to plants because it is one of its major components to produce and make a healthy and beautiful product (fruits and flowers).

METHODS

in this study, watering plants automatically was constructed. Using a microcontroller, the method of irrigating plants was innovated. Soil moisture of the plants was observed thus the device will automatically water them to maintain its moisture level. The device is programmed to water the plants in five minutes and if the soil moisture level reached 50%, the device will stop.

RESULTS

to evaluate the acceptability of the device, the researchers gathered data by surveying 30 students and 30 teachers from the school. The gathered data was treated by using arithmetic mean/mean average.

DISCUSSIONS

in conclusion, the study about the "Arduino Powered Watering Device Activated by Soil Moisture Detector for Garden Plants" proved that because of its characteristic to automatically water plants, it lessens the work of the students.

KEYWORDS: Microcontroller, moisture, Arduino, watering device, garden

SUBMISSION ID: R04A-CAVITP-1313

Bamboo Filtration Bottle

Christine Maureen M. Hernandez, Jairoh M. Aranas, Nicholle Jhane D. Cueto,
Rick Lennon D. Aguirre, Robert Gabriel M. Mendoza, & Zebedee B. Mendoza
(Adviser: Mellany Joy Panganiban)

Abstract

INTRODUCTION

Destruction of the world's forests resulted to worldwide shortage of potable drinking water. Although filtration systems are abundant; they are costly and require complex physical set up. In this study, the researchers intend to determine the potential of bamboo for deep well water filtration.

METHODS

Experimental research was used. Several set ups were made until the ideal materials and set up were identified. Water samples were tested in the laboratory before and after filtration to determine the effect of bamboo filtration. The outcome of the experiments was recorded in a journal.

RESULTS

Laboratory results show a reduction in the heterotrophic plate count with bamboo filtration. Heterotrophic bacteria cause health risks to humans. Moreover, improvement in the physical characteristics of water was also observed.

DISCUSSIONS

Bamboo, a renewable resource, abundantly grows in tropical areas and have filtration properties. Filtration of drinking water does not always need sophisticated water filtration facility as indigenous materials are also useful, affordable and effective.

KEYWORDS: bamboo, filtration, charcoal

SUBMISSION ID: R04A-BATANC-0452

Biomimicry as Alternative Source of Energy

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(Adviser: Mellany Joy Panganiban)

Abstract

INTRODUCTION

Although Batangas steadily grows economically, power source and its consumption cost remain a serious problem in the outskirts. In the study, the researchers intend to demonstrate mimicking photosynthetic process for a more sustainable option of power generation.

METHODS

Experimental research was used. Several set ups were made to try different materials that may be used in mimicking photosynthesis for power generation. The outcome of the experiments was recorded in a journal.

RESULTS

Results show that the ideal set up includes solar panel, water and pencils. This presents a simple photosynthetic model with the solar cell as storage of energy and the breaking down of water molecules into chemical energy. The simple set up enables the light bulb to work. Biomimicry, as in photosynthetic mimicry, can provide an environment friendly option for power generation as production of large quantities of hydrogen presents a more sustainable process of generating electricity.

DISCUSSIONS

Biomimicry is perceived as a way to deal with development as it looks for reasonable answers to human difficulties like power generation. Through mimicking photosynthetic process, a more sustainable alternative source of energy is possible and cost efficient.

KEYWORDS: biomimicry, alternative, power generation

SUBMISSION ID: R04A-BATANC-0448

Design and Evaluation of Microplastic Filtering Device

Carla Isabell Ojascastro, Gaila Mae Caculitan, & Carl Jazmine Baldoz

Abstract

INTRODUCTION

Water pollution is a major problem in the Philippines. Pieces of plastics that have been worn down by elements into tiny fragments called microplastics cause contamination of marine life leading into their untimely demise. Reports show that marine organisms were harmed because of ingesting micro plastics. For this reason, the researchers thought of designing a microplastic filtering device so that these pollutants can be collected and removed from bodies of water to lessen water pollution.

METHODS

One liter of sample water pollutant with microplastic was tested to determine the amount of microplastic before filtration. Then, the water sample was filtered using the device with sand filter. The water sample was pre-tested, and post tested for turbidity before and after filtration. The researchers tried to find out if there is a significant difference in the amount of micro plastics before and after filtration.

RESULTS

The result of the filtration of microplastics using sand filter showed that 26g of micro plastics were present before filtering the water sample. The result showed that 8g of micro plastics were present after filtering the water sample.

DISCUSSIONS

Results reveal that there is an 18 grams difference leading to the belief that the filtering device was able to filter this much microplastics. This means that the device has reduced the microplastic pollutant from the sample water by 31%.

KEYWORDS: microplastic

SUBMISSION ID: R04A-CAVITP-1596

**Effect of School- Based Feeding Program on the School Performance of
the Recipients of Rizal Elementary School Atimonan II District,
Atimonan, Quezon SY: 2018 - 2019**

Rachel De Jesus, Department of Education

Abstract

INTRODUCTION

Nutritional and health status are powerful influences on a child's learning and on how well a child performs in school. Weak health and poor nutrition among school children diminish their cognitive development either through physiological changes or by reducing their ability to participate in learning experiences. These affects and contribute to the inefficiency of the educational system.

METHODS

This study employed the use of descriptive type of research because it described events aimed to discover inferences or causal relationship that exist. The researcher used a self-made questionnaire answered by the twelve respondents, comprised of ten males and two females. Purposive sampling design was also used in order to meet the objective of the study. to find the perception of the respondents on the effect of school - based feeding program on their school performance, weighted mean was employed.

RESULTS

School - Based Feeding Program has a significant effect on the school performance of the respondents. It enhanced their academic performance, at the same time increased their social participation. As to the academic performance, nutrition affects students' thinking skills. Nutritional deficiencies early in life can affect the cognitive development of school-aged children, and access to nutrition improves students' cognition, concentration, and energy levels. Nutrition indirectly impacts school performance. Poor nutrition can leave students susceptible to illness such as headaches and stomach aches, resulting in school absences which eventually might lower their grades in school. Good nutrition directly affects the beneficiaries' social behavior since School Feeding Program alleviates hunger, it enables them to mingle with their friends and classmates actively. It helped them to contribute new ideas and become attentive on the different discussion they made.

DISCUSSIONS

Good nutrition helps students show up at school prepared to learn. Because improvements in nutrition make students healthier, students are likely to have fewer absences and attend classes more frequently. Thus, students will have more time in class, will have fewer interruptions in learning over the course of the school year. Additionally, students' behavior may improve and cause fewer disruptions in the classroom creating a better learning environment for each student in the class.

KEYWORDS: School - Based Feeding Program, Malnutrition, Cognitive Development, Social Development

SUBMISSION ID: R04A-QUEZON-0337

**Effects of Mobile Gaming to the Performance of the Students in
Palahanan National High School**

Ericka Canarias

(Adviser: Eric Hernandez)

Abstract

INTRODUCTION

Mobile games are always associated with poor academic performance. They largely influence the participation of students during class. Mobile Legends, Clash of Clans, and Clash Royale are some of the examples of these mobile games. However, some research studies have been proven that mobile games can bring positive learning outcomes. This study will give significance to mobile gaming which took part in the classroom environment and surprisingly made students actively engage with learning.

METHODS

The descriptive method was used with the questionnaire as the main data gathering instrument that sought to identify the influences of mobile games to the cognitive development of the students. It was conducted to the STEM students of Palahanan National High School. Frequency, percentage, ranking and weighted mean were used to quantify data to look forward for the positive benefits of games in academic performance of the students.

RESULTS

Mobile gaming is one of the factors which affect academic performance of students. Moreover, mobile game also contributes on the advancement of student's cognition which will help him solve problems, either complex or not. Mobile gaming brings negative impacts on students' academic performance. Despite of this, it is proven that mobile games have the potential to increase participation of students. This can be done through applying this activity in the learning process inside the classroom. Teachers can use mobile gaming as incentives for students. Aside from this, several mobile games enhance vocabulary and mathematical intellect of students. Additionally, cognitive ability can be developed through mobile gaming since game apps are technologically developed to test the critical thinking and analytical skills of a person. Mobile games are brain-challenging in nature which can help a person solve more complex problems.

DISCUSSIONS

Students should be aware of the negative effects of mobile gaming and how they can cope up with it. Teachers can use mobile gaming as an incentive for students. They can apply gaming in the learning process to be able to increase participation inside the classroom.

KEYWORDS: mobile gaming, cognitive ability, virtual world

SUBMISSION ID: R04A-BATANP-0321

**Electroencephalogram (EEG) Headset-Controlled Lower Body
Adjustable Cybernetic Exoskeleton through a Brain-Computer Interface
(BCI): A Potential Rehabilitation Device for Physical Therapy**

Ayumi Bolo, CrinCESS Jestine Maglanque, Fermina Kassandra Dela Cruz, &
Jose Carlo David Ocampo, Marcelo H. Del Pilar National High School

Abstract

INTRODUCTION

The researchers focused on the rehabilitation of people with physical difficulties and disabilities. Physical Therapy is a form of rehabilitation that aims to ease one's pain, which helps a person function, move, and live better. The hypothesis of this study is that the adjustment of the lower body adjustable cybernetic exoskeleton has no significant effect on the time it takes the exoskeleton to move. The main purpose of this study was to use an electroencephalogram (EEG) headset through a brain-computer interface (BCI) to control the exoskeleton, determine the efficiency of making an adjustable and relatively cheaper exoskeleton available to the public.

METHODS

The prototype was assembled by connecting two pieces of the Polyvinyl Chloride (PVC) pipes with a 1-inch diameter to the casing of the servo motors. The six servo motors were placed to the hip, knee and ankle of the exoskeleton. The motors were connected to the Arduino mega 2560 microcontroller that was connected to a buck converter then to the power supply. The microcontroller was programmed using the C++ programming language. The EEG headset and the microcontroller were connected via Bluetooth 4.0. Testing was conducted at a multi-purpose hall with a smooth surface, and the exoskeleton was adjusted to three different heights.

RESULTS

The use of electroencephalogram (EEG) headset specifically the Emotiv Insight Brainwear was successful to control the exoskeleton. The exoskeleton at its maximum height of 108 cm had the longest average time in covering the distance of 3 meters which is 52.254 seconds. On the other side, the minimum height of the exoskeleton of 100 cm resulted to the shortest travel time. Hence, the height of the exoskeleton and the time it takes to travel a certain distance is directly proportional to each other. The data gathered was then analyzed in a One-Way ANOVA Test using Statistical Package for Social Sciences (SPSS). The calculated *f* value was 173.536. Furthermore, the *f* critical was identified by Table of Critical Values, the *f* critical was 3.10. Consequently, the calculated value and critical value was compared.

DISCUSSIONS

The null hypothesis was rejected, and the alternative hypothesis was accepted. The researchers concluded that the adjustments of the lower body adjustable cybernetic exoskeleton had a significant effect on the time it took the exoskeleton to move.

KEYWORDS: rehabilitation, exoskeleton, electroencephalogram (EEG) headset, adjustable, polyvinyl chloride (PVC), microcontroller

SUBMISSION ID: R003-MALOLO-0001

F.A.D.E (Firefighting Aide Drone Extinguisher)

Mel Francis O. Odulio, Gen. Juan Castañeda Senior High School
(Adviser: Edgar Rivera)

Abstract

INTRODUCTION

The history of firefighting through aviation was considered as the most successful aerial operations in the world. Currently, drones also known as Unmanned Aerial Vehicle (UAV) also contributes to firefighting, an example is the award-winning Latvian- American Innovation Award 2018 firefighting drone mechanically unique with firefighting system connected to a fire truck for water supply. Since using water can't extinguish different classes of fires the researchers' goal is to invent and innovate an artificial intelligent firefighter drone unit with autonomous flight that can use complex fire extinguisher without any connections to the ground in order to roam the area and perform fire retardant-dropping and to let the drone report current status in the scene through speed dial automated call. Likewise, the researchers' instigated to determine the feasibility and effectiveness of the project in terms of how it assists in fire operations.

METHODS

The Artificial Intelligent Fire Fighting Drone Unit with Speed Dial Status Report was created using different materials intended for the three systems which includes flight, UAV intelligent and fire extinguishing systems of the product. The product used a thermal sensor, gas smoke sensor, and non-toxic dry powder that was able to extinguish classes of fire A, B, and C with air blower mechanism. Moreover, the frame was made from fiberglass which makes the drone fire-resistant.

RESULTS

The simulation showed the functionality of the drone where a torch at an elevated area test the ability of the drone to fly with its autonomous flight, be able to sense smoke and monitor the thermal status plus the application of the automated speed dial. in terms of effectiveness, the Imus City Bureau of Fire Protection perception proved the effectiveness of the product.

DISCUSSIONS

Only few firefighting drones were able to do the function of fire fighting with the use of water. Since water isn't applicable in eliminating almost all classes of fire, this Artificial Intelligent Fire Fighting Drone Unit with Speed Dial Status Report can help in assisting firefighting operations in remote and high areas especially for extinguishing fast spreading fire with its autonomous flight system. Moreover, having 3d sensing ability, X-ray Vision, Swarm firefighting unit, and retractable landing gear was recommended for the innovation of the study.

KEYWORDS: Artificial Intelligent, Firefighting Drone Unit, UAV, Fire Retardant Dropping, Autonomous Flight, Speed dial, Dry powder extinguisher, Fire-resistant, Bureau of Fire Protection

SUBMISSION ID: R04A-IMUSC1-0092

Filtration of Swine Production Wastewater

Amanda Noelle D. Medina, Eoline T. Ilagan, & Maureen Joy R. Cabel
(Adviser: Mellany Joy Panganiban)

Abstract

INTRODUCTION

As the swine production industry becomes progressive, the environment suffers from degradation and pollution. in Batangas, stricter environmental policies and requirements reduced the number of active swine raisers but still, pollution of waterways remain an issue of concern. in this study, the researchers intend to determine the potential filtration of swine production wastewater to reduce its pollution hazards.

METHODS

Quantitative research was used. A self-made survey questionnaire, which was validated by a technical expert, was administered to respondents from Soro-Soro Ibaba, Batangas City who were chosen through convenience sampling. The said locality in Batangas City is known for having the greatest number of active swine raisers. The questionnaire intended to identify the swine production activities that produce wastewater, the contaminants present in it and its recycling potential. Statistical analysis was used, and initial design of the filtration system was made.

RESULTS

The data gathered show that cleaning produces the most amount of wastewater while leftover feeds and fecal/urinal waste are the main contaminants. Moreover, wastewater recycling lessens the amount of waste thrown in bodies of water. Through the gathered data, the final design of the filtration system was recommended.

DISCUSSIONS

Results indicate that swine wastewater recycling may be imposed for purposive cleaning of wastewater to be able to reduce adverse environmental impacts and conform with regulations for the preservation of the environment. Moreover, it may also maximize the recycling potential of wastewater for other agricultural use like farming.

KEYWORDS: swine, wastewater, filtration

SUBMISSION ID: R04A-BATANC-0454

FISSION: Fire Security, Suppression, and Notification System

Vianca Roze Alaman

Abstract

INTRODUCTION

Fire disasters are known for their highly destructive action and many victims that is why firefighting services, intervention methods, and security are highly recommended. The researchers created a function prototype "FISSION: Fire Security, Suppression, and Notification System" which alarms and notifies the people about a fire, extinguishes the fire in the house model, and increases security against fire.

METHODS

The researchers designed the function prototype and gathered all the materials needed. A house model was constructed. Then, the input and output devices were connected following schematic diagrams and a program that triggers the output devices upon the detection of smoke or gas leakage was created. It was programmed using Arduino 1.8.4 software. First, the gas sensor will check if there is gas present in the area, and if there is, the system will automatically send a text message to the owner. Then, the smoke sensor will check if there's smoke present in the area, and if there is, the system will send a text message to the owner, the sprinkler and alarm will be activated. If the system did not fully extinguish the fire, then the system will proceed to dropping the fire extinguisher ball, turning alarm on, and sending a text message to the owner. If the fire is still not extinguished, the system will automatically send a text message to the fire department. The program was loaded to the microcontroller and was tested if it would respond accordingly to the instruction through placing gas and charcoal inside the house model.

RESULTS

After the trials, the results were gathered. The gas sensor has 90% average efficiency in terms of sensitivity while the smoke sensor and flame sensors have 100% average efficiency. The system has 90% average efficiency in terms of reliability in sending SMS due to gas leakage and 100% due to smoke and occurrence of fire. The system was not 100% efficient but based on the results from the trials the system is dependable and provides security for the user.

DISCUSSIONS

As the system was finalized, the system was able to meet its desired objectives, pass different tests, and affordable compared to other fire alarm system. The system is functional, efficient, and can provide safety for the users. It is recommended to have a high-pressure water pump to have a more efficient water misting process so that big fires can be extinguished successfully.

KEYWORDS: function prototype, fire, sensor, system

SUBMISSION ID: R04A-CAVTP-0649

Flood Level Oriented Warning System (FLOWS): An Advance Hydrological Flood Monitoring and Early Warning Detection System

Beatrice Colleen Navasca, JHS Student Researcher

Abstract

INTRODUCTION

Floods have large social consequences for communities and individuals. Through the use of flood monitoring and early warning system, further damage caused by flood would be prevented. Because of their ability to drastically reduce property losses and loss of life, flood warning services may be seen as a cost-effective means of mitigating flood hazards. Hence, the researcher created a flood detection system to monitor the rising water level in residential areas. This study presented a design of a flood monitoring system which consists of flood detector, LCD monitoring display, and Short Messaging Services (SMS).

METHODS

The Arduino IDE software was used to program the system. This system is targeted to be implemented as a flood warning tool by respective local authorities and officials in the City of General Trias, Cavite. Completely Randomized Design (CRD) was used by the researcher wherein five groups- Brgy. Vibora, San Francisco, Pasong Kawayan I, San Juan I and Sta. Clara (with randomized proponents) were subjected to different treatments using the system to compare data and infer results. The researcher used a systematic data collection approach which was the testing method where she tested the effect of the application of the treatment in the experimental group compared with the control group. This method was also used in testing the system's accuracy in sending messages via SMS in alerting the officials and the public.

RESULTS

to test the efficiency of the product, the researcher distributed the data on tables that showed the speed, distance and accuracy of the product. The data were analyzed using the t- test ($\hat{1} \pm 0.05$, $N = 5$, d.f.=4). Since computed $t = 12.823$ is higher than $t_{critical} = \hat{A} \pm 2.776$, it is within the rejection region. Therefore, there is a significant difference between the energy consumption before and after using the device.

DISCUSSIONS

As the study was prepared, conducted, tested and analyzed, the researcher therefore found out that the Arduino-based monitoring system was proven to be effective and reliable in monitoring the status of water level, detecting level of water and alerting the respondents, and can send alert messages accurately and quickly based on the signal connection. The FLOWS can be used by different barangays and government officials to monitor status of rivers, lakes, dam, etc.

KEYWORDS: flood monitoring system, alert detection, Arduino IDE software

SUBMISSION ID: R04A-GENTRI-0013

Flood Notifier: Arduino-Based Flood Monitoring Device via Short Messaging System (SMS) and Social Media Warning Updates

John Mark C. Enot, Mark Brian P. Lucero, & Sophia Shayne Nepomuceno,
CNSHS

Abstract

INTRODUCTION

Floods are caused by tropical cyclones that affect the people in a community. The Philippines ranks third among countries most at risk for disasters, including floods and storms where it could give devastation in terms of their economic and social impact, accounting for 80 percent of all deaths, 90 percent of the total number of affected people, and 92 percent of the total economic impact. With this, innovations become a part of the modern world giving people different ways to cope up with this kind of calamity. This research aimed to create a device that will not only monitor the flood but can also send SMS and post social media warning updates to inform the community.

METHODS

The Flood Notifier was constructed using Arduino Mega 2560, ultrasonic sensor, Global System for Mobile communication (GSM), Node Wi-Fi Module, buzzer, and a PVC tube. These components were wired together and were placed in a pint-sized container to secure the device. Arduino 1.0.6 software was used to program the device and was then subjected to testing and debugging of errors in the program. Flood Notifier's performance of accuracy was examined through Percentage test.

RESULTS

Results showed that Flood Notifier had 100% accuracy in sending Short Message Service (SMS) to the programmed number which indicates that the GSM performs the programmed functions efficiently. The text messages received by the programmed numbers were accurate in terms of the current level and specific advisories given to each level. The device also shows 100% accuracy in posting warning updates on Twitter during the flood. and lastly, it also has 100% accuracy in activating the buzzer when flood reaches the critical level which shows that the buzzer is functioning well in accordance of the programmed codes in the Arduino Mega.

DISCUSSIONS

The results demonstrate that the device will be useful in helping the people of the community to be alarmed at any time when there is a flood, especially on coastal areas. It can also help in disseminating important notice and evacuation plan to the citizens with the use of its SMS and Twitter update which can help avoid traffic and further damages due to flood.

KEYWORDS: Arduino Mega 2560, ultrasonic sensor, Global System for Mobile communication, Node Wi-Fi Module, flood

SUBMISSION ID: R04A-CAVITP-0206

Generation of Electrical Energy from Sound Energy using Piezoelectric Sensor

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National High School
(Adviser: Riza Soberano)

Abstract

INTRODUCTION

The demand for electrical energy increases with the rapid increase in the production of technological devices that goes with the rise of the digital age. However, traditional non-renewable energy resources are depleting, hence, paving the way for the high clamor for renewable energy. One of the least tapped energy resources is sound. For this reason, the researchers venture to work on a device that converts sound energy to electrical energy by using the intensity of sound as source and converting this using piezoelectric sensors.

METHODS

The device was constructed following an approved design with features specifically the use of piezoelectric sensors enabling the conversion of sound energy to electrical energy. It was tested for the amount of electricity produced as a function of the preset intensity of sound (60 dB, 70dB, and 80dB). Also, the time it takes to fully charge a power bank was also taken and recorded. Data was collected, analyzed, and interpreted.

RESULTS

Results reveal that for 60 decibels of sound, the amount of voltage produced averages an amount of 12V. For 70 decibels of sound, the amount of voltage produced averages an amount of 22V. For 80 dB of sound, the amount of voltage produced averages an amount of 33V. On the other hand, results show that for 60dB of sound, it took 150 minutes for the power bank to be fully charged. For 70dB and 80 dB sound intensity, it took 180 minutes and 300 minutes to fully charge the same model of power bank.

DISCUSSIONS

Results show that the intensity of sound is directly proportional to the amount of electrical energy produced. This means that as the sound increases in decibels, more voltage is produced. Also, higher intensity of sound means faster charging time for power banks.

KEYWORDS: Sound Energy, Electrical Energy, Piezoelectric sensor

SUBMISSION ID: R04A-CAVITP-0784

HSSV: High Security System for Vehicles

Myrrh Edrei Dumawal

Abstract

INTRODUCTION

Vehicle theft rate in the Philippines was at 13.4 cases per 100,000 population in 2014, up from 12.7 cases per 100,000 population in the previous year, this is a change of 5.93%. It is not only in films and television that fingerprint scanners are used, it is used more these days especially for home security. New threats such as identity theft, or cybercrime plus the new regulations made biometrics the most suitable means of identifying and validating individuals in a reliable way through the biological characteristics of an individual. It was first used in military sites and facilities, but it is now inching its way through public domain.

METHODS

Three different security means were applied; first, the fingerprint scanner, second the face detector, and third the RFID or also known as the radio frequency identification. These three mechanisms allow a step by step procedure where absolute identification is vital in every process. The programming language used a C Python and was edited in Raspberry Pi and Arduino through the use of VNC viewer. The full system was installed in the vehicle via the ignition wire below the steering wheel and the RFID-Bluetooth Lock combination was installed in the Central Lock system of the vehicle.

RESULTS

The first trial conducted did not go through as planned, but the succeeding trials were all successful. The flaw in the first trial was that it used the car's relay which was not compatible with the system, apparently on the subsequent trials it worked by using the channel relay. to prove that the system functions properly, we gathered 5 members of the family which are not registered on the system's program, each member went through the process of identification. The trials show that the system was efficient, showing 90% percentage.

DISCUSSIONS

The research was a success and the goal of making a system that has better security was achieved. A recommended feature for a future research concerning the system is to include an automatic start on the ignition right after the face is detected by the face detector.

KEYWORDS: RFID, Fingerprint, Fingerprint Scanner, Raspberry Pi, Bluetooth, Biometrics, Security

SUBMISSION ID: R04A-CAVTP-1009

**Improvement Plan in RM5 tm Assembly using Decision Tree Analysis
at Asian Transmission Corporation**

Guido Areza, Looc Integrated School

Abstract

INTRODUCTION

in today's world, business has become more and more competitive. Industries and organizations must perform well to survive and be profitable. in organizations, quality and productivity is very important. One of the most significant influences for an organization to be successful is their quality improvement in operations and productions.

METHODS

The structure of the methodology is in the form of a tree and hence named as decision tree analysis. in this paper, authors describe the theory and history behind the evolution of the decision tree analysis along with its application, advantages and disadvantages. Some examples have also been listed showing the positive effects of using decision tree analysis on productivity improvement on an industrial environment.

RESULTS

Based on the actual observation on the production line, three areas can be improved: Installation, Work Place Station and Main Process Flow. For Installation, it can be improved by installing shifting plate to T/M unit, installing harness cable and docking of T/M unit. For work place station, time cycle can be improved by picking up shifting plate, traveling to the next unit for monitoring test, picking up push/pull gauge, conducting shift resistance test using push/pull gauge and return push/pull gauge. For Main Process Flow, time cycle can be improved on Press test start button, travel to T/M unit, shifting the level to reverse gear, press shift operation OK button and Shift feel test.

DISCUSSIONS

The results demonstrated that proper installation will increase the productivity and lessen the cycle time of the product. Moreover, having a proper process flow can lessen costumer complaint.

KEYWORDS: decision tree analysis, production, industrial environment

SUBMISSION ID: R04A-CALAMB-0285

Integration of Lego Mindstorms EV3 as Surveillance Robodrone with Speed Dial

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(Adviser: Edgar Rivera)

Abstract

INTRODUCTION

Around 20 inmates escaped from a custodial center at the old police station in Barangay Talaba, Bacoar, Cavite last July 27, 2018. The researchers wanted to create a surveillance robodrone with facial recognition and speed dial to assist the police authorities. The drone is designed to call the authorities to inform them of the person in question.

METHODS

The robotics kit is terrain-based, meaning it is usually used on the ground and has never been used as an aerial device. The drone will be used as an assistive robot to criminal identification through simulation by using a phone camera with facial detection program to identify and differentiate people. After identifying the criminal, the drone is designed to call the authorities to inform them of the person in question.

RESULTS

The testing proved to be successful and was able to achieve flight despite the weight of the Ev3 drone. Likewise, the researchers were able to achieve an auto-piloted flight system closer to autonomous function and successful facial detection. The drone also did its function and was able to detect the person in question and promptly contact the authorities. The results show that the prototype could be used in crime scenarios when improved upon.

DISCUSSIONS

in determining the functionality of the drone, validation will be based on testing whether it can fulfill its purpose of detecting criminals or wayward students. Simulation of the scenario with the criminals, students, and bystanders was conducted. The drone was programmed to pass over them and determine whether the drone detects and the mechanism for calling the authorities works. The testing shows that the drone performs its duties well and without any malfunction. The drone was able to fly smoothly, and the auto-piloting technology proved to be functional and was able to fly the drone. The facial detection technology work and was able to distinguish the subjects. The mechanism for contacting the authorities also went smoothly and was able to call the appropriate number for the police and the prefect of discipline without interchanging the other.

KEYWORDS: Robodrone, Prototype flying Lego Mindstorms Ev3 robodrone, autonomous flight, auto pilot, Facial detection, Facial recognition

SUBMISSION ID: R04A-IMUSC1-0091

**Late Encounter: A Phenomenological Study of the Lived Experiences of
Middle Adulthood Age Electrical Engineers Engage in Advanced
Technologies and Software**

John Lennard De Guinto

Abstract

INTRODUCTION

The transition of advanced technologies and software brings excellent and evidence-based innovations. Often, these transitions bring difficulty to middle age electrical engineers. In this study, the researchers learned their reactions and coping strategies to the transition of advanced technologies and software in their work.

METHODS

The study used a semi-structured in-depth interview in which the participants describe their lived experiences by answering the questions. Wherein, the researchers conducted an interview with the middle adulthood age electrical engineers as the participants via one-on-one interview about the phenomenon at their most convenient time.

RESULTS

The result of the study reveals that engineers experience a more challenging job, shocked with the changes, and pressured to compete with other companies. In addition, it also revealed that middle adulthood age electrical engineer uses coping strategies to adjust with the struggles on advanced technologies and software they are using, these strategies are the adaptation of new technologies and software, self-studying, attending training and seminars, and being updated with the software.

DISCUSSIONS

Seemingly, engineers have a different reaction and coping strategies for the phenomenon. Few sources were used by the researchers about the study, and all the participants are male. So, the study suggests utilizing more source and inviting female participants to check if there will be similarities and differences in results.

KEYWORDS: middle adulthood age, electrical engineers, advanced technologies and software

SUBMISSION ID: R04A-CAVITP-0632

Maguey (*Agave americana* L.) Leaves as Partial Substitute for Coarse Aggregate of Concrete Hollow Blocks

Eizel Bianca Oberez, Shane Hernandez, & Trisha Mae Isip, Bucal National High School

Abstract

INTRODUCTION

Most people engaged in construction prefer materials that are durable but affordable. Concrete hollow blocks, for example, being one of the primary materials for construction, need to be durable - that is, with high compressive strength. For this reason, the researchers thought of using *Agave americana* L. plant fiber as a partial substitute for coarse aggregate of concrete hollow blocks thinking that these fibers could increase the compressive strength of CHBs.

METHODS

Maguey plant leaves were decorticated to obtain fibers. Materials for making concrete hollow blocks were prepared using the following treatments:

T0: 2000g sand + 500g cement + 800 mL water

T1: 2000g sand + 500g cement + 30g Maguey Plant fibers + 800 mL water T2: 2000g sand + 500g cement + 40g Maguey Plant fibers + 800 mL water

Two sample concrete hollow blocks per treatment were tested for compressive strength.

RESULTS

Results show that the compressive strength of sample concrete hollow blocks are as follows:

T0 = 70 psi T1 = 178.5 psi and T2 =

172.5 psi. It is noted that the samples under treatment 1 leads the control by 108.5 psi while the samples under Treatment 2 leads the control by

102.5 psi.

DISCUSSIONS

Based on the test results, sample concrete hollow blocks with Maguey Plant fibers as coarse aggregate have higher compressive strength than concrete hollow blocks without these aggregates. This implies that the presence of Maguey Plant fibers in the mixture increased its compressive strength hence producing a more durable concrete hollow block.

KEYWORDS: Maguey Substitute Hollow blocks

SUBMISSION ID: R04A-CAVTP-1543

Precast Concrete Wall Panel from Sawdust and Wood Waste Ashes

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(Adviser: Adelma Topacio)

Abstract

INTRODUCTION

The study aimed to determine the acceptability of sawdust and wood ash as alternative fine aggregates in enhancing the compressive strength of precast concrete wall panel. The study was limited to only one mechanical property of precast concrete wall panel tested. It did not consider any other structural products and did not include the chemical properties and other compositions of the commodities used.

METHODS

Experimental research design was employed in the study. In here, concrete mix was produced applying a ratio of 1:2:4. That is, each part of cement has corresponding two parts of combined sawdust and wood ash and four parts of gravel. Three different combinations of sawdust and wood ash (40% & 60%; 50% & 50%; and 60% & 40%) as fine aggregates per weight of cement served as the experimental treatments in the study. Compressive strength test in accordance to ASTM C 39-04a, with the use of digital compression testing machine of Cavite Testing Center Corporation Materials Testing Laboratory, was done for each concrete cube produced containing each experimental treatment to determine which is the most acceptable.

RESULTS

Findings reveal that the concrete with 40 percent sawdust and 60 percent wood ash showed the highest compressive strength among the experimental treatments. Nevertheless, it was found out that it could not match the strength of the commercial concrete mix available in the market.

DISCUSSIONS

The three different combinations of sawdust and wood ashes concrete mixture gave an average compressive strength below 5.0 MPa, which does not exceed the commercialized concrete mixture's compressive strength of about 10 MPa. This showed that the ordinary concrete mix has a much greater compressive strength than sawdust and wood ashes concrete mixture. Moreover, Trial 1 of 40 % sawdust & 60% wood ashes concrete mixture gave the highest compressive strength among the concrete mix.

KEYWORDS: concrete wall pane, sawdust, wooden waste ashes

SUBMISSION ID: R04A-DASMAR-0020

Processing of Silts and Sargassum-Based Geopolymer Bricks

Kian D. Gijapon & James Rexson E. Cayasa, Science Club members
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Abstract

INTRODUCTION

Utilization of silt deposits and sargassum as a raw material for construction of bricks is one of the most effective solution to lessen wastes and pollution generated from industrial and agricultural activities. The brick industry is the most indicated technological activity sector to absorb solid waste due to the large quantity of raw materials used as well as the large volume of materials used for the construction of outer and inner walls of buildings. The study sought to determine if the silt wastes and sargassum is capable of becoming an alternative accessory component in the construction of bricks.

METHODS

The experiments were conducted by varying the ratio of silt waste-to-sediment-to-sargassum-to-cement (4:4:2:3) and curing oven temperature of 210^oC for 18 hours. Crushing, pulverizing and sieving were done to obtain the desired material. Sargassum, was pulverized by means of mortar and pestle. Then, all the components were mixed together with the right proportion to reach the qualities of a standard brick. Physical property, percentage of water absorption, compression and flexural strength of the bricks were determined and tested after the firing process.

RESULTS

The average percentage of the water absorption is 16.43% which falls under the ideal range of acceptability for bricks which is 20%. Moreover, the sargassum helps lowering the vitrification temperature in brick firing from 1000 ^oC to 210 ^oC, as well as integrating it as a fluxing agent. Furthermore, the bricks were sent for another testing such as compression strength and flexural strength. Based on the compressive strength test result of the silt and sargassum bricks, it obtained an average strength of 2.8 Mpa and it signifies that it almost leveled to the minimum standard test for bricks considering that the ratio is not the same as the commercialized bricks. in addition, the flexural strength of the three samples has an average of 0.6 which makes it a good brick capable of withstanding bending forces applied on it.

DISCUSSIONS

Results revealed that silt and sargassum is a potential alternative component for brick production because it obtains the minimum megapascal of commercial bricks which is 1.6 to 1.9. The limited equipment of Taganito NHS Science Laboratory prompted researchers to find an institution with equipment that can fire bricks on the required temperature. This research work can be used as a basis for further experiments on the potential of silt waste and sargassum for concrete and ceramic wares.

KEYWORDS: silts, sargassum, bricks, geopolymer, vitrification

SUBMISSION ID: R013-SURNOR-0003

**Project: ANTARES (Arduino-based Necessity-Terminating
Autonomous REconnnaissance System)**

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(Adviser: Charito Corsiga)

Abstract

INTRODUCTION

As the country continues to expand and develop infrastructure, it becomes more susceptible to disasters. Highlighting the need for the improvement regarding disaster management plans in the country, this study was conducted to construct an autonomous system capable of (1) outputting alarm, (2) sending SMS distress signals, (3) and communicating with utility lines to prevent further damage in the event of a disaster. Additionally, the system has a complementary application to access information about logged and current disasters for information dissemination.

METHODS

The system utilized four sensors for three corresponding disasters a) an accelerometer for earthquakes, b) smoke-flame sensors for building fires, and c) water level sensors for floods. ANTARES' software utilized the Arduino programming platform while the Android application employed the use of the Java-based Android Studio for efficient data transferal. Algorithms for fire exit navigation, post-disaster utility line assessment, and data logging features of the application were accessible through the application. The sensors were then calibrated for testing. The autonomous system was then subjected to artificial disaster tests at the DOST-PHIVOLCS Earthquake Simulation Environment

RESULTS

The system was able to output alarms and messages through the GSM module with minimal latency. Succeeding tests have shown that the optimal value for the accelerometer calibration is the value closest to representing Intensity V earthquakes (± 8). All sensors operated optimally when calibrated to process data at 100 samples per second in line with PHIVOLCS standards. Respective disaster response protocols were configured for maximum effectivity with least levels of latency following a responsive utility line manipulation. Regarding the application, tests have shown negligible latency levels ensuring accurate data transferal between the application and the system. Application accuracy for fire exit navigation and post-disaster utility line assessment features issued consistently favorable results with rapid result adaptation to staged post-disaster circumstances.

DISCUSSIONS

All tests conducted on the system have yielded affirmative results proving [the system's] functionality. This study's results support the given technology's potential for commercialization and widespread disaster management application. Using improved versions of the sensors would directly increase system accuracy and significantly lower data transferal latency.

KEYWORDS: disaster management, disaster mitigation, Arduino, autonomous system, DOST PHIVOLCS

SUBMISSION ID: NCR1-PASIGC-0019

Prototype Disposable Diaper Shredding Machine for Fertilizer Production

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(Adviser: Russell Gorre)

Abstract

INTRODUCTION

Pollution is one of the most critical threats faced by our planet in the present-day scenario. This is caused by the nonbiodegradable and hazardous waste that we use and don't dispose of properly. Among these wastes are plastic bags, plastic bottles, Styrofoam, and especially disposable diapers. Disposable diapers have greater impact and contribution to pollution. This motivated the researchers to invent a disposable diaper shredding machine. Since disposable diapers contain polyacrylate, a very good liquid absorbent, and human feces and urine that has been proven to be a good alternative fertilizer.

METHODS

The body was constructed by cutting four rectangular plywood. The fiber glass was glued together with the plywood and the remaining was made as a funnel of the machine. The double shaft blade was inserted below the funnel. The small rectangular shaped plywood was made as the drawer of the machine. Next, the 12V gear motor was connected in wires. After connecting the two, the blade was also connected with the wires side by side. The researchers then tested if the device is working according to its desired operation. The machine was tested with three replicates by varying time of shredding (5 minutes, 10 minutes, 15 minutes) and varying grams of diapers (500 grams, 1000 grams, 1500 grams).

RESULTS

in 15 minutes, the machine was able to shred 985.33g of diapers, then 10 minutes with 459.33g and 5 minutes with 141.3g. 500g of diapers was shredded in 12.09 minutes, 1000g in 15.30 minutes, and 1500g in 26.23 minutes. in both parameters, the results revealed that there is a significant difference between the three set ups.

DISCUSSIONS

The longer the amount of time, the higher the amount of produced fertilizer in grams are collected from the shredding machine.

KEYWORDS: shredder; disposable diaper; shredding time

SUBMISSION ID: R006-NEGROS-0012

Ren: Arduino-Based Autonomous Floor Mop

Celene Michaela Labong, Janna Mae C. Del Mundo, & Jasmin C. Labrador

Abstract

INTRODUCTION

People nowadays, are busy with their personal works. Thus, they could not fulfill the responsibilities they need to accomplish at home, just like cleaning their houses and performing household chores. This investigatory project entitled, "Ren: Arduino-based Autonomous Floor Mop" ' aimed to emancipate people from obnoxious daily chores. This robot makes the easiest and fastest way of cleaning.

METHODS

For the development of the robot, we have planned the robot structure and functions, constructed the robot, created flow charts and programs using Arduino UNO, and we've tested the robot and the effectiveness of its sanitation based on the accuracy rate of each component including the average measurements detected by the sensors towards different blockages. The accuracy of the robot was tested with the C++ program. The researchers conducted three trials with 10 repetitions each to test the functionality of the robot.

RESULTS

After assessing the tests, the robot showed 100% success rate in its overall operation. With 100 % accuracy, it was found out that the robot can be manipulated easily without any issues on the controls programmed. The data collected was calculated and the average was computed to find the accuracy. Descriptive statistics was used in the statistical analysis.

DISCUSSIONS

in today's generation, without the proper use of time, we cannot accomplish anything. Through the help of a robotic mop cleaner, people can accomplish cleaning faster and easier. It will save time and effort. This project aims to design and fabricate an autonomous robot that would assist people at home who are too busy to clean and mop their floor, especially for families with children. in particular, this also includes the elderly who live by themselves and does not have enough strength or ability to perform daily chores.

KEYWORDS: automatic mop, C++ programming, motor, sensors, microcontroller, water pump, Arduino

SUBMISSION ID: R04A-CAVITP-0498

Solar Powered Automated Water Irrigation System with Fertilizer Diffuser

Carlos Lenard Pescasio, Henrick Granado, & Reb Dy Nigoza

Abstract

INTRODUCTION

Since technology has been rapidly developing, most millennials today depend more on technology rather than doing activities on their own. With the hasty growth of technology, a lot of industries that need manpower, most especially in the agricultural industry has been affected. As years pass by, the number of farmers in our agricultural industry has been decreasing because traditional farming has been unappealing to millennials. From the aforementioned instances, the conceptualization of a Solar Powered Automated Water Irrigation System with Fertilizer Diffuser has been done. Owners of farmlands might decrease the burden of looking for enough manpower which would help the farming process. This study focuses on developing a Water Irrigation System with Fertilizer Diffuser which is powered by a solar pane; which can help farmers in the future. Furthermore, it aims to test the operability ease of use, novelty, cost and general acceptability if the device developed.

METHODS

The device was constructed using the Arduino Uno as the main component of the device that controls the irrigation system. There are three sensors namely relative humidity, sunlight and soil moisture that serves as the input that triggers the water valve to open and close. The program has been developed using C++ language. The system has two water valves that serves as the provider of the irrigation requirement and the fertilizer diffuser. to test the operability, ease of use, novelty, cost and general acceptability of the device, 10 trials were made by testing the product.

RESULTS

All of the results of the 10-trial functionally and accuracy test revealed the following results: accuracy of sensor 1 (humidity) - 1, accuracy of sensor 2 (sunlight) - 1, accuracy of sensor 3 (soil moisture) - 1, water valve 1 (irrigation) - 1, water valve 2 (fertilizer) - 1, time and accuracy of the fertilizer diffuser - 1, condition of the solar panel - 1, and water resistance of the pump -, all of the criteria has a 100% success rate.

DISCUSSIONS

in this regard, it was concluded that the device can lessen the burden of looking for manpower since it was automated to dispense water and fertilizer in a certain time indicated in its program. It was very accessible and easy to operate since the person using the device will only need to turn it on and he could leave the device to do its job.

KEYWORDS: Automated Water Irrigation Fertilizer Diffuser

SUBMISSION ID: R04A-CAVTP-1654

Solar Powered Portable Eco-Friendly Charging Station (SPPECS)

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CNSHS

Abstract

INTRODUCTION

The world heavily relies in fossil fuels for electricity which brings an expansion of greenhouse gas emissions serving as the main cause of global warming. Often, innovations in using renewable sources of energy are implemented, but it is not enough to diminish the use of non-renewable energy. Thus, this study aimed to design the Solar Powered Portable Eco-Friendly Charging Station (SPPECS) to produce a portable charging station that can supply electricity for electronic devices.

METHODS

The device was conceptualized on its electrical system and model. Afterwards, the gathered materials were used to construct the device. Preliminarily, the structure of the model was built then the electrical scheme was implied to it. The built device was tested, and results was subjected to collection. Subsequently, a survey was conducted for the assessment of the device. Through convenience sampling, fifty students were selected as respondents to evaluate the device performance. The results were used for the statistical analysis of weighted mean.

RESULTS

The results showed that the device was functioning accurately in charging and discharging electrical energy. in charging, it led a faster rate of charging than discharging electricity. Hence, the battery can last for extended hours and can be charged to maximum at a minimum period. On the other hand, many students who participated in the survey evaluation of the device perceived that it was convenient, efficient, and functional. However, portability problem was identified as a drawback where its weight affects the user's capability in moving it from one place to another. Inclusively, the respondents were satisfied on the abilities of the device in supplying electricity for heavy loads of electronic devices since medium to heavy loads of electronic devices were significantly powered by the mechanism.

DISCUSSIONS

The results establish the necessity of renewable sources of energy specifically solar energy as an alternative for non-renewable energy. Development of this device helps the environment and the user, as well as contributing to the advancement of green technology. Through portability, it can be transported to one place to another as it was designed similar to a suitcase. Moreover, the study provides the extensive use of functional solar powered portable economic friendly charging station. Further expansion of this study suggests using lightweight lithium ion batteries and improve the design to its maximum capabilities.

KEYWORDS: Solar energy, charging station, electronics, green technology

SUBMISSION ID: R04A-CAVTP-0209

Sound to Electricity Conversion Using Electromagnetism

Alexis Anciado

Abstract

INTRODUCTION

Renewable energy is an industry that is growing around the globe. It's a step away from greenhouse gas emission and a step forward to fighting climate change. Scientists are open to find new power sources without the harmful effects to our environment. Sound is a type of energy that is produced when things vibrate and is all around us. Since sound energy produces vibrations, electromagnetism was used. This study aims to convert sound to electricity using electromagnetism.

METHODS

The researcher created a device showing how sound played in a speaker was converted to electricity using a LED light as an indicator. The electromagnetism in a speaker was used to convert sound to electricity which is its original purpose but in reverse. The speaker was connected to a LED light and was tested if electricity would be converted by tapping the speaker, imitating the sound being played. An amplifier radio was connected to the speaker in order for it to play music and was connected to a battery source. The amount of sound was then measured using a mini sound level meter when the LED started to light up indicating electricity being converted and the amount of electricity was being measured using a multimeter.

RESULTS

The LED light lit up when the speaker was first tapped and when the radio was used to play different songs in its antenna indicating that there was conversion. When a song with a consistent tone and volume all throughout was played in the radio, the volume of the radio was slowly turned up until the LED lit up and it was when the music was playing at 107.4 dBA that the speaker converted 52 DCV at 12 mA.

DISCUSSIONS

The result shows how a speaker's electromagnetism can covert sound to electricity, it also shows how much it can convert. By using the data in this research, it can help other researchers that are interested in delving into the conversion of sound. This could also help in opening up new ways and new topics in using energy sources that are safe for our environment. The study failed to convert sound that was already in the environment and used sound that was playing on a radio that was reliant to a power source. The study could be improved by using microphones that function similarly to speakers or using different means to convert sound.

KEYWORDS: Hogwarts

SUBMISSION ID: R04A-CAVITP-1386

The Impact of Digital Storytelling on Pupil's Literacy and Engagement in Palahanan Elementary High School

John Laurence Alcantara
(Adviser: Eric Hernandez)

Abstract

INTRODUCTION

Digital storytelling (DST) is the act of combining traditional storytelling with multimedia elements such as still images with a narrated soundtrack including both voice and music using digital media. We observed that digital storytelling is now being used in different schools but sad to say, people including teachers are all unaware that this pedagogical approach is called digital storytelling. To study more about this, researchers found a way to explore the impacts of digital storytelling on pupils' literacy and engagement. Highlighting the possible benefits of digital storytelling, this study also seeks to help educators and learners tap into the power of digital storytelling.

METHODS

The study used the descriptive research design with a constructed survey questionnaire that sought to identify the impacts of digital storytelling on pupil's literacy and engagement. It was conducted to the students and teachers of Palahanan Elementary School. Statistical treatment was applied in this study to look for the positive benefits of games in academic performance of the students.

RESULTS

The teachers should consider the length of digital stories to at most 5 minutes. They could download video clips with shorter time length, but the quality of the contents remains pure. By this, the role of digital storytelling as teachers' instructional tool in teaching process will be enhanced. The teachers should know the benefits of digital storytelling on pupils' literacy and engagement for them to enhance their teaching style. On the other hand, the pupils may consider these benefits to learn more about technology and to grasp their lessons well. The school institutions should conduct further seminars on proper use and integration of technology into classrooms. This could be of great help in producing high quality education - innovative and creative way of teaching - where both teachers and learners learn at the same time.

DISCUSSIONS

The result of the study revealed that the digital storytelling assessed by teachers is an effective instructional tool during teaching -learning process. The conducted survey among teachers has provided both quantitative and qualitative evidences that learners find media projects artistic and beneficial. Despite having negative effects such as boredom and tardiness, learners still find digital storytelling as a tool which enhances their level of literacy.

KEYWORDS: digital storytelling, cognitive ability

SUBMISSION ID: R04A-BATANP-0294

ENGLISH LITERATURE

A Freudian Analysis of "Brokeback Mountain"

Michael Beraña, Department of Education - Lipa City

Abstract

INTRODUCTION

The fact that *Brokeback Mountain* was critically acclaimed in all platforms it was put into, there must be something deep within this literary masterpiece that made Annie Proulx a distinct name in the twenty-first century American literature.

METHODS

The qualitative research method was employed. Documents, memos, and other pieces of written information were reviewed to arrive at an adequate Freudian criticism of the work.

RESULTS

in a work that depicts how complicated and tragic gay life may be such as *Brokeback*, psychoanalysis could always provide a plausible account. Critics of psychoanalytic theory might have argued about its lack of parsimony, the case study method Freud used, its poor definitions, its untestability, and its sexism, but current researches on biological and cognitive psychology have shown that Freud's principles can be proven empirically.

DISCUSSIONS

Proulx is a Freud reader. She had Freudian precepts in mind while she was scribbling Ennis' and Jack's story. She is also a geographic determinist writer of fiction, believing that regional landscapes, climate, and topography dictate local cultural traditions and kinds of work, and thereby the events on which her stories are built, bold in putting the tragedies of emotional deprivation on the front row.

KEYWORDS: literary criticism, queer literature, Annie Proulx, American literature, psychoanalysis, *Brokeback Mountain*

SUBMISSION ID: R04A-LIPAC1-0217

Comprehension Level in Reading Literature Among Junior High School: Basis in Understanding Filipino Subject

Maria Dolores R. Castillo, Department of Education - Batangas

Abstract

INTRODUCTION

The action research entitled "Comprehension Level in Reading Literature Among Junior High School: Basis for Understanding Filipino Subject", aims to determine the students' level of comprehension in reading texts. Thus, this research also aims to identify the difficulties that impede the increase in students' level of comprehension in understanding vocabulary words and any reading texts.

METHODS

The researcher made use of the Grade 10 students composed of 14 sections as the respondents of the study. Using the purposive sampling method, the proponent came up with the number of respondents from the total number of its population. Confidentiality of the checklist result observed and ensured.

RESULTS

The researcher draws the following conclusions from the result of the study: (1) Most of the Grade 10 students fall under frustration when it comes to the level of mastery in understanding vocabulary words and level of comprehension in reading texts. (2) Fewer students' involved in reading and loss of interest in a particular topic of a reading text can affect the level of instruction. (3) A well - planned program that can increase students' ability in understanding vocabulary words and level of comprehension in reading the text as recommended as a solution in line with the difficulty of the students in reading any piece of literature.

DISCUSSIONS

Based on the result of the study, the researcher creates specific activities that can help students' overcome their difficulty in understanding vocabulary words and comprehension level. After two weeks that the intervention has been made and implemented, an increase in students' ability in understanding vocabulary words and level of their reading comprehension significantly

KEYWORDS: level of comprehension, intervention, level of understanding

SUBMISSION ID: R04A-BATANP-2313

**Defense Mechanisms and Motivations as Depicted in Nick Joaquin's
Novel "The Woman Who Had Two Navels"**

Jhondriel Lim, Lipa City Science Integrated National High School

Abstract

INTRODUCTION

Defense mechanism in humanity has been playing a vital role in keeping homeostasis in human's holistic development, mind and body. Thus, it becomes more and more normal practice, giving justification to its example, projection. Years after years, this has become a similar subject and topic of literary writings, depicting the normal scenarios in real life, maybe just adding a little bit of exaggeration. In this study, these defense mechanisms were investigated in a controversial tropical gothic novel "The Woman Who Had Two Navels" written by Nick Joaquin. Several defense mechanisms were delineated from the story, their motivating forces were investigated, and effects to other characters were discovered.

METHODS

This study made use of the descriptive method of research in describing the phenomena that exist in different forms in the novel. The method consists of content analysis that involves assumed psychological investigation of the material. Moreover, coded texts were analyzed to come up with a thematic analysis of the novel. These were further used to support the claims of the paper. The material was analyzed using the psychological approach. In this approach, the motivation of characters and/or symbolic meaning of events are analyzed. In dealing with the material, defense mechanisms of the characters were initially identified. Coded texts were pulled as supports for the claims. After these were identified, the motivations of the characters in deploying these defense mechanisms were identified. Lastly, their effects on the other characters were investigated.

RESULTS

It was found out that the novel depicted several defense mechanisms portrayed by the different characters in the story: denial, rationalization, intellectualization, projection, displacement, reaction formation, sublimation, undoing, isolation, conversion, identification, regression. Motivating factors of the characters include family, problems, and poverty.

DISCUSSIONS

These defense mechanisms deployed about by the characters and their motivations display an array of human nature. In the novel, these defense mechanisms were all done in the context of family matters, including problems and skeletons in the closet.

KEYWORDS: novel, psychological, escape mechanisms, motivations

SUBMISSION ID: R04A-LIPAC1-0191

Developing Motivational Activities for Teaching Literature in Junior High School

Jocelyn Señado, Lipahan National High School

Abstract

INTRODUCTION

Literature is a written art that serves as a channel for expressing ideas and histories in long ago eras. But despite the richness that literature offers, most students are still uninterested in learning it because they think that it is boring and it has no appeal to them. Another reason why students nowadays do not like literature is their point of interest. In this study, the teacher's use of motivational macro techniques in teaching literature and its relation to the performance of the junior high school students in literature was analyzed which led the researcher to the development of motivational activities that will further improve students' learning of literature in junior high school.

METHODS

A descriptive design with the Input-Process-Output paradigm was used in the study. A researcher-made questionnaire served as the main data gathering instrument which undergone the process of construction, validation, and administration. 299 grade seven students, 295 grade eight learners, 290 grade nine students and 286 grade 10 learners answered the questionnaire while their teachers provided the researcher a copy of their grades in English. The subjects' responses were checked, tallied, analyzed and interpreted.

RESULTS

Results of the study revealed that grade seven, eight and nine learners had a satisfactory performance in English while grade 10 respondents performed very satisfactorily. On the other hand, when it comes to the level of performance in literature, all grade levels had a very satisfactory performance in literature. The findings of the study also showed that a significant relationship between the performance of grade seven, eight and nine students in English and their level of performance in literature existed. However, the same result revealed that there is no significant relationship between the performance of grade 10 students in English and their level of performance in literature. When it comes to the utilization of motivational macro techniques in teaching literature, data showed that teachers utilized them moderately.

DISCUSSIONS

The results showed the need for developing motivational activities in teaching in order to improve the learners' satisfactory and very satisfactory level of performance in literature into outstanding. Students' literary performance will continue to hang back when teachers provide activities that would not fully meet and engage the learners in the lesson. Motivation is undoubtedly an important factor in achieving a successful teaching-learning process.

KEYWORDS: literature, motivation, motivational activities, performance

SUBMISSION ID: R04A-BATANP-1520

**Development of Literacy Scheme in Enhancing Struggling Readers'
Skills in Identifying Characters of Afro-Asian Literature**

Alma Noche, Department of Education, FGPMNHS

Abstract

INTRODUCTION

Reading literacy in schools was intensified by the Department of Education through different reading programs and activities. These endeavors aim to make every Filipino child a successful reader as they believed that reading would not make the minds stagnant but instead improve them further. However, in our school, the majority of the students particularly the Grade 8 Laurel are considered struggling readers. This study is to develop a literacy scheme that will help the struggling readers in Grade 8 Laurel in enhancing their skills in identifying characters in the short stories on Afro-Asian Literature.

METHODS

This study used the descriptive qualitative type of research to describe the data and characteristics of what is being studied. Initially, the researcher identified the level of the students in their skills of identifying characters in the short stories. A 30-item test which consists of short stories and questions on identifying characters was administered to the students of Grade 8 Laurel. In addition, the researcher conducted informal interviews on students focusing on their encountered difficulty in identifying characters of the stories.

RESULTS

The study revealed the learner's level in the skills of identifying characters of Afro-Asian literature: beginner level is 27 or 65.86%; developing level are 12 or 29.27; 2 or 4.87% are in the proficient level; advanced level is 0%. Results showed that the majority of the learners need specific help that will aid them to enhance their skills in identifying characters. Moreover, the study showed the common difficulties of struggling readers in identifying characters of short stories. Wrong interpretation of words ranked 1st, lack of knowledge in identifying characters ranked 2nd. Lack of vocabulary ranked 3rd and lack of time in reading ranked 4th. In addition, the literacy scheme consists of suggested activities, games, simulations and sample worksheet that will help the struggling leaders.

DISCUSSIONS

The results showed that struggling readers are having difficulty in identifying characters in the short stories because of lack of vocabulary, wrong interpretation of words, lack of knowledge in identifying characters and insufficient time in reading. This means that there is a significant need for the teacher to provide appropriate activities and strategies like a literacy scheme to help them overcome these difficulties. It is recommended that a follow-up study may be done to evaluate the effectiveness of the literacy scheme.

KEYWORDS: Literacy scheme, identifying characters, struggling readers, Afro-Asian literature

SUBMISSION ID: R04A-BATANP-1234

**Difficulties Encountered by Grade 11 Students of Tagaytay City Science
National High School in Interpreting Poems**

Rema Allanic, Tagaytay City Science National High School

Abstract

INTRODUCTION

This study was conducted to determine the most difficult among the four comprehension levels of questions based on the results of the assessment given to the respondents and the causes of these difficulties as perceived by the Grade 11 students of Tagaytay City Science National High School.

METHODS

in gathering the necessary data, the researcher used the four poems in determining which comprehension level students found most difficult or least difficult. These are; The Road Not Taken, in Heaven, Salutations to the Dawn, and Last Night I Heard a Robin Singing. Respondents had to read each poem and then answer the comprehension check given. in finding the perceived causes of difficulty in interpreting poems, the researcher used a survey questionnaire.

RESULTS

Based on the data gathered, it was analyzed that the literal level and interpretative level of comprehension was easy, critical level as moderately difficult and the application level as difficult. The study also revealed the perceived causes of the difficulty in interpreting poems. Giving of meanings to unknown words came out to be a very significant cause of difficulty followed by unfamiliarity with the figures of speech, idiomatic expressions, kinds and elements of poetry and inability to visualize sensory images as a significant cause of the difficulty.

DISCUSSIONS

Identifying the level of questions to which students find most difficult and the reasons behind this difficulty are significant in devising improved techniques and strategies in teaching poetry. It is suggested that English teachers should include in their routine vocabulary enrichment and incorporate in their lessons the kinds of poetry, elements of poetry and figures of speech to provide students the strong foundation needed in effective and meaningful poem interpretation. It is also imperative that teachers should provide activities that will develop students' confidence in expressing their ideas, for administrators to intensify the use of English language and encourage future researchers to conduct further researches on the same study.

KEYWORDS: poems

SUBMISSION ID: R04A-CAVITP-1516

**Effectiveness of Feeding Program in Reading Capability of Severely
Wasted and Wasted Grade-One Pupils in Mamatid Elementary School
Cabuyao District Sy 2016-2017**

Liezel Dela Cruz, Mamatid Elementary

Abstract

INTRODUCTION

Every teacher wants their pupils to be a good reader. to achieve this goal, good beginning reading instruction should be done for every learner to identify words, comprehend text and their fluency. As a reading teacher, one must develop the learner's eagerness and motivate them to read and the capabilities of each learner to cope with the reading process with proper nutrition to have a healthy mind and body. As a study that determined the effectiveness of feeding programs in reading capability of severely wasted and wasted Grade-One pupils in Mamatid Elementary School Cabuyao District SY 2016-2017 was conducted. The study determined the gender of the respondents; their Body Mass Index (BMI) before the 120-day feeding program; and their reading capability before and after the feeding program. Differences in the reading capability of the respondents before and after the feeding program were also determined as well as the relationship of feeding program on the reading capability of male and female respondents.

METHODS

The study is a combination of a descriptive correlation design of research and the one-group pretest-posttest design of experimental research. With 77 respondents distributed as 52 wasted and 25 severely-wasted Grade-One pupils, the study gathered both primary and secondary data such as Body Mass Index (BMI) from the School Nutritional Status Report of the respondents and their reading capability adopting the Division Reading Validation Oral test.

RESULTS

Findings revealed that the reading capability of the severely wasted and wasted Grade-One pupils improved after the 120-day school feeding program. Significant differences were also noted between the reading capabilities of both wasted and severely wasted Grade-One pupils before and after the 120-day school-based feeding program.

DISCUSSIONS

The study concluded that school-based feeding program is effective as it increases the nutritional status of the pupils and at the same improves the reading capability of Grade-One pupils, hence recommended the continuous implementation of both school-based feeding program and the reading validation oral test. For the reading capability test, it is recommended to implement the same throughout the elementary levels.

KEYWORDS: effective, continuous implementation

SUBMISSION ID: R04A-CABUYA-0042

**Effectiveness of Feeding Program in Reading Capability of Severely
Wasted and Wasted Grade-One Pupils in Mamatid Elementary School
Cabuyao District Sy 2016-2017**

Liezel Dela Cruz, Mamatid Elementary School

Abstract

INTRODUCTION

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DISCUSSIONS

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KEYWORDS: effective, increases, continuous implementation

SUBMISSION ID: R04A-CABUYA-0060

Effectiveness of Reading Enhancement and Comprehension Test in Grade 9 Frustration Readers

Daisy L. Payas, Lead Proponent, Joanne T. Retuerma, & Ma.Luisa V. Gabrinao

Abstract

INTRODUCTION

The research aimed to help Grade 9 Frustration Readers in Pililla National High School S.Y. 2018-2019, to develop their reading strategies and improve their reading comprehension level. The researchers aimed to help Frustration readers to improve their reading comprehension skills through varied activities and intervention programs that they can use in preparations for a higher level in school which is the Senior High School. Respondents were selected after the administration of the group silent reading in Phil-IRI, those who gained a score of three points and below out of seven comprehension questions, were categorized as Frustration readers, the findings revealed that there are 46 frustration students in Grade 9 of Pililla National High School. These 46 students will undergo the individual oral reading test, They undergo three modules to study according to the different levels of reading comprehension (Literal, Inferential, Evaluative).

METHODS

A researcher-made test was utilized as an instrument to evaluate the reading comprehension level of the Grade 9 Frustration readers. This study used quantitative-descriptive research method and purposive process of gathering, analyzing, classifying and tabulating data about the present and prevailing conditions, process and trends and then taking adequate and accurate interpretation about such data.

RESULTS

It implies that the students with difficulty in reading comprehension might obtain low performance in English subject and other related subjects that requires reading passages and understanding. and so, these struggling students in reading needs attention as well as reading Remediation program in English to address and remediate the difficulty and improve the performance in reading through the help of Researcher's made test (Module) in reading.

DISCUSSIONS

The results demonstrate that after the exposure of Grade 9 Frustration Readers in Reading and Comprehension Test in English, These Frustration readers were able to cope with their studies, it helps them to improve their reading skills, reading styles and strategies as well as their reading remediation comprehension in literal, inferential and evaluative level through the reading enhancement and comprehension test.

KEYWORDS: Reading, Comprehension, Frustration readers, Literal, Inferential, Evaluative, English, Secondary, Teaching and Learning

SUBMISSION ID: R04A-RIZALP-0158

Improving Predicting Outcomes Skill through "Dakong Kahon" Intervention

Celymay Buniel, Teacher

Abstract

INTRODUCTION

The study about " Improving Predicting Outcomes Skills through "Dakong Kahon' Intervention" of Tabon-Tabon Elementary School Tago I District, Grade 3 class of school year 2017-2018 encountered least learned skills in language subjects of first grading competencies such as predicting outcomes from the story given, resulting in poor logical thinking, poor reading comprehension and frustration level of reading inventory. The researcher conducted rigid observations, interviews, and standard assessments, he found out that out of forty- four (44) pupils, five (5) have poor skills in predicting outcomes competency.

METHODS

This action research used the descriptive method. Data collection was based on Item analysis on test papers, Comprehension check-up of post reading, reading inventory and their Participation Rating for the first quarter.

A weekly reading strategy of " Dakong Kahon" as well as their daily participation in every language subject activities and item analysis for test questions. After the intervention, the researcher gave again ten (10) reading selections to the respondents to get the level of increase of percentage used as the basis for the analyses of results.

RESULTS

Pupil	Before	After	Increase
1	30%	80%	50%
2	10%	60%	50%
3	20%	60%	40%
4	20%	70%	40%
5	10%	70%	60%

DISCUSSIONS

The table shows that there is a development of percentage in predicting outcomes skill after using the intervention. It is very clear that "Dakong Kahon" is a very interesting strategy for improving predicting outcomes skills.

Supported by the Tabon-Tabon Elementary School project banner Parents Active Participation in Educating Learners (PAPEL) which in line with Surigao del Sur Project banner Leaders of Vision and Excellence (LOVE) which aims to capacitate teachers with necessary skills in teaching reading.

KEYWORDS: Predicting outcomes, Dakong Kahon, reading strategy

SUBMISSION ID: R013-SURSUR-0251

Improving the Reading Ability of Eight Struggling Readers in Grade 5

Jocelyn Rebong, Department of Education

Abstract

INTRODUCTION

Fifth graders are expected to be good readers. But the result of the Phil-IRI revealed that there are eight Grade 5 pupils which is 23% of their class, who are struggling in reading. In this research, the author determined the factors that hinder their ability to read and improved their reading skills through the use of Phonemic Awareness during remedial reading classes.

METHODS

A descriptive survey method, a type of quantitative research, was employed with a focus on the Grade 5 pupils of Gregorio A. Herradura Elementary School. The data were collected using observation, distribution of questionnaires and testing (pretest and posttest).

RESULTS

The re-INTRODUCTION of Phonemic Awareness during remedial reading classes helped improved the reading skills of the research subjects as shown in their advancement indicators. Before the study was conducted, the level of the reading ability of the eight Grade 5 pupils falls under the non-reader level. After the study was implemented, their reading level improved from non-reader to frustration level.

This study also showed the factors affecting the reading literacy of students. The socio-economic position of a family exhibited high significance in the reading literacy of students.

DISCUSSIONS

Based on the results, it is therefore concluded that helping struggling readers to read was very challenging but fulfilling and rewarding when done passionately and effectively. Teachers had to start with the basic strategy of introducing phonemic awareness.

The eight struggling Grade 5 readers can now read technically but they are lacking comprehension skills. It is highly recommended that further study should be done to help these late readers hone their comprehension skills.

KEYWORDS: Once you learn to read, you will be forever free.

SUBMISSION ID: R04A-LAGUNA-0172

**Integration of Figures of Speech Among Grade-9 English Teachers of
San Juan District, Division of Batangas**

Jennifer Matuto, Department of Education

Abstract

INTRODUCTION

The need to be proficient in literature among non-native speakers has become a global phenomenon. Today, educators are faced with the challenge of addressing the needs of the growing number of students whose primary language is not English. While mastering other skills and content in other subject areas, there is a necessity for these learners to understand literature. In this study, I explored the factors that contribute to the apparent existence of the problem in teaching Anglo- American Literature and the instructional materials to be used to relieve the existing problems of teaching literature to students.

METHODS

The quantitative research approach was used in the study. Using questionnaires, I surveyed in the East District of San Juan, Batangas, Province. Thirty grade nine English teachers of Anglo American Literature responded to a set of structured questions. The data were collected, analyzed and interpreted.

RESULTS

Most of the teacher respondents from grade nine were subjected to the factors that affect the teaching of literature, where some of the learning competencies designed in teaching were not religiously employed from first to the fourth quarter. In some instances, the integration of the most common figurative language such as simile, metaphor, personification, hyperbole, and irony was used very often that led to poor delivery and understanding of the selection. Strategies and instructional materials in teaching figures of speech were identified as used very often resulted in a lack of interest of the students to listen to the discussion and poor performance of the teacher in teaching literature.

DISCUSSIONS

The results demonstrate the need of the respondents for an enhancement action in which they barefaced to the improvement of using all of the required learning competencies designed under the K to 12 Curriculum in teaching Anglo- American Literature.

KEYWORDS: literature, figurative language, competencies, strategies, instructional materials

SUBMISSION ID: R04A-BATANP-1494

**Laurelian Going Mandarin: A Special Program in Foreign Language
Chinese Mandarin at Wenceslao Trinidad**

Eladia Rodriguez

Abstract

INTRODUCTION

Multilingualism has become very beneficial and significant in today's generation. Learning language other than the native language helps to make a real connection with other people and provides a better understanding of the language and their culture. This study focused on the showcase of experiences in preparing Special Program in Foreign Language- Chinese Mandarin in Wenceslao Trinidad Memorial High School which highlights the processes to implement the program among Grade 7 learners.

METHODS

The action research is collaborative research because it involves both teachers and the principal of the school in researching and taking action for the implementation of the new program. Typically, a group of students, larger than just one class, are tested, and the results were analyzed. It is qualitative research because it presents the phenomenon experienced by the entire WTMNHS community. Observations, surveys, anecdotal notes utilization and unstructured interviews were used as research tools.

RESULTS

The aim of implementing of the Special Program in Foreign Language-Chinese Mandarin at Wenceslao Trinidad Memorial National High School was granted through the requirements met by the school-approved by the Division of Batangas Office, Regional Office and Department of Education Central Office, and Department of Education for Curriculum Delivery. Program start in identifying the requirements, collecting the response of the students, and processing the implementation. The requirements are the justification letter, letter of intent, endorsement letter, needs assessment of the school, the interest of the students to enroll in the subject using survey and the proposal and action plan of the program.

DISCUSSIONS

The results show the process of implementation and suggestions on the enhancement of the program and give tips to the readers in understanding the processes about the program and for possible application of the said language program in their schools. Before it was implemented, there should be discussions among stakeholders of the school and teachers and personnel must be aware of the program.

KEYWORDS: Implementation, foreign language, multilingual, needs assessment

SUBMISSION ID: R04A-BATANP-0731

Literary Analysis Skills of 21st Century Readers

Lucky Mazo

Abstract

INTRODUCTION

in the present times, Philippine education has been climbing its way up as the neighboring countries race to the summit of educational progress. Through the acquisition and utilization of English as a predominated language, 21st-century learners are expected to be equipped with analytical and critical thinking skills which are essential in making them globally competent in the changing world. This study investigates specifically how readers think analytically and critically when presented with literary texts written in the second language.

METHODS

This is a qualitative phenomenological study identifying students' perceived experiences in close reading and critical interpretation of literary texts. Data collection process through unstructured interviews, documents, and visual materials analyses, as well as establishing a protocol for recording information were collected. Class strategies that enhance critical thinking skills were also investigated. The target group was Grade 6 pupils.

RESULTS

The target group who received explicit instruction in the inferencing critical thinking strategy performed well with a high percentage of students demonstrating critical thinking skills. The results of the target group who received the close analysis and critical thinking instruction broke down as follows: of the ten who participated, three demonstrated critical thinking while seven demonstrated basic thinking. of the seven who scored in the basic thinking category, all four were male and three were female. Considering the three students who demonstrated critical thinking, two were female and one was male.

DISCUSSIONS

The participants encountered challenges while reading and analyzing literary texts because of their interest. Students feel bored and sometimes can't understand the text that they are reading because they are not interested in it. They also lack vocabulary, that's why they can't understand the text especially when the text has unfamiliar words. The environment also affects them when reading and analyzing literary text especially when the surroundings are deafening. On the other hand, students use the dictionary to unlock the words that they don't know and try to expand their vocabulary to overcome the difficulties that they encountered. This study suggests the future researchers to identify the root causes of reading difficulties and to explore other teaching reading strategies to enhance the 21st-century skills of the learners.

KEYWORDS: Literary Analysis Skills of 21st Century Readers

SUBMISSION ID: R04A-CAVITP-1303

Manifestation of Teachers' Accountability in Enhancing English Instruction in the District Rosario West

Glenn Patupat, Jackielyn V. Patupat, Marites L. Morales, & Raquel D. Matulac,
Department of Education

Abstract

INTRODUCTION

This study was undertaken to determine the extent of the manifestation of accountability demonstrated by the teachers in enhancing English instruction.

METHODS

This study employed the descriptive method of research since it aims to determine the current status of English instruction in elementary school. The survey questionnaire was utilized as the main research instrument in gathering data. The statistical tools were the Spearman Coefficient of Correlation in analyzing the results of validation and the t-test of significance in testing the difference between the assessment of the two groups of respondents.

RESULTS

As a whole, the teachers' accountability in enhancing English instruction was manifested to a great extent as assessed by the school heads and teachers themselves. It is indicated the importance of feedback and evaluation results for future reference in decision making and implementing educational programs aimed at practices in the school.

DISCUSSIONS

There were significant differences in the assessment of the two groups of respondents in monitoring and evaluating pupils' performance and feedback as indicated by the respected obtained value. The problems encountered by the teachers in the manifestation of accountability to enhance English instruction were considered moderately serious.

KEYWORDS: manifestation, accountability, feedback, teaching strategies, monitoring and evaluating pupils' performance

SUBMISSION ID: R04A-BATANP-1683

Pedagogical Approaches and Level of English Proficiency of Grade 8 Students

Jennifer L. Balcueva, English Teacher

Abstract

INTRODUCTION

Education is vital to the pace of the social, political and economic development of any nation, so effective teaching is very essential. The main purpose of this study was to identify the different pedagogical approaches and level of English proficiency in English 8 which are perceived by the teachers handling English subject. The researcher wishes to help improve the quality of education in English 8. English students were the respondents. The study delimited to a sample of ninety-nine students. Thirty-three of them actively participated in the Dry- Run of the test materials conducted in another school, other groups were the Control Group while the last thirty-three acted as Experimental Group. Only the English subject of grade 8 and English Teachers was involved in the study.

METHODS

The study made use of pre-test and post-test design. The high performing students were placed in the first section while the rest were grouped heterogeneously. This study employed the experimental method of research to determine the effective pedagogies and level of English proficiency of grade 8 in San Antonio National High School as perceived by the administrators and the English teachers. This study also described the extent to which several pedagogical approaches are being practiced by teachers in English as indicated by the frequency and duration of the use of the identified approach in the English classes. It likewise documented the result of the pre-test and post- test examination of the students as evidence of their learning after using the varied pedagogical approaches in the class.

RESULTS

After the analysis of data gathered, the following findings are summarized.

Rank 1 in the pedagogical approaches employed by the English teacher is Games. 2.5 are Constructivism and Cooperative Learning. Photo Language and Multi-Media as Rank 4.5. Rank 6.5 are Pair Share Activities and Blended Approach. Rank 8 is Jazz Chant. 9th is Acting and 10th is Hip-Hop Education.

DISCUSSIONS

The students find the English lessons and class discussions interesting and worthwhile because of the varied pedagogical approaches employed by the teacher who was supportive of the enhancement of students' level of English proficiency. The mean scores before and after the pedagogical approaches in the experimental group taken by 33 students really differ from each other, while the mean scores of the pretest and posttest of the control group taken by 33 students also differ from each other.

KEYWORDS: PEDAGOGICAL APPROACHES

SUBMISSION ID: R005-TABACO-0047

Project STAR (Share The Arts of Reading): A Program in Enhancing Reading Ability of Public Elementary School Learners

Jean Flores, Rina De Mesa, & Rosielyn Arandia, Department of Education

Abstract

INTRODUCTION

The researchers are not aiming to have a 100% reader with comprehension of her class. What they aimed is to decrease at least 60% of the total number of pupils who belonged to the frustration level. This action research project was conducted to improve reading comprehension of grade IV pupils of Pinagsanhan Elementary School for the school year 2018-2019. They intend to improve the reading comprehension by using the higher - order thinking skills such as predicting, making connections, visualizing, inferring, questioning and summarizing. in the classroom, the researchers modeled these strategies through the think-aloud process and graphic organizers. This was followed by the pupils using these strategies through the whole class, small group, and independent practice.

METHODS

This study is a qualitative research. PHIL - IRI Test was one of the tools used and administered to pupils in the fourth-grade classroom in the first week of July 2018 which aimed to determine student growth in reading comprehension. A checklist was used to identify which reading comprehension strategies were being used by the pupils in small groups. This tool provides information on changes in how well the participants understand and use reading comprehension strategies over time.

RESULTS

This study has helped the researchers develop a better understanding of the strategies that the participants need to learn to comprehend. Teacher modeling and think-aloud process are the most valuable tools to use in helping the participants to comprehend well. in the past, we have used both of these tools but failed to see their efficacy. The time when the researchers read texts to the participants, the strategies used have become more productive and lead a better learning experience. Better insight into the participants' lives was also established.

DISCUSSIONS

The researchers observed that pupils had a problem using the strategies within the group setting without a guide sheet to follow. Therefore, they developed a group record keeping sheet for the various strategies pupils were to use before, during and after reading the story in their group. One of the struggles that they encountered with their fourth-grade pupils was a way to know if they were using the comprehension strategies independently. Therefore, most of their pupils still need guided practice for questioning, inferring, and summarizing strategies.

KEYWORDS: sharing project reading ability enhance art

SUBMISSION ID: R04A-CAVTP-1610

Project TLC (Tender, Love and Care): An Intervention Program for Slow Reader in School

Rachel Ann Bautista, Cavite Association For Research Educators

Abstract

INTRODUCTION

This research study focuses on the reading ability of pupils to reduce the slow reader of Grade II in Salcedo Elementary School- Annex following the K to 12 policy " No Read No Move". Reading performance of pupils was measured through ELLN VALIDATION which focuses the slow reader pupils in Grade II. The study focuses on improving the performance of Grade II pupils of Salcedo Elementary School-Annex through TLC(Tender Loving Care) Program.

METHODS

The respondents of the study are pupils coming from Grade Two pupils of Salcedo Elementary School-Annex, Municipality of Noveleta, Division of Cavite for the school year 2018-2019.

The study will focus on the effects of TLC to be conducted on 15 pupils or 20 % of the total population for the full implementation of the program of Reading. The extent of the research will last for 3 months from July to October 2018. The posttest will determine the effectiveness of the intervention to be utilized.

RESULTS

The worker utilized an ELLN Validation. It clearly means that the respondents don't have enough knowledge the shows that the highest score in the pre-test is 5 and the lowest score is 1. Which have a mean score of 30 for Grade Two and a standard deviation of 5.25 .

DISCUSSIONS

The researcher conducted post-test. The highest score was 9 and the lowest score is 5. The obtained mean score of 84.95 for Grade Two and Standard deviation of 2.25 It data shows that there an increase of 45% for Grade Two in their performance in reading .

KEYWORDS: TLC, VALIDATION

SUBMISSION ID: R04A-CAVITP-1674

Reading Difficulties of Students and Challenges Faced by Reading Teachers

Evelyn Rosales, Department of Education Laiya National High School

Abstract

INTRODUCTION

Many educators believe that the failure of the child in formal education can be traced to his reading difficulties. These difficulties hinder him to succeed in school (Umali, 2016). The main objectives of this study are to identify factors contributing to the reading difficulties of students and the challenges that teachers face in teaching reading.

METHODS

The respondents of the study are the students with reading difficulties of Laiya National High School, Municipality of San Juan, Batangas. The Descriptive method of research is used in this study. Questionnaire and interview are sources of information.

RESULTS

The researcher found that most of the students are in the right age to be in their grade level, the same number of male and female students have reading difficulties; both parents are capable of supporting their children in terms of reading because they are literate and both parents are working near their homes. The reading ability of students is influenced by cognitive such as emotional and personal factors and environmental factors. The common reading problems of students are mispronunciation, repetition, and omission. Reading teachers are faced with challenges of providing good instructional strategies and materials. The reading difficulties of the students vary according to their profile except for age.

DISCUSSIONS

The researcher recommended that teachers should consider the factors affecting their students' reading ability so they can provide appropriate activities to make their students good readers. The school environment should be made pleasing and motivating for learners. Academic activities that can be integrated with reading should be encouraged by the academic teachers to help the English teachers enhance the reading ability of the students. The suggested plan of activities can be utilized to address the factors affecting the reading ability of the students, the contributing factors in the reading difficulties to enhance the reading ability of the students.

KEYWORDS: reading difficulties, English, reading ability

SUBMISSION ID: R04A-BATANP-1287

**Remedial Reading Program of Selected Struggling Learners in Grade
One- Opal of Salong Elementary School**

Yolanda Baque, Department of Education

Abstract

INTRODUCTION

It is said that pupils learned in different ways, some are considered as a fast learner, some are the late bloomer/slow learner, that's the reason why a teacher, as a facilitator of learning, should consider, the level of understanding of the learners, this is also the same in the teaching of reading wherein if the students cannot recognize basic word, and cannot pronounce basic sounds, phonemic awareness and phonics are used in teaching reading. Without understanding the connection between sounds and letters students cannot read and write or worst, become illiterate. This can also be observed in the real-life situations, wherein in the primary level some students struggle in reading, this is also the reason why the teacher spends some of his/her break time in remedial instruction, in order to help the learners, overcome these difficulties.

METHODS

A descriptive qualitative method of research was used which includes transcribing of audio-response and categorizing it, in assessing the difficulties of reading and if selected learners in Grade I- OPAL of Salong Elementary School I used the purposive sampling in gathering data using the self-devised instrument. The seven (7) struggling learners in the reading of grade one pupils were chosen and they served as respondents for implementing the remedial reading, they were chosen based on the current result of Oral Reading Test.

RESULTS

Based on the observation from the method/s used it showed that all of the respondents have the same level, when it comes to reading they were considered as non-reader because they can't recognize words and sounds. After the remedial instruction, all of the respondents agreed that they have learned to read basic words, and they also learned how to pronounce it. The dominant strategy that helped the students develop their reading skills is through the use of flash cards and modules, provided by the teacher

DISCUSSIONS

The result demonstrates the importance of the remedial instruction by using different strategies and intervention to prevent reading difficulties, teachers must monitor students regularly and give them targeted support as soon as they begin to fall behind their age-level benchmarks. Once students fall behind, intensive and directed support will be necessary to help them close the gap. Content-area teachers must examine how they make meaningful connections for their students. When all teachers take responsibility for developing good reading skills in all students, student success rates will soar.

KEYWORDS: Keywords: struggling readers, benchmarks, soar, remedial class

SUBMISSION ID: R04A-BATANC-0206

**Status of Journalism Trajectory in the Division of Cabuyao: Basis for
Strengthening Program for Journalists and Advisers**

Jaypee Montiano, Mamatid Elementary

Abstract

INTRODUCTION

The approval and implementation of the Freedom of Information Bill of the Philippines open the opportunities of the journalist to disclose realities and to bring to people what is happening in the country. This somehow enlivens the spirit of the journalist to continuously offer various ways to open the eyes of the public to the different aspects of life.

METHODS

The study involved all the school paper advisers in the Division of Cabuyao during the school year 2016-2017. It is of Descriptive type of researcher in which the survey questionnaire served as the main source of data treated to satisfy the statement of the problem. It utilized the researcher-made instrument anchored on the Republic Act 7079 also known as the Campus Journalism Act.

RESULTS

The study unfolded that during the three-year evaluation period, the majority of the surveyed campuses had an average rating in terms of the awards they received. It also turned out that Campus Journalism is perceived and significant to very significant in (1) strengthening ethical values (2) promote critical and creative thinking. Meanwhile, it was also unveiled respondents have agreed that constraints were often encountered by the young journalists and their advisers.

DISCUSSIONS

Based on the findings of the study, the following are recommended: 1. The school administration is encouraged to focus on improving the support-system in terms of physical facilities and training programs towards the improvement of campus journalism in the surveyed schools, 2. The school paper advisers and the teachers are advised to establish a monitoring scheme in school that would intensively monitor and assess the performance of campus journalism. 3. Teachers need to craft a module for campus journalism that focuses on the significance of honesty and integrity in campus journalism and develop critical and creative thinking among young journalists. 4. The school administrators, school paper advisers, and teachers need to support the program proposed by the researcher that would underpin and strengthen the trajectory of Campus Journalism in the entire division of Cabuyao.

KEYWORDS: status, journalism, trajectory, underpinned, strengthened program

SUBMISSION ID: R04A-CABUYA-0022

Uplifting the Basic English Literacy

Hendrico Mombay, Lilibeth Belandres, & Luzvie Mombay

Abstract

INTRODUCTION

in reference to the Department of Education Order No. 44, s. 2018 entitled Guidelines on the School-to-School Partnership and Project Salik-Suri, continuing implementation of its purpose will push for this school year between Mataas Na Burol Elementary School being the Leader School and Hukay Elementary School as the Partner School which both parties agreed in providing a broader responsibility to help elevate the performance of the latter.

METHODS

This action research attempted to use the phonics approach to improve the reading abilities of slow readers and readers-at-risk in Grade III of Hukay Elementary School for the school year 2017-2018. in the Phonics Approach to reading word, recognition is taught by using the grapheme-phoneme association method. A grapheme is the written letter (what you see on paper). A phoneme is a sound that the letter represents (what you hear). Learners are taught the vowels, consonants, and blends. They are then taught to combine the sounds and blend them into words. in this way, the learner read unfamiliar words by using the association of speech sounds with certain letters or groups of letters. The early introduction of a phonics program as part of an overall reading approach has become an almost universal practice in the teaching of reading.

RESULTS

Action research relied chiefly on the results of the different oral reading tests (recognition level) conducted during the period of the program. The descriptive method of research was used in the study to find out the reading performance of the pupils. The data gathered were tabulated, evaluated and analyzed using percentages to identify the reading levels of the pupils. The pre-test and post-test scores of the pupils in word recognition were statistically treated and analyzed using the paired-samples t-test to answer the problems posed in this study.

DISCUSSIONS

Third grade is one of the stages of a pupils' educational growth that is very vital as it a stage of pupils' development as an individual holistically. Social, personal and academic factors may also affect this stage of their life. in school, third graders must show mastery in reading basic Filipino and English materials such as magazines, newspapers, journals, books, dictionaries, textbooks and the like. An emerging stage of a pupil's academic growth starts at this moment in their life as well. But we cannot argue the fact that not all pupils have developed the habit of reading and understanding what they were reading.

KEYWORDS: Uplifting the Basic English Literacy Program

SUBMISSION ID: R04A-CAVITP-1487/ R04A-CAVITP-1490

Utilization of Project Net for Grade 4 Pupils in Janosa Elementary School: A Tool to Uplift Learners Confidence in Oral Recitation

Lorelyn Bolante

Abstract

INTRODUCTION

Opening of classes in an English class of Grade Four, a story is presented. At the end of the discussion, most of them vowed their heads. 6 learners explained what happened why most of them refused to answer, as discussed farther from the concerned what is going through so others would not be offended. Learners commented that they might mispronounce words, the other one commented they were shy to answer and the other one said they do not know such a place existed in a specific area. By then, the researcher thought of means to help the learners participate orally in upcoming recitations. and this action research sprouted and came to life.

METHODS

Reading comprehension with a contextualization of reading selections within the locality using an experimental approach. The utilization of Project NET can be used in Class Discussions that are context-related in the literature presented such as poems, short stories and moreover writing it up. We need to uplift the confidence of each of the learners depending on their level. We must find our ways and means so that our learners speak up, reason out, express opinions and most especially utterly confident to recite orally when things talked about are found in the vicinity. and this research stands up for what we aim for, to be globally competitive.

RESULTS

From the pre-test only 6 got VS and on post-test 19 got VS. This research can be shared with the Philippine Educational System and contributory to the overall participation in Oral Recitations not only Grade Four learners but all Grade Levels to ensure good oral reading lessons. Do not let a day pass without identifying the hardships of our learners in reading especially nowadays that we have the means to uplift learning. in this research: Utilization of Project NET of Grade Four Pupils in Janosa Elementary School: A Tool to Uplift Learners' Confidence in Oral Recitation, small things mean a lot to our learners.

DISCUSSIONS

Guides to be considered in oral recitations:

a. Anticipate- Involve them in the activity. b. Concentrate- Understand what the words mean with the use of context clues. c. Show the selections using multimedia. d. Carry out the given instruction. Simple directions are easy to understand. e. Practice Independently. Not all the stories and passages can be contextualized but in situations, we could do these. Let us give hope and build a better nation.

KEYWORDS: utilization, Project NET, tool, contextualized

SUBMISSION ID: R04A-RIZALP-0231

ENVIRONMENTAL ENGINEERING

**A Comparative Study on the Mechanical Properties of Pulverized
Crassostrea gigas (Oyster) and *Perna viridis* (Mussel) Shells as Cement
Block Aggregates**

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dela Cruz, Cavite National Science High School

Abstract

INTRODUCTION

Pollution caused by massive waste seashells had been one of the greatest problems in the Philippines (Galiotto, 2013). These shell wastes that are disposed from households, seashores, markets, and farms are dangerous to the environment if not carefully managed. Thus, recycling these seashells is helpful to decrease the waste materials in the environment. This research study aimed to incorporate oyster and mussel shells as aggregates in cement block production which minimized the waste pollution caused by the seashells. Moreover, it was also done to improve the cement blocks' mechanical properties since cement blocks made within the country are generally weak.

METHODS

Oyster and mussel shells were gathered and pulverized after being cleaned. The pulverized seashells were added to the formulation. Different setups of blocks for compressive strength and water absorption test were prepared. The cement hollow blocks were cured for 7 and 14 days and were tested for their mechanical properties after curing. In addition, three trials were done on each setup to get more accurate results. The test results were subjected to two-way-ANOVA statistical test to determine if there are significant differences between the data.

RESULTS

Results showed that the cement blocks with oyster shells yielded the highest compressive strength with an average of 2.26 MPa for 7-day cured setup and 3.74 MPa for 14-day. Also, the cement blocks with mussel shells have the lowest absorption rate of (+)11.4% and (+) 15.6% for the 7 and 14-day curing period. Also, it was revealed that the curing period affects the blocks as it was directly proportional to the compressive strength and water absorption rate. After subjecting to two-way ANOVA, the results yielded P-values of 0.17 and 0.67 for the compressive strength and water absorption test respectively. Seeing that the P-values are greater than the significance level, it was then declared that there is no significant difference between the data values.

DISCUSSIONS

The results revealed that all the cement blocks except for common blocks have passed the standard compressive strength and only the cement blocks incorporated with mussel shells for water absorption. The results were affected by the curing period as the longer curing time strengthens the cement blocks but lessens its capability to resist water. This means that incorporating the waste seashells as aggregates can strengthen the blocks and lessen the pollution in the environment.

KEYWORDS: aggregate, water absorption, compressive strength, *Perna viridis*, *Crassostrea gigas*

SUBMISSION ID: R04A-CAVITP-0302

A.W.C.M. (Arduino-based Waterway Cleaning Machine)

Daryl Dane Pescasio, Ernison Angelo Paiton, & Franco Miguel Infantado

Abstract

INTRODUCTION

The Philippines is prone to typhoons because of its location an average of 20 typhoons is expected to enter the Philippines Area of Responsibility. These typhoons tend to make floods that lead to numerous deaths. One of the greatest factors of having floods is that the waterways being blocked by the trash that people often put trash on these waterways. in conclusion, the A.W.C.M. Or Arduino- based Waterway Cleaning Machine was conceptualized.

METHODS

This machine is consisting of 2 main parts, the base which holds the trash and the main body which contains the brain and the motors. The machine has railings for the movement of the machine. It is mainly composed of Arduino uno, jumper wires, a4983 module, stepper motor, bearings, and motorcycle battery. An ocular visitation was done on San Miguel-a, Maragondon, Cavite to see the real scenario on the canals. Later on, I made a 3D design and make a dummy robot to see the actual size and placement of the programming materials. Then, I started the frame-making, it was done on Exemplar hardware . The programming materials were bought on E-gizmo and Sparkfruit in Manila. The Construction of the device has been made the frame and the programming materials have been combined and start the programming of the device. Arduino IDE is used for programming the Arduino Uno for the movement of the machine. testing and debugging was done before the trials. The percentage was used to determine the accuracy of the device.

RESULTS

The machine had 100% in terms of movement of the machine, sensor, acquiring trash since all of our methods are perfectly planned and got 80% accuracy on the part of the lifting of the trash. The totality of 95% accuracy in the whole parameters. It did show that Arduino- based Waterway Cleaning Machine could really help society.

DISCUSSIONS

in lifting the trash, we encounter some problems because the thread that was used is not coordinating in the flow of the DC motor. Also, our wire mesh was smaller than the bottom part since we can't lift if it's bigger. But', the other function of the device worked properly

KEYWORDS: Acquiring trash, Arduino Uno, Arduino IDE, Motor Shield, Jumper Wire, Waterway, Programming

SUBMISSION ID: R04A-CAVITP-0924

Arduino Based Anemometer: A Wind Monitoring Device

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Abstract

INTRODUCTION

Approximately twenty tropical cyclones every year enters the Philippine Area of Responsibility where fifteen are typhoons and five are super typhoons (ADRC, 2008). This is because of its location along the ring of fire or typhoon belt (Wingard and Brandlin, 2013). This research study aims to develop a device that can monitor the weather and be able to measure it digitally then send the data through text message using a GSM Module.

METHODS

The device proposed wireless connectivity by using GSM Module that provides a reliable, portable and low-cost tool for the industry where it is necessary to have an environmental control on monitoring the weather. It consists of an anemometer and temperature sensor that was controlled by an Arduino microcontroller, the device was programmed in C++ programming language to send text messages when a certain range was reached in three levels. An accuracy test was used for the gathering of data to analyze the overall performance of the device.

RESULTS

The data obtained were tabulated and treated statistically to show the results of whether to accept or negate the hypotheses. The accuracy of the device is 92.5% in measuring the average wind speed and temperature; 93.3% in sending a text message with a warning; and 93.3% in alarming in three different level warning. It shows that there is a systematic error that occurred during the testing of the device. While testing the device, there was a time when the device cannot show the average wind speed and temperature in the LCD display which means it cannot read the wind speed and temperature. With these results, it can be inferred that the device can function according to its programmed task. The overall accuracy of the device after testing it based on its three parameters was 93%. Thus, reject the null and accept the alternative hypothesis.

DISCUSSIONS

in result, it was evident to say that the device was functional. Although, the results demonstrate some minor problems such as systematic errors, the device functioned according to its programmed task The device can serve as a local weather station used in times of a storm for monitoring purposes.

KEYWORDS: anemometer, Arduino, C++ programming language

SUBMISSION ID: R04A-CAVITP-0201

Arduino-Based pH, Temperature, and Turbidity Detector as an Early Warning Device for Fish Kill

Angellica Ruth T. Matro, Kieliz Najecel V. Legaspi, & Wrygl Q. Reyes,
CNSHS

Abstract

INTRODUCTION

The Philippines is considered one of the major fish producing countries in the world. In fact, it has produced an estimation of 3.1 million tons of different aquatic animals in 2012. However, the country also has environmental issues and is on constant alert for red tides and fish kills due to its location (Aguilar, 2004). It was in September 2014 when reports emerged about the occurrence of a fish kill in Malimango River, Brgy. Ligton III, Rosario, Cavite and has affected five more barangays (Locsin, 2014). With this, the researchers thought of a device that would help prevent this event.

METHODS

The main materials of the device were three parameters: pH, temperature, and turbidity. Water samples were collected from Malimango River. Having an Arduino microcontroller, the device was programmed using Arduino 1.0.6 software for measuring the parameters, specifically its pH, temperature, and turbidity levels. Also, the device was programmed to alarm at critical levels and send/show the readings through Short Message Service (SMS), on Liquid Crystal Display (LCD), and website (Thingspeak). In knowing how accurate the device was, an independent t-test was used to compare the device with a commercial one.

RESULTS

When compared to the commercial device of the Department of Science and Technology (DOST), the device shows similar readings of pH and temperature levels. It is 99.95% accurate in reading different levels of pH and 99.87% accurate in reading the temperature. However, it failed in measuring turbidity as it shows 99.80% inaccuracy due to the malfunctioning of the turbidity sensor. In terms of its functionality, in alarming and sending the readings, the device was 100% accurate. From its readings on Malimango River, the waterbody results into having the normal ranges for each parameter that classifies for Class C (Fishery Water, Recreational Water Class II, Industrial Water Supply Class I) based from the guidelines of Department of Environment and Natural Resources (DENR) Administrative Order No. 2016-08.

DISCUSSIONS

The results, especially the readings of turbidity levels, demonstrated the need for future researchers to search for a more accurate turbidity sensor. Also, it is recommended to add more water parameters for water quality to have a more reliable and accurate analysis of waterbodies. A solar panel is as well to lessen the burden of finding a power source.

KEYWORDS: fish kill, pH, temperature, turbidity, Arduino microcontroller, Arduino 1.0.6 software, Thingspeak

SUBMISSION ID: R04A-CAVITP-0203

Automated Plastic and Paper-Detecting Garbage Bin

Rey C. Ponteres

Abstract

INTRODUCTION

Information dissemination of proper waste disposal has been done innumerable times but statistics still show as if no effort has been exerted to address garbage disposal in the country. The main goal of the study is to create an automatically-opening garbage bin with capacitive sensors that detect paper and plastics. The study aims to provide ease to the segregation and collection process of garbage. Specifically, it answered questions concerning the capacitive sensor's ability to detect plastic and paper. Further, the study tried to find out if there is a significant difference in the response time of the device in detecting each garbage sample and which set-up is most effective and efficient (E&E) in detecting paper and plastic.

METHODS

The components specifically the Arduino board, Servo motor, capacitive sensor, photo sensor, and power supply were connected on the breadboard according to its corresponding pinouts and were programmed using Arduino. The device was assembled carefully inside the housing without removing the wires and pins. An Oscilloscope was used to test the efficiency of the device by recording the exact response time upon detecting samples. Each garbage material of each set-up was tested ten times using the oscilloscope. Analysis of Variance and t-test were used to find out if a significant difference exists on the response time of the device upon detection of garbage samples in all trials.

RESULTS

The result showed that the numerical differences in the response time of the device upon detecting paper and plastic samples in the two setups ranged from 0.5 to 1 Åusecond only. Using t-test and Analysis of Variance, it was found that there is no significant difference in the response time among all trials since the calculated p-value is always greater than the 0.05 level of significance. The efficiency of the device is consistent in 10 trials conducted for each garbage sample in each setup. One capacitive sensor is as effective as s capacitive sensors.

DISCUSSIONS

The Oscillation test confirmed the E & E of the prototype paper and plastic-detecting garbage bin. The no significant difference in all tests signifies that though the number of trials for detection and response is increased, the efficiency remains almost constant. If on the other hand, a significant difference exists on the response time among trials conducted, then the E&E of the device is questionable which could entail low quality and the possibility of being damaged soon.

KEYWORDS: auto-detect garbage bin, Arduino board, garbage sensor, garbage collection

SUBMISSION ID: R012-KORONA-0008

Chalkeeper Prototype to Produce Chalk Out of Chalk Dust

Carl Bryan B. Sumalpong, Trece Martires City National High School

Abstract

INTRODUCTION

From the Yanko Design (YD), the Chalkeeper concept was made and designed by Yonggu Do and Eunha Seo. According to Seth (2011), It is a duster that absorbs the chalk erased from the board and molds the dust back to a piece as the amount of gathered dust is enough. However, there is no actual machine yet that can execute the said concept. Thus, this study was conducted to determine the possibility of producing chalk by observing the chalk's physical properties in terms of its color and texture.

METHODS

This experimental research was conducted at the researcher's residence. First, the Chalkeeper prototype was made and adjusted to perform its purpose. Second, the machine was used to collect chalk dust from a chalkboard. Treatments were then prepared by mixing, in which the chalk dust was varied and water (5mL) being constant; T1 - 5 grams; T2 - 10 grams; and T3 - 15 grams. Next, the molding process began by turning on the machine for 1 hour on each treatment. Afterward, treatments were then sealed and stored in a container.

RESULTS

The data from the experiment were interpreted through observation by the researchers to assess the physical properties of the produced chalk in terms of its color and texture. The observation was done by comparing the treatments to the commercial chalk. As a result, all treatments possessed all of the said physical properties of the commercial chalk with the T3 being the best among the treatments. With its white color and dusty texture, the third treatment was observed as the closest resemblance of commercial chalk among the treatments. On the other hand, T1 was proved to be the treatment that was the least similar to the commercial chalk.

DISCUSSIONS

These results proved that there is a possibility of producing chalk out of chalk dust by means of using the Chalkeeper prototype machine. Therefore, these results confirmed that the treatment which has a higher amount of chalk dust while with the amount of water being constant is better in terms of its physical properties specifically in its color and texture.

KEYWORDS: Chalkeeper, chalk dust, physical properties

SUBMISSION ID: R04A-CAVITP-0707

**Eco Bricks Does the Trick: Exploring Alternative Waste Management
Through Active Community Engagement**

Rochelle Mae B. Manalo, Pantay Integrated High School
(Adviser: Lawrence Icasiano)

Abstract

INTRODUCTION

Accumulation of solid waste has been a perennial concern of the residents of Pantay Bata, Tanauan City due to intermittent garbage collection. Hence, this issue in garbage collection prompted the researchers to come up with a project that would help address the accumulation of household wastes and ensure the project's sustainability.

METHODS

A descriptive research method was used in this study. The researchers surveyed among the residents of Pantay Bata, Tanauan City to determine their knowledge, attitude, and practices on solid waste management. Using the Slovin's formula, 70 residents were chosen as respondents. The researchers also explored solid waste management practices and models that could be localized and adopted by the community. Frequency and percentage were used to represent and analyze the responses of the participants.

RESULTS

Results showed that since the majority of the household wastes were plastic, the majority of the respondents considered the production of Eco-Bricks to address the threat of such non-biodegradable materials to the environment. Based on the survey, residents are optimistic about the potential of Eco-Bricks to solve the community's problem in plastic disposal. They also find it economical and practical to sustain.

DISCUSSIONS

The Eco-Bricks project help lessened the accumulation of household wastes as perceived by the residents of Pantay Bata. It has also increased the level of environmental awareness among them. Community engagement ensures the sustainability of the project. It further proves that for a community to be empowered, residents should be well informed of any innovation or breakthrough that advances their welfare and improves their living conditions.

KEYWORDS: Solid Waste Management, Eco Bricks

SUBMISSION ID: R04A-TANAUA-0109

Fermented Apple Snails (*Pomacea canaliculata*) as Source of Amino Acids Used as Pesticide and Fertilizer in Pechay

Erika Mei S. Payuran, Pedro Guevara Memorial National High School
(Adviser: Virgilio Jr Daracan)

Abstract

INTRODUCTION

Apple snail, (*Pomacea canaliculata*) was reported could cause severe damage to food crop especially in rice crops here in the Philippines, which is a staple food for the Filipinos. The farmers mostly rely on chemical and synthetic molluscicides to overcome this problem which improper use of pesticides could give a negative impact on the environment. Now, the researchers found out a way to utilize these apple snails so that the large population of the species could be reduced. The present study investigated the effectivity of the snails to be used as a pesticide and fertilizer as they are fermented.

METHODS

The apple snails were beaten until completely destroyed and then incorporated with molasses. This was tested on pechay plants only, with two set-ups with five pechay plants each. One set up was watered with the snail amino acids while the other samples were not. The growth of the leaves and the holes in the leaves were observed for two weeks. Data was recorded in between the said time.

RESULTS

The results showed that the pechay plants used with the IMO (Indigenous Microorganisms) from snail amino acids enhanced the growth of the plant. The length of the longest leaf in each sample was measured in centimeters showing results on the last day: the plants watered with IMO had the longest leaf of 10.5 centimeters while the one watered with water measured only 8 centimeters. in terms of the ability to get rid of pests, the study showed significant differences in terms of the leaves having holes. There are many more holes in the plants that are not watered with IMO compared to the other.

DISCUSSIONS

The results of this study suggested that amino acids from apple snails can be used for pests and enhancement of growth of plants and its application can be provided an alternative way for sustainable fertilizers and pesticides. However, the researcher suggests doing further testings on the effectiveness of the fertilizer on the height of the plant instead of the length of the leaves only, the comparison of the vibrancy of the leaves and other characteristics proving the plant's health.

KEYWORDS: Apple Snails, Amino Acids, Indigenous Microorganisms, Fertilizer, Pesticide

SUBMISSION ID: R04A-LAGUNA-0061

Hydro-Flood Whirlpool Turbration

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Abstract

INTRODUCTION

The Philippine archipelago is surrounded by most bodies of water making it prone to typhoons which can cause disastrous floods. The floods in most communities in the country are very slow to dissipate due to rapid industrialization, heavy rainfalls, or just the dumping of garbage in waterways. The issue has been a concern for different groups of local authorities, so the researchers innovated a solution, the Hydro-Flood Whirlpool Turbration that helps the continuous flow of flood that could capture and can be used as energy.

METHODS

The said innovation of the Hydro-Flood Whirlpool Turbration has the concept of hydroelectric power of hydropower which the energy is created from flowing water such as a flood that can be captured and be turned to electricity that can be used in the household during calamities. It also created having a whirlpool-design which makes the water run faster than a typical drainage system.

RESULTS

The Hydro-Flood Whirlpool Turbration model performed its main function which is to help the continuous flow of water flood (water represents the flood on the miniature). Based on the analysis the researchers conducted, the speed of the dissipation of water is about three times faster if there is an existence of the turbine-vibration (turbration) compared to the standard existing drainage system in every community using the miniature created. The prototype of the innovation generates capable of lighting a 3V bulb. The filter part of the innovation filtered about 70% of garbage (represented by small debris of trash) in water. The water available in the deep well coming from the reservoir is not 100% clean so it is not recommended for drinking, bathing and other direct contacts on a person's body.

DISCUSSIONS

The product created can helpful for future purposes specifically when the predicted abnormal change in temperature hits the earth. The project is highly recommended to be established in different communities specially to flood-prone areas where the flood level is critical. Placing the turbration which was based on the Basin Theory where the flood is usually stuck. It will be more useful if the mechanical part which generates energy and deep well will be included in this project.

KEYWORDS: turbration, whirlpool, turbine, flood

SUBMISSION ID: R04A-BINANC-0009

Increasing Strand Productivity and Sustainability through Social Enterprise: The Pantay Integrated High School's DumPET Experience

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Abstract

INTRODUCTION

Social Enterprising has become a new paradigm shift in Entrepreneurship. More than raising profits, social enterprises channel their productivity towards a social purpose. This paper will present a developing social enterprise project entitled "Project DumPET", and interpret its sustainability through the experiences of Shielded Metal Arc Welding (SMAW) instructors and students of Pantay Integrated High School.

METHODS

Being qualitative in nature, the study documented the conceptualization and implementation of Project DumPET through observations, interviews, and focus group discussions involving two TVL instructors and 17 SMAW students directly involved in the project.

RESULTS

What was once a group project in one of the SMAW classes, Project DumPET has grown to become a thriving school-based social enterprise among the Technical-Vocational-Livelihood students of Pantay Integrated High School. It has already benefitted 639 junior and senior high school students in its school and the bins have been distributed to 10 elementary schools and 7 private companies in Tanauan City and nearby municipalities. The sales of the bins provided allowances to the indigent SMAW students and ensured sustainability in its operations. There has been increasing desire among the student partners to put up a similar business and engage in related profitable yet meaningful business ventures.

DISCUSSIONS

The success of the project prompted the school's internal stakeholders to conduct orientations by purok or zone to further educate the members of adjacent communities about waste segregation and 3Rs (Reuse, Reduce, and Recycle) and to fully support the initiatives of such student-initiated social enterprise and environmental advocacy.

KEYWORDS: Waste Segregation, Social Enterprise, Shielded Metal Arc Welding

SUBMISSION ID: R04A-TANAUA-0184

ORNAMATE: Indoor Watering System for Ornamental Plants

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Abstract

INTRODUCTION

Even in our progressive and technological age many of us are still finding time to grow plants. We often grow indoor plants as part of our hobbies. The idea is to create a greener space at home. However, people intended to have indoor plants but forget to water it before they had to go to their perspective places. That is why the researchers came up with making ORNAMATE which stands for Ornamental companion: a plant watering system that can help in making growing plants easier and less time consuming with a proper amount of water that the plant needed.

METHODS

When all the materials were assembled and the program was uploaded to the motherboard, the researchers calibrated the soil moisture level using a dry and wet cloth. The data they gathered shows that in the level of 400-500, the moisture is high and when the sensor reached 800-900, it was low. in the program, when the device sensed the moisture is low, ORNAMATE automatically waters the plant at the same time the buzzer will make a sound and the monitored level will flash on the LCD.

RESULTS

ORNAMATE is a device specifically designed to manage the water consumption of indoor plants with its many features, one being a Soil moisture sensor that will detect if the plant needs or does not need watering. Another is the water pump which will activate or deactivate upon the results that the sensor will get. The values needed to activate the pump are (800-900) which is low moisture, after activation the pump will automatically stop at (400-500) or high moisture levels. With these features, ORNAMATE regulates the amount of water being applied or put onto a plant and will greatly benefit everyone with their indoor plants because with ORNAMATE your plant is taken care of.

DISCUSSIONS

Soil moisture plays a great role in plant growth, the amount of moisture can either make plants wilt or drown. Water too plays a major part in plant growth as it acts as a medium through which nutrients from the roots gets throughout the plant. Indoor plants also known as Decorative or Ornamental plants don't need direct sunlight in order to survive but they may be conservative to the amount of water you give them. Too much water can lead to drowning and too little water will lead to drying or wilting.

KEYWORDS: Ornamental, Automatic, Companion, Drowning, Soil Moisture, Wilting

SUBMISSION ID: R04A-LAGUNA-0055

Potential of Different Wastewater Samples from Naic and Tanza, Cavite as Feed Source for Generating Electricity through Microbial Fuel Cells (MFCs)

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Cavite National Science High School

Abstract

INTRODUCTION

Pollution has now been increasing as our technology is advancing. Water pollution is one of the worst pollutions existing today mainly because of today's growing industries. The Microbial Fuel Cells (MFCs), gaining much attention nowadays because of its ability to generate power from organic or inorganic compounds via microorganisms, is now considered as an alternative source of electricity for satisfying the high demand of energy. This research study aimed to investigate the potential of the three different wastewater samples from Naic and Tanza, Cavite as a feed source for generating electricity through mediator-less microbial fuel cells.

METHODS

The potential of the three different wastewater samples (residential, industrial, and agricultural) gathered from Naic and Tanza, Cavite in generating electricity through microbial fuel cells was tested. The data gathered was then analyzed using One-way ANOVA.

RESULTS

Data gathered showed that all the types of wastewater (industrial, residential, agricultural) from Naic and Tanza, Cavite tested in the study has the potential to be a feed source for microbial fuel cells for generating electricity. Among the three wastewater samples, the agricultural wastewater had the highest amount of open-circuit potential produced on average. The data collected is subjected to One - Way Analysis of Variance (One-way ANOVA). For the first trial, it was observed that the F-calculated, 50.5772, is greater than the F-crit, 9.552094. For the second trial, the F-calculated 13.45813, is greater than the F-crit 9.552094 which means that the null hypothesis will be rejected and that there is a significant difference between the open - circuit potential generated from the three wastewater samples.

DISCUSSIONS

From the results gathered, it can be inferred that there were some fluctuations when it comes to the voltages produced by the device per week. According to Neshat (2017), the sudden increase of voltage in some is normal especially if it is in the startup period and the adaptation of the bacteria to the feed is the reason for this phenomenon. in the process of generating electricity in MFCs, the component that has the most important role is the bacteria that oxidize organic substrates to produce electricity (Harwani, 2013). On the other hand, consistency can still be seen as the industrial wastewater's and the residential wastewater's average OCP remained the same throughout the experimentation period.

KEYWORDS: microbial fuel cells (MFCs), open-circuit potential

SUBMISSION ID: R04A-CAVITP-0370

Pyrolysis Oil from Waste Plastic Bottles as Fuel for a Two-Stroke Engine

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Abstract

INTRODUCTION

Plastic waste is a major problem in Region IV-A (CALABARZON). Despite efforts of local government units to recover plastic wastes, the average volume of recycled plastics is far less than 4,440.15 tons of waste generated every day in the region. In this study, waste plastics made from Polyethylene Terephthalate (PET), mostly used for soft drink bottles, were converted to fuel to run a two-stroke engine that can operate a small power generator.

METHODS

Waste plastic bottles went through pyrolysis to be converted to fuel. Ten (10) Kg of soft drink bottles collected from the surrounding communities were shredded and fed (5 Kg per batch) to an improvised heating chamber made of metal that was heated less than 600 °C. Pyrolysis oil was collected from the container connected to the heating chamber via a metal pipe. Finally, it was transferred to a two-stroke engine the same device found in chainsaws and weed trimmers - to be tested.

RESULTS

The operation of the two-stroke engine fueled with pyrolysis oil lasted approximately two (2) hours shorter compared to standard grade diesel. Its operating duration is dictated by the amount of pyrolysis oil transferred to the device. The experimental setup yielded approximately 1.8 L of pyrolysis oil which is equivalent to 23% weight of waste plastic bottles. Also, it produced a yellowish solid residue by-product which is equivalent to 8% of the feedstock's weight. The remaining 69% were the gaseous yield of the experiment. The pyrolysis oil produced has a lighter color compared to a standard grade diesel. Meanwhile, the two-stroke engine functioned closely similar to a standard grade diesel but with a considerable amount of emission mainly because of impurities.

DISCUSSIONS

The results show that pyrolysis oil from waste plastic bottles can be used as fuel and/or fuel additive for a two-stroke engine that can drive a small power generator. However, waste plastic bottles yield more gas by-products than pyrolysis oil, therefore, creating a need to conduct experiments on other waste plastic materials.

KEYWORDS: plastic wastes, Polyethylene Terephthalate, pyrolysis oil, two-stroke engine

SUBMISSION ID: R04A-CAVITP-0555

R.U.T.A (River Universal Trash Accumulator)

Carl Channel O. Aguilar, Genozon B. Añonuevo, Joaquin Luis B. Bala, Leiron
Babi A. Mota, & Vincent T. Gadier, Pasig City Science High School

(Adviser: Maria Allen B. Secretario)

Abstract

INTRODUCTION

Pasig River ranked 8th worst contributor of solid waste in oceans, 2nd relative to its drainage area, all over the world (Journal Nature Communications, 2017). With all the solid waste problems the world encounters, the authors came up on developing garbage collector in the form of intellectual machine, R.U.T.A., a solar-powered boat navigated through microcontroller that aids in the collection of solid wastes floating on rivers.

METHODS

The device was fabricated manually in terms of its mechanical and electrical connection integrating the circuit diagram. The solar panel was used to power the propeller, the rudder that changes direction and the conveyor which is responsible for the collection of solid waste. Siemens Logo and Arduino Uno were used to programming the wireless communication part by automatically stopping the operation of the conveyor if the garbage bin is already full using photo sensor and the navigation of the device through mobile remote control application. to test the device, the authors used a man-made swimming pool where solid waste materials were discharged. in that controlled environment, the device was able to float and accumulate solid wastes. to achieve the actual performance of the device, the authors tried it in one of the rivers in Pasig and were able to test the navigation part through a wireless controller and how the current in the river would affect the motion of the device. The accumulated solid wastes on the garbage bin were measured in terms of its mass collected per unit of time.

RESULTS

The device was successful in collecting solid wastes discharged on rivers. The authors conclude that 1) the machine can collect an average of 120 grams per one revolution of the conveyor; 2) the average time of the conveyor to complete a one revolution is 17.52 seconds; and 3) the average mass of the solid waste collected in 10 minutes, 30 minutes and 60 minutes are 3.7 kg, 5.4 kg, and 9.0 kg respectively.

DISCUSSIONS

The device was successful in collecting solid wastes discharged on rivers. The authors conclude that 1) the machine can collect an average of 120 grams per one revolution of the conveyor; 2) the average time of the conveyor to complete a one revolution is 17.52 seconds; and 3) the average mass of the solid waste collected in 10 minutes, 30 minutes and 60 minutes are 3.7 kg, 5.4 kg, and 9.0 kg respectively.

KEYWORDS: remote-operated boat, solid wastes, solar panel, sensor, rivers

SUBMISSION ID: NCR1-PASIGC-0018

**Reinforced Particleboard from Kans Grass (*Saccharum spontaneum*)
Sheathes and Rice (*Oryza sativa*) Hulls Using Modified Starch- Based
Adhesive**

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Laguna

(Adviser: Corazon A. Esteban)

Abstract

INTRODUCTION

in the development of wood materials based on renewable resources, the search of substitutes is one of the biggest challenges that academia and wood industries are facing. Particleboard has low strength as compared to other fiberboard and low density so it can be easily damaged while in transit. Due to moisture, boards warp and expand for has low strength and gets damaged. Particleboard has low durability and less life as compared to medium density fiberboard and plywood. It cannot support heavy loads. These boards are weak substitutes but are cheaper compared to the conventional ones; thus, the study sought to utilize reinforcements are done.

METHODS

Sawdust was collected and strained to produce a fine dust. Kans grass sheath was trimmed, washed and air-dried for 24 hours. 300 grams of distilled water were boiled to a temperature of $70\pm 2^{\circ}\text{C}$ and 250 grams of citric acid crystal was submerged in the process along with 60 grams of cornstarch. The board binding process was accomplished through mixing the reinforcements, sawdust, and adhesive in a container. Boards were produced in an electrically heated compress. It was examined using the ASTM D 1037, performed in the laboratory of Forest Products Research and Development Institute.

RESULTS

A total of three boards of different ratios of reinforcements were produced and tested. A total of nine samples tested for thickness swelling, water absorption, pull out load, moisture content, and tensile strength. According to the samples that were tested for moisture content, the average moisture content (%) per sample was 13.3, 9.6, and 12.4. The average tensile strength (kg) of each sample was 2.43, 2.04, and 4.6. The average pull-out load (kg) for each sample were 10.4, 8.7, and 23.4. The submersion of the board in water resulted in swell (inch) for each sample were 1.9, 1.9, and 1.7. Average water absorption was also tested and resulted per sample with 10.7, 10.9 and 8.1.

DISCUSSIONS

There is a significant difference in the water absorption capability, pull out load, moisture content and tensile strength of particleboard of different ratios of reinforced materials which are backed up by the values computed by the statistical tools. It is concluded that the particleboard can be enhanced through the means of reinforcement and such. Utilizing starch, a biodegradable adhesive reduced the cost in the board-production. to further advance the scope of the study, make the dimensions of the board thicker and perform more tests like flammability and abrasion.

KEYWORDS: particleboard, starch-based adhesive, kans grass sheath, rice hulls, sawdust, reinforcements

SUBMISSION ID: R04A-STAROS-0012

Smart Irrigation System (S.I.S.)

Arlamac Asahan, John Aeron Hugo, & Marielle Brenda Javier

Abstract

INTRODUCTION

Climate change affects agriculture through effects on crops and weeds, soils, insects and disease. Gardeners are one of the most affected by the effects of climate change. Due to the effects of climate change, the gardeners are becoming too tired since they need to check their plants more frequently. The common irrigation system used for planting waters the plant depending on the time set by the owner and it doesn't consider the condition of the plants which could lead to drowning. In our device, the moisture, temperature, and humidity of the soil are being considered before the irrigation system water the plants. By using this device, the farmers won't be exhausted and they don't have to worry whether the plants will be in good condition or not.

METHODS

Twenty chili pepper seeds were planted and were grown for a week. The plants' heights were measured and the numbers of leaves were counted. The chili pepper plants were divided into two plant boxes to install the system on one of it and the other one was watered manually. The plants were observed for 30 days and the heights of the plants were measured and the numbers of leaves were counted again. The results were analyzed with independent T-test statistical analysis.

RESULTS

Twenty chili pepper seeds were planted and were grown for a week. The plants' heights were measured and the numbers of leaves were counted. The chili pepper plants were divided into two plant boxes to install the system on one of it and the other one was watered manually. The plants were observed for 30 days and the heights of the plants were measured and the numbers of leaves were counted again. The results were analyzed with independent T-test statistical analysis.

DISCUSSIONS

The results showed that the Smart Irrigation System (S. I. S.) is better to use than the manual irrigation system. It also signified that S. I. S. uses water efficiently and can be a help to the agricultural society.

KEYWORDS: Smart Irrigation System

SUBMISSION ID: R04A-CAVITP-0934

Solar Powered Mosquito Zapper with Fragrance Diffuser

Abigail Bulos

Abstract

INTRODUCTION

Dengue, the Zika virus, and Malaria were one of the relevant diseases that mosquitoes bring. More deaths were associated with mosquitoes because of the diseases they carry. On the other hand, different researchers thought of different ways on how to kill them, and one of the best is the mosquito zappers. The mosquito zapper uses electricity to work. It electrifies mosquitoes that will be caught in touch into its grid. This study was conducted to determine the effectiveness of solar-powered mosquito zapper with fragrance diffuser in terms of catching mosquitoes and to find out if the solar powered mosquito zapper with fragrance diffuser can do what the commercially available mosquito zapper can.

METHODS

The experiment includes three major parts the first one is the making of the solar powered mosquito zapper with fragrance diffuser, the second one is the testing of the product to an electronic professional and lastly, testing of it as home use. The solar-powered mosquito zapper was made of a carton box and chicken wires, it's major components are the solar panel, chipset, and a battery. Its fragrance diffuser (reed diffuser) was from the sap of a lavender flower since it has been found that floral scents attract mosquitoes. It was tested by an electronic professional at M. Cruz St. Cainta, Rizal using different electric tester as well as at 450 Flora St. Marick Subd. Brgy. Sto. Domingo Cainta, Rizal and as home use for 7 days at 119 Sitio Victoria Brgy. San Juan Cainta, Rizal. Both of the mosquito zappers (the commercially available mosquito zapper and the solar powered mosquito zapper with fragrance diffuser) are placed at 6.62 sq. m room approximately 1.09 m far from each other. The solar-powered mosquito zapper has a 5 ml amount fragrance diffuser that lasts for 3 days, it was charged for 8 hours and also lasts for 8 hours.

RESULTS

It has been found that there is no significant difference between the solar powered mosquito zapper with fragrance diffuser and commercially available mosquito zapper since the t statistics which is -0.35355 is less than the t critical which is 2.178813.

DISCUSSIONS

The study indicates that mosquito zapper with fragrance diffuser is more effective in killing mosquitoes than the commercially available because mosquitoes get attracted to floral scents that the diffuser emits. Mosquitoes are one of the deadliest animals that cannot be easily killed but through thorough research, solar powered mosquito zapper with fragrance diffuser can now be used for killing mosquitoes

KEYWORDS: mosquito zapper diffuser lavender

SUBMISSION ID: R04A-CALAMB-0433/ R04A-CALAMB-0443

**Solar-Powered Waste Bin Using Rice Husk and Fish Net Catch Bag: A
New Marine-Cleaning Technology**

Marjorie Faith L. Cruzem, Pauleen Rose P. Joveda, & Reginah Mae P. Reyes,
CNSHS

Abstract

INTRODUCTION

One of the major challenges worldwide is waste management. It presents risks to the environment and public health (Garfi, 2012). The problem in garbage introduced Seabin technology. Its purpose is to build a floating waste bin that could sip water along with the garbage and could filter some of the oil present. This study pursues to produce a marine-cleaning technology innovation with solar panels as its energy source and that could filter microparticle wastes from the bodies of water with the use of a net that is less expensive than the one used in the Seabin Project.

METHODS

The solar panel system consists of two 200-watt panel board, charge controller, and 220-volt battery gathered from Manila and Cavite. A 1Hp submersible water pump and types of catch bags were used: fish net and rice husk. The device testing was done in the river of Bancaan, Naic, Cavite. Discharge water of three samples: raw water, water from fish net catch bag, and water from rice husk catch bag, was tested according to water analysis protocol C: Total Suspended Solids (TSS), Settleable Solids, and Turbidity, then tested in Department of Science and Technology (DOST). Two-way ANOVA was used to determine the significant difference between raw water and two catch bags.

RESULTS

Total of 20 wastes were collected: 6 plastic bags, 4 organic food, 5 junk food sachet, 3 plastic bottles, 2 paper bags, and a cigarette butt. The DOST water analysis results showed that the third sample- water from rice husk catch bag has the least TSS of 6mg/L, and highest Settleable Solids of 0.1mg/L, that means, least micro plastics are found in the third sample. However, the third sample has the highest turbidity measurement of 11mg/L or gravel, sand, silt, or clay are the most numerous compared to the other two samples that are because of rice husk residues. The two-way ANOVA result between raw water and water from rice husk catch bag rejected the null hypothesis since the F value (columns)= 2.99 is less than F critical= 19, which means that there is a significant difference between raw water and water from rice husk catch bag.

DISCUSSIONS

The waste bin was successfully modified to the solar panel system and was able to sip wastes in it. Water from rice husk catch bag was most turbid among three water samples, but it can manage to remove the microplastics that combines to table salt production. Thus, it is recommended to use different catching technique or micro-sized filter nets that will not affect the turbidity level of water.

KEYWORDS: Seabin technology, total suspended solids, settleable solids, turbidity, Two-way ANOVA

SUBMISSION ID: R04A-CAVITP-0214

Solid Waste Eliminator, Educator and Processor of Eco-Friendly Resources (S.W.E.E.P.E.R.)

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Cavite National Science High School

Abstract

INTRODUCTION

One of the most dominant issues that the world faces today which requires utmost attention is solid waste management (United Nations Environment Programme, 2009). Wastes comprising of plastics and food wastes that can be generated from schools, households, and communities are harmful to the environment if not carefully managed. Thus, reducing, managing and recycling solid wastes are significant to the health of the environment. This research study aimed to construct a robotic prototype machine that functioned as a small-scale Materials Recovery Facility (MRF) which reduced and managed common plastic and food wastes in the Cavite National Science High School (CNSHS), and recycle them into eco-friendly resources. Moreover, it was designed to harness and utilize energy from the sun and the wind

METHODS

The robotic prototype machine was constructed using LEGO® Mindstorms® NXT Education Base Set #9797 and recycled materials, and it was programmed using LEGO® Mindstorms® Education NXT software version 2.1.

RESULTS

Results on the overall performance of SWEEPER showed that it has a total of 88% success rate in its processes from start to finish. It showed that SWEEPER is accurate in conducting the pyrolysis of plastic wastes, making of CO₂ absorbing concrete char blocks, and harnessing and utilizing solar and wind energy with a total success rate of 94%. It also showed that it is not accurate in performing anaerobic digestion of food wastes due to the total accuracy rate of 50%. Moreover, the 12% failure is caused by the open spaces on the sides of the cover of the autoclave that causes the air to enter. Since air has entered the autoclave, oxidation of the plastic wastes took place which caused the pyrolysis to fail; by the open spaces on the cover of the anaerobic digester, the methane-producing microorganisms have been affected because they live without oxygen; and caused by the position of the mixer and the conveyor.

DISCUSSIONS

The results demonstrate some minor problems in the non-biodegradable section caused by the open spaces on the sides of the cover of the autoclave that causes the air to enter, in the biodegradable section caused by the open spaces on the cover of the anaerobic digester which allowed the entry of air inside, and in the block section caused by the position of the mixer and the conveyor. These minor problems are the root cause of the malfunctioning of SWEEPER.

KEYWORDS: materials recovery facility, LEGO® Mindstorms® NXT, pyrolysis, anaerobic digestion

SUBMISSION ID: R04A-CAVITP-0156

**Teaching Performance and Teaching Readiness in A K12 Classroom of
Preservice English Teachers of Ccc As Basis for Enhancing Field
Courses**

May Anne Batain, Department of Education - Calamba City

Abstract

INTRODUCTION

Student achievement is often linked to teaching performance. If teachers are effective, there will be no doubt that students will have better academic achievement. But teaching performance will not be considered good without a sound foundation. This foundation is the years of training and preparation a teacher undergoes in order to equip himself or herself with necessary skills that will help him or her facilitate instruction especially in an environment that constantly changes.

METHODS

This study takes descriptive and at the same time correlational survey as its research design. The descriptive design focuses on the present condition and aims to find a new truth (Calmorin and Calmorin, 2010). This design involves describing, analyzing, interpreting the present nature, composition, and processes of phenomena. The correlational survey, on the other hand, determines to what extent or degree does a relationship exists between variables (Gay, Mills, Airasian, 2011).

RESULTS

The study yielded the following results; (1) that the pre-service teachers' demographic profile did not affect their performance; (2) that the demographic profile of the cooperating teachers and the members of the faculty did not affect their performance as members of the panel; (3) That the pre-service teachers' performance was at par with the standards set by K-12; (4) that the perceived level of language teaching readiness of the pre-service teachers indicates readiness on their part (5) that teaching performance does not directly affect the language teaching readiness of the pre-service teachers; (6) that the overall performance of the pre-service teachers does not directly reflect the level of language teaching readiness of the pre-service teachers.

DISCUSSIONS

A thorough study on teaching performance and its correlates and on teaching readiness are necessary to gauge how ready the future teachers are in facing the real challenges of K-12 in an actual teaching situation.

KEYWORDS: Teaching Performance, Teacher Preparedness, Pre-service teachers, K-12 classroom

SUBMISSION ID: R04A-CALAMB-0049

The Efficacy of Plastic Cups as Replacement for Stones in Making Concrete Cylinders

Vince Edward Tubigan, CLDDMNHS

(Adviser: Liza Brion)

Abstract

INTRODUCTION

in the Philippines, solid waste is still a major problem in society. By using plastic cups instead of stones, the researchers can lessen the cost of materials needed to make concrete cylinders. Concrete cylinders are used by engineers as prototypes to create a strong mixture of concrete with great strength to be used for buildings, structures, and houses. The objective of this study is to lessen the number of plastic cups by using them as a replacement for stones in making concrete cylinders.

METHODS

Various methods were used in this study. Gathering of plastic cups and cutting it into small pieces. By mixing all the materials like plastic cups, cement and sand with different ratios (12.5 : 987.5 : 1000, 37.5 : 962.5 : 1000, 62.5 : 937.5 : 1000, 87.5 : 912.5 : 1000) in terms of grams. After making the mold it was brought to Universal Testing and Inspection Incorporation to be tested.

RESULTS

Most cylinders obtained a Cone & Split fracture while Samples 1 (10 cups) and 4 (30 cups) obtained a Cone & Shear fracture. Sample 2 (10 cups) has the greatest UCS with 22.7 MPa (3292 Psi) while Sample 8 (70 cups) has the lowest UCS with 5.0 MPa (725 Psi). This implies that the relationship of the number of plastic cups added in the mixture is inversely proportional to its Ultimate Compressive Strength.

DISCUSSIONS

The findings indicated that the concrete cylinder with plastic cups can be a suitable replacement. There is significance in the number of plastic cups added in each cylinder. The results discuss that the lesser the number of plastic cups, the higher the compressive strength. This study suggests utilizing other materials to help the environment and to contribute to engineering purposes.

KEYWORDS: cement, plastic cups, concrete cylinders

SUBMISSION ID: R04A-SANPAB-0068

The Utilization of HDPE (High- Density Polyethylene Plastic as A Raw Material for Plastic Tiles

Shiena Marie Lao, Cavite National Science High School

Abstract

INTRODUCTION

Plastic is known for its durability, malleability and for being light-weight. It is also convenient to use in almost everything that is why people are fond of using this. With that, the demand for plastic production increased and at the same time, the disposal of these plastics became a factor of floods, diseases, and pollution. With the given problem solutions pop out and one of those is recycling. This research aims to recycle plastic waste especially High-density polyethylene by utilizing this to make tiles out of plastics.

METHODS

First was the researcher gathered the materials needed for the experiment. Then it would be the plastics that were weighed for about 160 grams. After this, it would be passed through a shredder to be able to have almost similar sizes. Next, it would then be put in a molder at the same time furnace for it to be shaped and melted. After melting it for 40 minutes it would be cooled and polished the edges. The tiles created would then be compared in terms of water absorption, bend strength and adhesion or compaction through drop tests. After that, the results of the two variables would then be compared with each other.

RESULTS

Based on the results in terms of water absorption, the plastic tiles show no absorption ability while the ceramic shows about a 15% increase in weight. Next would be in compaction test through drop test. in each trial, the plastic tiles didn't break unlike in ceramic tiles in all trials the ceramic tiles show brittleness. Then next would be in terms of the bend strength. The ceramic tiles are a lesser amount of flexibility while the plastic tiles show a larger amount of resistance during bending moment.

DISCUSSIONS

Based on the results it is said that in all tests that the variables underwent the results of plastics and ceramic shows a significant difference. It shows that utilizing plastics is better for most aspects compared to using ceramic. The plastics show the right amount in every test. This research may be successful but it also has some flaws. This study lacks the variation of test done and the materials were plain. So to further enhance this research I suggest to look for a better test to compare these two and to prove that plastic can be utilized in making tiles. You can also add more trials and materials used in making the plastic tiles.

KEYWORDS: bend strength, water absorption, adhesion, compaction, High density polyethylene, shredding, durability, flexibility, resistance, deterioration

SUBMISSION ID: R04A-CAVITP-1045

Thermal Desalinator

Dean Andrei Lucero, Lykha Jane Seguiro, & Vandolf Encarnacion, Cavite
National Science High School

Abstract

INTRODUCTION

A shortage of drinking water is a problem around the world. It is getting more serious due to a growing population and climate change (Rizvi, 2017). Seawater desalination is an innovation that incorporates several procedures to remove salt and different minerals from seawater generated into fresh water. (Zhou, 2003). Thus, this technology is reliable and significant to those people suffering from scarcity in their country. This research study aimed to construct a small-scale innovative device that performed as desalination unit which transformed seawater into safe drinkable water to sustain the scarce freshwater and especially, available to those people near the coastal areas in Naic, Cavite.

METHODS

The researchers made a device for desalination (Thermal desalination), it was then used to treat seawater with the purpose of making it potable. The device was made by a small machine shop and was modified by the researchers to overcome some leakage problems. Seawater was poured unto the device and the machine was turned on, the treated water was collected from the device through a faucet on the second chamber.

RESULTS

The treated water was tested according to its color, pH, turbidity, total dissolved solids, salinity, and fecal coliform to ensure its potability. A paired T-test is the statistical test used; it was used to compare the means of two values from the parameters (treated water and seawater). The results showed that there is a significant difference between the color, pH, turbidity, total dissolved solids, salinity and fecal coliform of the water before and after the treatment.

DISCUSSIONS

The results showed that the device treated the water successfully, the treated water passed the standards for safe and potable water, and this means the device can be used by families as a freshwater source. It would lead to less plastic usage and cost reduction. The device can be particularly useful for coastal families since they have the most abundant source of seawater.

KEYWORDS: seawater desalination, thermal desalination, potability

SUBMISSION ID: R04A-CAVITP-0298

**Utilization of Microbe Balls from Mangrove Areas of Lemery in Pansipit
Sewage Water Treatment**

Radhcel Alvarez, Lemery Senior High School

(Adviser: Randie Atienza)

Abstract

INTRODUCTION

Around 80% of wastewater is discharged into the waterways which can cause health and environmental hazard. (IWA, 2018) This instance can be seen in Pansipit River wherein sewages are connected and wastewater flows directly into it thus degrading its quality. The lack of water treatment facilities in this area served as the main factor to conceptualize microbe balls as an organic water treatment medium that contain actinomycetes which have the potential to perform nutrient recycling and eliminate water impurities. (Aggarwal, 2018)

METHODS

An experimental method was employed where three set-ups of wastewater samples were prepared to determine the effect of microbe balls in Pansipit Sewage Water before and after the treatment and another three set-ups to test the effect of a varied number of balls using water samples from three selected sewage stations in Lemery. Dissolved oxygen (DO) level, pH level, temperature, Nitrite and Phosphate content were tested through using Mean, T-test and Analysis of Variance. Differences were considered significant at the probability level of $p < 0.05$.

RESULTS

Before the treatment, Pansipit Sewage Water has a low DO level, basic, has a normal temperature, high nitrite, and phosphate content. After the treatment, its quality improved as the DO level increased, pH level became neutral, temperature, nitrite and phosphate content were decreased which satisfies the Water Quality Guidelines and Effluent Standards. Statistically, there is a significant difference in the quality of Pansipit Sewage Water before and after the treatment. There is also a significant difference in the phosphate content if the number of microbe balls was varied and in the controlled and experimental set-ups in terms of DO, pH, and phosphate content.

DISCUSSIONS

The results revealed that microbe balls have the potential to treat sewage water since it improved the five water parameters involved in the study. Actinomycetes in microbe balls recycle nutrients and eat pathogenic microorganisms present in wastewater to remove its impurities.

KEYWORDS: Pansipit Sewage Water, sewage water treatment, mangroves, microbe balls, actinomycetes

SUBMISSION ID: R04A-BATANP-0920

**Vehicle Emission Air Purifier (VEAP) Device Using Snake Plant
(*Sansevieria trifasciata prain*) Fibers**

Erica Mai T. Cabuyao, Luis Palad Integrated High School
(Adviser: Maria Corazon Borbon)

Abstract

INTRODUCTION

Vehicle emission is the greatest contributor to air pollution. In fact, 71% of air pollution comes from mobile sources. Due to this reason, this study aimed to utilize Snake plant (*Sansevieria trifasciata prain*) fibers as a vehicle emission air purifier to lessen the number of smoke constituents (carbon monoxide, carbon dioxide, hydrocarbons, nitric oxide, smoke opacity, and smoke density) from both gasoline and diesel-fuelled vehicles.

METHODS

Fibers, obtained by scraping leaves, were inserted into the constructed device. This device was subjected to five trials for each of the five samples of six different types of vehicles (motorcycles, tricycles, cars, vans, jeepneys, and buses) to test its effectiveness, with the help of emission analyzers. Its properties were also tested to support the claim of the fibers as an effective purifier. Other than this, it was also compared to the commercially-available vehicle exhaust filter (Fiber Mat). Lastly, it was subjected to a usability test to determine how long the filter could be used.

RESULTS

Snake plant fiber has 87.02% holocellulose, 11.01% moisture and 3.32% ash content. Tensile strength test shows a single strand can hold up to 160g. In using the device, the greatest decrease in gasoline vehicles are hydrocarbons with 88% and nitric oxide with 99%. While in diesel vehicles, the greatest decrease is smoke density with an average decrease of 95.75%. T-test results show that there were significant differences in the following smoke constituents: CO and CO₂ in motorcycles; CO, CO₂, and NO in tricycles; smoke opacity and density of cars, jeepneys, and buses; and smoke density of vans after the utilization of the device. Fiber usability was tested for 19 days. The mass increased by 12.2g due to the presence of soot. Lastly, the fibers were concluded to be comparable to the commercial Fiber Mat in terms of cost and effectiveness.

DISCUSSIONS

The results show that the Snake plant (*Sansevieria trifasciata prain*) is an effective vehicle emission air purifier as it reduced almost all of the smoke constituents present in gasoline and diesel-fuelled vehicles. It also has desirable properties that make it a compelling vehicle exhaust filter. Moreover, it is highly comparable to the available commercial exhaust filter - Fiber Mat.

KEYWORDS: Snake plant (*Sansevieria trifasciata prain*), air purifier device, air pollution, vehicle emission, smoke constituents

SUBMISSION ID: R04A-TAYABA-0000

ENVIRONMENTAL HEALTH

SPG BAMOHAY (Basura Mo Ibabahay Ko) Project" Its Impact on the Cleanliness of Ambulong Elementary School

Alejandra Carolino, Department of Education

Abstract

INTRODUCTION

Ambulong Elementary School stands for the character trait of Compassion. The school Personnel is trying their best to be the model of the Department of Education Core Values: Maka-Diyos, Makatao, Makakalikasan at Makabansa SPG BAMOHAY (Basura Mo, Ibabahay Ko) Project is a follow-up project of SPG in 2010's "Basura Mo, Ipon Ko." The main objective of this research study is to determine if the SPG BAMOHAY Project is advantageous among the pupils, teachers, and stakeholders as well, the awareness of one's responsibility and to show concern in saving and protecting the environment using the 3R's. in this way, everybody in the school does not just keep the surroundings clean however, it serves also as fundraising that helps/supports the other needs/project of the SPG (School Pupil Government), school and helps everyone to realize the importance of the 3R's, one of the government projects on the wise use of solid waste materials.

METHODS

This action research adheres to address the cleanliness of the school's surroundings, awareness of one's responsibility and the practice of the 3R's in protecting the environment. There are 25 teachers, 11 SPG officers, 300 select pupils from Kinder to Grade Six and 50 stakeholders who participated in the study to determine the effectiveness of the said project. A self- make survey questionnaire was utilized.

RESULTS

SPG BAMOHAY (Basura Mo, Ibabahay Ko) Project plays an important role in maintaining the cleanliness of the school's surroundings, the awareness of one's responsibility and showing concern in saving and protecting the environment using the 3R's. The results of the study showed that the use of the project gained an excellent score in terms of its effectiveness. Moreover, the pupils, teachers as well as the stakeholders' experience in the use of the project gives positive feedback.

DISCUSSIONS

Each pupil has to bring his own paper bags wherein he will put his own garbage/wastes, empty bottles and used papers. The SPG Officers will then collect the wastes and put them in the Garbage House or the pupils themselves as well as the parents/stakeholders bring their wastes in the Garbage House. Before the school year ends, the SPG officers will again submit a project proposal and they can use the fund they raised from the wastes they collected.

KEYWORDS: BAMOHAY, Garbage House,

SUBMISSION ID: R04A-TANAUA-0153

**A Study of Street food Business Among Cavite City CNHS - SHS AY
2018 - 2019**

Sta Elena , Kassie P
(Adviser: Dr. Ruel S. Arcon)

Abstract

INTRODUCTION

The researchers have conducted this study to evaluate the level of understanding of SHS Student regarding sanitary practices of street food, the food safety knowledge, and the bad effects of eating street foods of SHS Students of Cavite National High School. This study is very significant towards the street food vendor because this information can be used to better or improve their particular business. in terms of sanitary practices and the variety in their products. This study can be used as a reference or related literature for future researches it can be expanded upon a broader scope of samples.

METHODS

Using a survey questionnaire, we conducted focus groups with TVL and Academic track. Thirty student respondent is from TVL track and another Thirty student respondent is from Academic track to a set of Likert type questionnaire. Inventory was also conducted, with data collected through quantitative analysis of the use of the innovation in both individual tracks.

RESULTS

Many respondents who participated in our focus groups perceived substantial problems with the assessment innovation, which from 1) Reasons why SHS student patronized street food, 2) Bad effect of eating street foods, and 3) Level of understanding of SHS student regarding sanitary practices. The value was seen for learning and for guided self-assessment in which track was the highest. The respondent agrees that they patronized street foods because it is affordable and it is always available. The TVL respondents agree that the reason for eating street foods is an infectious disease, weakens the immune system, chronic disease, gastroenteritis disorder, and allergic reaction. The academic strand disagrees weaken the immune system chronic diseases and gastroenteritis disorder. The TVL respondents agree in the sanitary practices that the vendor wearing gloves and towel, the vendors have available water supply, cleaning and sanitizing tools and equipment and the cooked foods are covered. The academic strand is neither agreed or disagrees with the sanitary practices.

DISCUSSIONS

The result demonstrates that the TVL respondents have a higher knowledge of the Reasons why SHS student patronized street food, Bad effect of eating street foods and higher) Level of understanding of SHS students regarding sanitary practices.

KEYWORDS: Street food, health, business

SUBMISSION ID: R04A-CAVITC-0020

**Acceptability and Efficacy of Calameric (Calamansi and Turmeric) as
an Alternative Toilet Deodorizer**

Felix Candid T. Baylon
(Adviser: Jomel Montero)

Abstract

INTRODUCTION

Fragrant home is one of the most Filipino families care about, to stay in a good clean environment where everybody needs for protection from germs causing diseases. The stinky part of the house where these bacteria love to thrive is in your comfort rooms. Thus, this study wants to measure the level of acceptability of Calamansi (*Citrofortunella microcarpa*) fruit extract mixed with Turmeric (*Curcuma longa*) tuber extract as an alternative toilet deodorizer.

METHODS

This study utilizes an experimental research design using a parallel group design. A total of 10 panelists evaluated the acceptability and efficacy of the product in the four comfort rooms of San Miguel National Comprehensive High School-Magroyong. Scorecards were used in gathering the data. Afterward, data were subjected to statistical analysis such as weighted mean and t-test.

RESULTS

Results show that the odor of the product earned an adjectival rating of completely acceptable. However, the availability and practicality of Calamansi and Turmeric gained an adjectival rating of very acceptable. Moreover, the availability and odor of the experimental product both have a significant difference with the commercial product while the practicality was found not significant.

DISCUSSIONS

Calameric (Calamansi and Turmeric) extracts are effective in producing a fragrance that can control the unpleasant odor of the comfort rooms. In addition, the quality of Calameric (Calamansi and Turmeric) is not far from the commercial toilet deodorizer's performance. The availability of the Calamansi and Turmeric in the locality of San Miguel, Surigao del Sur, Philippines is highly recognized. Moreover, this can race with the commercial toilet deodorizer in the remote areas that are out of reach by the commercial products.

KEYWORDS: Acceptability, Efficacy, Calameric (Calamansi and Turmeric), Toilet Deodorizer

SUBMISSION ID: R013-SURSUR-0159

Asian Clam (*Corbicula fluminea*) Shells as an Alternative Soil Acidity Regulator

Elijah Joseph M. Geronimo & Sian Rogie R. De Ramos, Pedro Guevara
Memorial National High School
(Adviser: Virgilio Daracan, Jr.)

Abstract

INTRODUCTION

This study entitled Asian Clam (*Corbicula fluminea*) Shells as an Alternative Acidity Regulator seek to test the efficiency of the pulverized Asian clams as an acidity regulator at varying amounts in a fixed soil from Cavinti, Laguna. Researchers were measuring the pH level thoroughly in their research. The researchers conducted this study mainly because of the problem with soil acidity.

METHODS

The researchers gathered 15 kilograms of Cavinti soil which is Acidic with a pH measure of 4.2 given by the Municipal Agriculturist Office. The researchers also gathered 12 kilograms of Tulya shells in Sto. Angel, Norte, Sta. Cruz, Laguna. The shells were pulverized. After the collection, they proceed with the preparation of the samples in which they prepare 3 samples and 1 control. Treatments were all in a controlled quantity of soil which is 1 kilogram per sample. After a month, it showed various results.

RESULTS

By getting the absolute value of the difference between the pH of the soil from the first day and after one month, the results were used for ANOVA. It shows the computed value which is 322.6077 while the f-Critical is 4.066181. Then, t-test was used to determine which is more efficient. The computed value of t was compared to the t-critical.

DISCUSSIONS

The ANOVA shows that the soil regulator is significant to use as an alternative soil regulator. On the other hand, the results from the t- test show that treatment C became the most efficient. Based on the processes used, it indicates that as the number of shells placed in a soil, the more the soil is able to regulate

KEYWORDS: soil regulator, acidity, clam shells

SUBMISSION ID: R04A-LAGUNA-0074

**Assessment on the Compliance to Environmental Literacy of the
Students of Paharang National High School**

Francis John Mapalad, Department of Education
(Adviser: Christopher Cordero)

Abstract

INTRODUCTION

Schools are always required to acknowledge and impose environmental literacy among their students to maintain an environment and student-friendly vicinity to their learners. Despite continues reminders and activities conducted and organized by the school, some students are still ignorant leading to the malpractice of the 5R's and other practices. This makes clean and green unattainable for the school. The researcher aims to 1.) Assess the knowledge of the students on environmental literacy, 2.) Develop a way to enrich the students' interest in engaging with environmental practices and 3.) Help the school attain and maintain its student and environment-friendly vicinity.

METHODS

A descriptive research design with a quantitative approach was used to assess the knowledge of the students on environmental literacy particularly in 5R's. The respondents of the study were the grade eleven and twelve students of Paharang National High School, SY 2018-2019 who responded to the standardized survey questionnaire. The data were analyzed and interpreted using statistical tools such as Frequency, Weighted Mean, Composite Mean, Independent t-test and One-way Analysis of Variance.

RESULTS

This study revealed that among the students of Paharang National High School, using Likert scale of 1.00-1.49 to the least extent 1.50-2.49 extent 2.50-3.49 to the extent 3.50-4.49 to the great extent 4.50-5.00 to the very great extent are complying to the extent only to Reuse, Reduce and Repurpose of 5R's. Based on interviews with the respondents, they have no idea to implement Reuse, Reduce and Repurpose of 5R's since they lack knowledge about it. Also, the majority of the respondents complying to the great extent to Refuse and Reduce of 5R's.

DISCUSSIONS

Paharang National High School students comply with 5R's to an extent. There is a significant difference between the profile of the respondents and their level of compliance to 5Rs. This is due to the fact that they are unaware of the environmental practices, even the simplest and common ones. The most complied environmental practice is reducing. This is because a law is imposed by the government about reducing plastic use. There is a significant difference between the grade level and the level of compliance to the 5Rs of the respondents. This proves that when they proceed to a higher year level, their knowledge is increased and they become more knowledgeable about 5Rs.

KEYWORDS: Environmental Literacy, Reuse, Reduce, Repurpose, Refuse, Reduce

SUBMISSION ID: R04A-BATANC-0200

**Awareness and Practices of Senior High School Students on the
Implementation of Ecological Solid Waste Management at Diffun
National High School**

Elmer G. Alvarez
(Adviser: Jaybert Cabanero)

Abstract

INTRODUCTION

Environmental problems are worsened by growing accumulated solid wastes which have been improperly disposed of everywhere. Students are aware that poor waste management harms the environment and to the people. This awareness was however not evident in the student waste management practices. Thus, this study will determine the students' level of awareness and practices in the implementation of ecological solid waste management in the school.

METHODS

The research employed a descriptive type of research design. The primary instrument used in the study is a researcher-constructed questionnaire. This questionnaire was subjected to pilot testing. The result of the pilot test was reviewed and evaluated with Cronbach alpha of 0.776, which indicates a respectable description of its level of internal consistency. The data were analyzed using the SPSS Trial version.

RESULTS

in assessing the awareness of the students on ecological solid waste management, findings showed that the majority of respondents are moderately aware of the features and programs of Ecological Solid Waste Management (ESWM). As to execution and compliance on the activities implemented to support the programs, the students confirmed that they sometimes practiced proper solid waste management. It was found out that there is a moderate problem with the implementation of the program. As to the objectives of the program, the majority of these were attained. This set of data entails of poor attitudes of senior high school students towards proper solid waste management. Results further indicate a significant difference in the level of awareness and frequency of the practices particularly on the programs of the school to support ESWM in terms of respondents' ethnicity.

DISCUSSIONS

Based on the findings of the study it recommends to strengthen the program of the school towards ecological solid waste management. It recommends also the school to have an action plan and implement it strictly with proper monitoring of its projects and activities. It recommends also to considering the recommendation of Al-Rabaani and Al- Mekhlafi (2009) that individuals have to develop the awareness, gain knowledge and implement practice which will help individuals to more environmentally supportive behavior and the integration of environmental issues in school classes (Nussbaum, 2013).

KEYWORDS: awareness, practices, solid waste management

SUBMISSION ID: R002-QUIRIN-0077

**Awareness, Attitudes and Practices of Students Towards Household
Waste Management of San Pascual Senior High School 2**

Herjen Anne A. Tumaming, Department of Education
(Adviser: Rosellie Tumaming)

Abstract

INTRODUCTION

The topic of environmental protection has attained the highest importance in this era globally but the practices of basic concepts waste disposal are often neglected. People around the globe are aware of the impact of improper waste disposal practices, but the negative attitude of implementation gives rise to a chaotic situation. This study was conducted to obtain baseline information about waste management practices among students at San Pascual Senior High School 2

METHODS

A convergence of parallel mixed method design was used in the study. Using a pragmatic approach, the researcher used a researcher-made questionnaire and a face-to-face interview with the subjects. Fifty students responded to a set of structured questions and semi-structured questions. The subject of this study was the twenty grade 11 students and thirty grade 12 students from San Pascual Senior High School 2.

RESULTS

The fifty students who responded in our researcher-made questionnaire perceived big problems in terms of 1) awareness in door-to-door garbage collection, 2) attitudes towards accepting their responsibility through household waste management and 3) practice in making DIY at home out of recycled materials. Also, it was found out from the fifty students who participated in the face-to-face interview that most of them are not aware in door-to-door garbage collection, also the students didn't accept the responsibility in household waste management, and they are not interested in making DIY at home out of recycled materials.

DISCUSSIONS

The results show that the students must be fully aware regarding door-to-door garbage collection however, lack of awareness jives with the absence of door to door garbage collection scheme within the barangay. Students should be more responsible, aware and have more learnings when it comes to household waste management. The students must have a sense of responsibility in order to maintain their surrounding's cleanliness because a clean place is a safe place.

KEYWORDS: environmental protection, household waste management, responsibility

SUBMISSION ID: R04A-BATANP-1157

Bacteriological Analysis of Drinking Water and the Prevalence of Water-Borne Diseases among Students: Basis for Putting Water System in the Municipality of Tampakan

Mark Gil Labrador, T-III & Janet M. Bilbao, T-I

Abstract

INTRODUCTION

Water is the most essential and life-sustaining drink for humans and all organisms to survive. Potable water should be safe and free from any risk when it is consumed. Considering the facts presented, the researcher feels the importance of conducting a thorough investigation and data gathering to determine the potability and safety of water in the secondary schools in Tampakan, South Cotabato as well as to design a strategy to be employed among the consumers.

METHODS

The descriptive research design was used to assess the bacteriological quality of the drinking water collected from the secondary schools of Tampakan, South Cotabato and the prevalence of water-borne diseases.

Figure 2. Research Design

The study was conducted at the selected secondary schools of Tampakan, South Cotabato. Sources of drinking water supplies from among schools vary from hand pumps, shallow wells and rainwater collectors classified as level I, for level II, piped water with a communal water point e.g., bore well and spring system and level III piped water supply with private water point e.g., house connection. Schools with Level I source of drinking water supplies include: Tampakan National High School, Maltana National High School while Level II includes Liberty National High School, Lampitak National High School, Palo 19 National High School and Danlag National High School.

RESULTS

Based on the result of the bacteriological examination of drinking water samples, only Tampakan National High School and Maltana National High School have passed the Philippine National Standard for Drinking Water (PNSDW) as indicated by the result of total coliform counts which is <1.1 MPN/100 mL and fecal coliform counts which is $<1.1/100$ mL. Four schools failed to pass the normal limits set by the Philippine National Standard for Drinking Water (PNSDW). Hence water was found to be not fit for drinking. In general, Taeniasis was the most reported case of water-borne infection, accounting for 2.63% from tapeworms of the genus *Taenia* and can be transmitted through drinking water contaminated with eggs, followed by Watery Diarrhea with 2.43% from water contaminated by bacteria.

DISCUSSIONS

For non-potable drinking water, it is recommended that periodic treatment be done on the water source using the Standard Procedure base from Philippine National Standard for Drinking Water (PNSDW).

KEYWORDS: Bacteriological Analysis, Prevalence, Water System, Coliform count, Fecal Coliform, *E. coli*

SUBMISSION ID: R012-SOUCOT-0002

Comparative Study on the Growth Response of Carrot Plants on Vermicompost and Other Types of Fertilizers

Imelda Del Monte, Lumampong National High School - Indang Annex

Abstract

INTRODUCTION

Vermicomposting involves the production of organic fertilizer that can increase the percentage of plants ability to fight against diseases. Produced fertilizer is known for its environmentally beneficial effect helping the reduction of global warming. With the information gathered, the researcher and team were highly motivated to study the growth response of carrot plants on vermin cast and other types of fertilizers.

METHODS

to construct a vermibin for the construction of vermicompost, the researchers used ten hallow blocks, compost, and vermiworm. Other than that, they also prepared a seedbox, seedlings soil, vermicompost, and water. The seedling tray was made of plastic which about 12 x 15 inches. About five kilos were placed in the seedling tray. The soil was obtained from Carasuchi, Indang, Cavite. Seeds of carrot plant were planted in a seedling tray. Consequently, the marigold plant will be used as a pesticide. Initially, the researcher selected an appropriate site for their study, wherein the soil is slit or sandy, loam well-drained, durable mixed with organic matters. This was also characterized by providing the ideal temperature for high survival of seed germination.

RESULTS

The use of vermicompost as fertilizers produces carrots with the highest average length, diameter, and weight. in terms of length, results showed that the computed F value is 0.460 this means that there is no significant difference in the growth response of carrot this implies that the 3 fertilizers used have a similar effect on carrots in terms of length. Regards of the diameter, results showed that the computed F value is 18.370 and the growth response of carrot significantly different from one type of fertilizer to another. It shows that vermicompost is the most efficient fertilizer to use in enhancing the diameter of the carrot. Among all the variables, the weight, growth response of carrots is significantly different in three varying types of fertilizers. It shows that vermicompost has the greatest effect on improving the weight of the carrot.

DISCUSSIONS

With the major findings of the study, the researchers arrived at these conclusions: All types of fertilizers used; vermicompost, chemical, and organic fertilizers have a similar effect on the growth response of the carrot in terms of length. Vermicompost is the most efficient fertilizer to use in enhancing the diameter of carrots. Vermicompost has the greatest effect to improve the weight of the carrot.

KEYWORDS: vermicast, vermicompost, organic, vermitea

SUBMISSION ID: RACE-NATOFF-0003

Determining Air Quality in Brgy. Pinamucan Ibaba, Batangas City in Relation to the Residents' Health

Gertrude Petr Patricia G. Agena, Jed C. Tolentino, & Valerie Anne B. Adora,
Batangas State University

Abstract

INTRODUCTION

Air pollution is one of the biggest problems that confront many countries including the Philippines today. It is a problem because invasive pollutants like particulate matter (PM) when concentrated in one place or another is hazardous to the health of its inhabitants. Therefore, it is only practical for concerned researchers to determine the air quality which is defined in the herein study as PM of any particular area in the country especially if it is hosting industrial companies that operate power plants. In this study, the researchers focused on identifying the concentration of PM in Brgy. Pinamucan Ibaba, Batangas City populated by at least 1600 people and currently hosting JG Summit Petrochemical Corporation which is a coal-fired power plant that manufactures polyolefins or plastic products.

METHODS

A low-cost air quality sensors were used. Adopting the procedure from the study of Kuznetsov et al. (2014), the researchers installed the sensors 2 meters atop from the roof of houses far from trees in seven (7) sitios of the barangay namely, Arce, Soriano, Malaya 1, Malaya 2, Malaya 3, Babasa and Casao. The experiment was conducted for 24 hours for three (3) Saturdays of October 2018. ANOVA Test, Pearson R Coefficient Correlation, Chi-Square Test of Independence were used in the statistical treatment and analysis of data. The experiment was completed in one semester.

RESULTS

Definitive is the findings that PM_{2.5} which is greater in number than PM₁₀ can place the health of the subject residents at high risk of contracting respiratory diseases considering that the aerodynamic diameter of 2.5 micrometers can penetrate deep inside the lungs of those who will be exposed to the said pollutant. The results gathered showed a significant difference of PM per square inch among the seven (7) sitios of Brgy. Pinamucan Ibaba, Batangas City taking into account the location and date when the data was collected.

DISCUSSIONS

The results reveal the need for infographic materials which should be posted strategically in seven (7) sites in order to inform the inhabitants of preventive measures that will keep themselves from overexposure to invasive PM. Successfully determined was the concentration of PM in subject sitios of the barangay. The installation process of the sensors will falter if mounted on roofs near the trees. The integrity of the capability of the sensors to trap PM was a constant factor in the success of the determination of the concentration or number of PM.

KEYWORDS: air quality, low-cost air quality sensors, health, PM_{2.5}, PM₁₀.

SUBMISSION ID: R04A-BATANC-0172

Effectiveness of Phytoremediation Using Pechay (*Brassica rapa*) and Mustasa (*Brassica juncea*) in the Industrialized Land of General Trias, Cavite

John Ray Gaspar, TMCSHS

Abstract

INTRODUCTION

Soil contamination has always come with the rapid industrialization and urbanization (Chen, 2009). Fortunately, the natural process called phytoremediation in which green plants are used to rehabilitate the contaminated soil could address this problem. According to Mourato (2015), the Brassica plant is effective for phytoremediation since it is known as accumulators of heavy metals. In addition, it can tolerate uptake and defend their systems from stress from heavy metals. In this study, the viability of Pechay (*Brassica rapa*) and Mustasa (*Brassica juncea*), species of the said plant, as phytoremediators of lead-contaminated soil from industrialized land of General Trias, Cavite was investigated.

METHODS

Using a Quantitative method experimental research design, the sample soil from the said land underwent soil analysis at the Agricultural Research Institute in the University of the Philippines, Los Baños to determine its lead content contamination. Then, the Brassica plants sprouts were planted to the soil with the four treatments: T0 - soil with no Brassica plants, T1- two Pechay and two Mustasa, T2- three Mustasa and one Pechay, and lastly T3 - three Pechay and one Mustasa. After the harvesting period, the treatments underwent soil analysis once again to determine the level of lead contaminants left in the soil.

RESULTS

Results showed that the soil prior to the exposure to the treatment had a lead content of 2.84 ppm. After exposing the contaminated soil to the treatments, the lead content significantly decreased. In T1, the soil was significantly decreased by 2.3 Pb ppm leaving it with a lead content of 0.54 ppm. Whereas, T2 was decreased by 2.21 Pb ppm with 0.63 lead content left on the soil. While T3 was decreased by 2.52 Pb ppm leaving the soil with 0.32 lead content. Lastly, T0 with no Brassica plants remained unchanged. The results were interpreted based on the computed bioaccumulation factor from the soil analysis. If the bioaccumulation factor is less than one, the plant is not accumulative, if it is 1 to 5, the plant is accumulative, and if the result is greater than five, the plant is very accumulative. T1 to T3 were classified as accumulative while T0 was classified as not accumulative.

DISCUSSIONS

There is a significant difference in the lead content left in the soil based on the varying treatments. The study found out that the most effective phytoremediator was T3 compared to the other treatments. Therefore, the researchers concluded that it is capable to rehabilitate the soil.

KEYWORDS: Phytoremediation, *Brassica rapa*, *Brassica juncea*

SUBMISSION ID: R04A-CAVITP-0096

Environmental Awareness of Class Presidents at Pansol National High School

Janice Mendoza, Teacher

Abstract

INTRODUCTION

Environmental awareness is a relevant issue that everybody should reflect on. Understanding how sensitive our environment is and making a course of action for its protection is one of its major features. Schools have played a significant role in generating environmental awareness among children and youth. Current environmental issues both local and global are discussed inside the classrooms since they are integrated into our curriculum.

METHODS

Data gathering procedures were used in the course of the study. A set of the survey questionnaire was given to the presidents of the thirty-one sections to assess the students' level of awareness on school's environmental projects and programs. Weighted mean and ranking were used in the assessment. to analyze how the students responded in the school environmental programs and projects, the monitoring checklists were tallied and compared. Frequency and percentage were used to measure the respondent's evidence of responsiveness in the school environmental programs and projects.

RESULTS

in the students' level of awareness, it was revealed that the class presidents are aware of the school's environmental projects and programs. The findings can be attributed to efforts made by the teachers in reminding the students of the school's projects to maintain a clean environment. Additionally, the principal's follow up during the flag raising ceremony helped the students to be aware of the said projects and programs. While, in the analysis of the students' responsiveness in the school's programs and projects, some of the indicators were rated as not evident. It was implied that having awareness doesn't guarantee that responsiveness will be enhanced. Non - responsiveness can be rooted in their family orientation/ culture where they may not be used in putting their trash in its proper place. This negative culture is being brought to school which can influence peers to do the same.

DISCUSSIONS

The study showed that respondents have awareness about the existing environmental projects and programs but their actions did not match with what they know and understand. These challenges that we encountered can be attributed to their practices in their respective community, family orientation, and attitudes and behavior.

KEYWORDS: environmental programs and projects, awareness, responsiveness

SUBMISSION ID: R04A-BATANP-2108

**Herbal Plants: A Remedy for Loose Bowel Movement as Perceived by
the Herb Doctors in the Municipality of Donsol**

Kc Melitante

(Adviser: Julius Caesar Averilla)

Abstract

INTRODUCTION

Loose Bowel Movement was ranked first in the municipality of Donsol amongst the children and adults as per record reported by the Rural Health of Donsol. Loose Bowel Movement (LBM) believed that can be cured using some herbal plants that can be found in our surroundings. This study analyzed different herbal plants that can prevent loose bowel movement as perceived by the herb's doctors in the municipality of Donsol.

METHODS

This research used a descriptive-analytic design. Researchers interviewed six known herb's doctors in the municipality of Donsol. This study used an interview guide and survey questionnaire in collecting data. The data gathered were triangulated, analyzed and interpreted.

RESULTS

The herbal plants that can be used as a remedy for loose bowel movement as perceived by the herb doctors were determined. Researchers translated the herb doctors answers and responses to the questions that were thrown. Based on the analysis and interpretations of the data gathered, the findings of the study revealed that out of six respondents, three of them recommended the herbal plant guava (*Psidium guajava*). Two out of six, recommended the herbal plant kumintang (*Catharanthus roseus*), banana (*Musa*), and molave (*Vitex parviflora*). One out of six respondents suggested the herbal plants Sambong (*Blumea balsamifera*), Artamisa/Parsley (*Petroselinum crispum*), Kamangkaw/ Spearmint (*Mentha spicata*), Asin-Asin (*Lantana Camara*), Santol (*Sandoricum koetjape*), Duhat (*Syzygium Cumini*) and Calamansi (*Citrofortunella microcarpa*). The herbal plants cure loose bowel movement/diarrhea without having any side effects and it is one of the advantages of it. Based on the findings, researchers concluded that the majority of the respondents recommended the herbal plant Guava as a remedy for LBM.

DISCUSSIONS

in view of the findings, Donsolanos should preserve nature especially the herbal plants that can be a remedy for any illness and every household should have herbal plants planted on their back yard. People must determine the difference between ordinary plants and herbal plants and everyone should know the advantages of herbal plants. Herb doctors should be acknowledged, recognized, and respected by people. The findings of this study instigate the future researchers to conduct an in-depth interview, and a deeper analysis of data gathered in different regions for everyone appreciate the advantage of herbal plants.

KEYWORDS: herbal plants, alternative medicine, health

SUBMISSION ID: R005-SORSOP-0010

Lead Level Content of Tilapia Fish (*Oreochromis niloticus*) in Palico River: An Analysis

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(Adviser: Mari May Bugtong)

Abstract

INTRODUCTION

People surrounding Palico river depend on it for their source of food. Trace metals are potentially accumulated in living tissue of marine organisms and subsequently transferred to man, however, all trace elements are toxic if consumed at sufficiently high levels for long periods specifically the element Lead. This study was conducted to prevent lead pollution disaster if there is and for better utilization of the potentially rich –man-made river.

METHODS

Descriptive Observational Method particularly the laboratory observation method was used in this study, in this method, the samples were tested in the laboratory and the results found when using laboratory observation are more accurate than those obtained with naturalistic observation.

RESULTS

According to the Atomic Absorption Spectrophotometry or AAS test is done by the LQCC or Lipa Quality Control Center given to the tilapia fish that came from the market or commercial tilapia fish, lead content was not detected with the detection limit of 0.06 mg/kg. On the other hand, the same procedure, treatment, and test were done to the sample tilapia fish that came from Palico River and lead content was not detected also with the detection limit of 0.06 mg/kg. This means that there is no level of lead content found in the river.

DISCUSSIONS

Although tilapia fish caught from the Palico river and that from the local market as based on this study is declared lead free, it is recommended for testing the other traces of metals to be considered safe for human consumption and still recommended not to eat the fish caught from the river until proven safe by accredited government agency through further testing of other metal traces and other impurities.

KEYWORDS: lead level content, tilapia fish, metal, metal pollution, analysis

SUBMISSION ID: R04A-BATANC-0387

**Maintaining the Cleanliness of Balayan East Central School by its
Populace through Project: SARP (Segregating and Recycling Program)**

Anelita Radam & Gina D. Mendoza, Department of Education

Abstract

INTRODUCTION

School Environment means the extent to which school settings promote student safety and student health, which may include topics such as The physical environment of school buildings and school grounds is a key factor in the overall health and safety of students, staff, and visitors. School buildings and grounds must be designed and maintained to be free of health and safety hazards and to promote learning. This study was purposively conducted to provide this key factor to all the clientele of Balayan East Central School situated at Paz Street, Balayan, Batangas through the implementation of Project: SARP (Segregating and Recycling Program)

METHODS

The study employed the descriptive research method. This method describes the nature of a situation as it exists at the time of the study and explores the causes of particular phenomena through the results of the survey questionnaire for the 2,470 respondents represented by their respective class advisers. Consolidation of the response determined the source of the problem on the school's waste management. An approval to conduct the study was requested from the School Principal and other school clientele.

RESULTS

Results of the data gathered showed that Balayan East Central School has guidelines/policy on waste management. These guidelines/policies were disseminated well to the school populace through GPTA and HRPTA meetings. Out of 2,353 (Two Thousand Three Hundred Fifty-three) population of learners, only 70% or 1,647 (One Thousand Six Hundred Forty-seven) of the school population followed the school guidelines/policies. As a means of garbage disposal, there are small trash bins installed in each classroom intended for plastic wastes, paper, and leaves but are not enough to keep all the waste inside them. In addition, the school has a compost pit but the area is limited due to lack of space.

DISCUSSIONS

The research study revealed that the school is truly encountering a problem with proper waste management by the school populace. The researchers applied interventions to solve the problem in maintaining the cleanliness of the school by the school populace. These interventions focused on the rigid re-dissemination to all the pupils of the guidelines/policy of the school on waste management, conduct of symposium on the proper waste management particularly waste segregation and recycling through the Project: SARP (Segregation and Recycling Program).

KEYWORDS: maintaining, cleanliness, BECS populace, segregating and recycling

SUBMISSION ID: R04A-BATANP-1881

Millennial Generation: The Role and Contribution of Batangas City East Educators in Sustaining Environmental Awareness Among Students

Rosie Ilagan, Batangas City East Elementary School

Abstract

INTRODUCTION

With the realization that the millennial generation is being out focused on what is important - Environmental Awareness, the researcher conducted this study to know the different environmental issues and problems that need more attention and to get engaged the students with different environmental programs or activities in order to strengthen and sustain their Environmental Awareness. It is expected that the result of this study will be a great help and will result in a big change to the lives not only of the pupils but also to the community where every pupil belongs. This study will enlighten and educate today's generation and pass their leanings to the future generations.

METHODS

The researcher used the Descriptive Research method to determine the role and contribution of Batangas City East Educators in strengthening and sustaining Environmental Awareness among students and to know the different environmental programs and activities that helped this study in attaining its main objective. However, the researcher used the qualitative method in analyzing the level of active participation of students in different environmental programs.

RESULTS

The data gathered from the respondents revealed the following: 1) One of the top environmental problems/issues that Batangas City East Elementary School and its community are facing is the "Air and Noise Pollution". Followed by the "Disappearance / Lack of greenery and natural environment". 2) The most effective environmental program / activity that contribute a lot in the environment is the "Anti-Burning Law of Leaves and Waste materials". Followed by "Organizing Greening/Planting Programs at School". 3) Female Students are more active and more interested in joining different environmental programs than Male Students. 4) School Educators has a big role and contribution in every child's learning either be academically or real-life situation. 5) Environmental Education is one of the best ways to promote in order to sustain awareness.

DISCUSSIONS

Considering the results, it implicates that the YES-O Program must be given more focus from the enumerated environmental programs. While training and seminars for Batangas City East Educators about Environmental Education and Programs must also be promoted and for them to learn active teaching approaches including trips, projects, and community service. This will expose students to the reality of the environment and environmental problems hence enhancing holistic learning.

KEYWORDS: Environmental Awareness, Environmental Programs, Environmental Problems

SUBMISSION ID: R04A-BATANC-0411

Multi-Purpose Container from Uncoated Paper Using Mixing Machine

Jermae Gone Flores, Jose Martin Lapaz Rodriguez, & Reign Jessiel Diquit

Abstract

INTRODUCTION

Papers are one of the most commonly used material by society, from work, school, and even in food packages. Due to this situation, the use of paper has been gradually increasing to supply the community's demand for it. More trees are needed to be cut down that could lead to worse effects on the community. and by recycling, this huge problem could be solved or toned down. One of the most common objects and often used in households are containers. The use of paper to make a multi-purpose container could be helpful for the environment to lessen the trash and be beneficial to the community as an organizer.

METHODS

Using a mixing machine, the papers were shredded. The papers were soaked for one day in order to shred easily. After shredding the water was removed and glue was added to the paper and mix it. After mixing the mixture was transferred to the container and dry it using an oven for about thirty minutes with medium high temperature. The molder was put out inside the oven every five minutes in order to avoid the melting of the plastics molder.

RESULTS

After the products were dried in undergoes two different tests, the water absorption test, and the durability test. The result showed that the paper product made from colored and bond paper were all durable resulting 1 as the average rating. The test showed that the paper product has don't any damage after thirty drops. The test also shows that almost 40% was the absorption rate of bond and colored paper.

DISCUSSIONS

The results demonstrate that using paper wastes can be made a product that is durable to protect the objects inside it. addition of glue helped the product to be more durable and harder. The making of the multi-purpose container made from waste paper helped in lessening the paper wastes.

KEYWORDS: waste, paper, container, recycling

SUBMISSION ID: R04A-CAVITP-0628

Perceptions of Ibaanians Towards a “No Plastic Policy” in Ibaan Public Market

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& Recah Bagayawa, Dr. Juan A. Pastor MNHS, Ibaan, Batangas
(Adviser: Joy Dee Diona)

Abstract

INTRODUCTION

Plastic gives a helping hand, but they are polluting our land. This statement explains that plastic bags might seem harmless, but there are reasons to have concerns about their very existence. The purpose of this study is to determine the perceptions of vendors and buyers towards "No Plastic Policy" in Ibaan Public Market. in order to reduce the usage of plastic bags.

METHODS

Through quantitative research methods, which emphasize objective measurements and the statistical, mathematical, or numerical analysis of data collected through survey questionnaires or by manipulating pre-existing statistical data using computational techniques.

RESULTS

Results have shown that the implementation of the "No Plastic Policy" in Ibaan Public Market has a good effect because it will help in protecting the environment as well as humans. Moreover, it has been argued that there is a significant relationship between the perceptions of the respondents towards "No Plastic Policy" and their age, sex, educational attainment, and market player.

DISCUSSIONS

This is strengthened by the complexity theory wherein it states the examining a program's success must not only include references to elements related to program participants but also to the relationships of participants with each other and with the environment in which they act and how that process of implementing strategies, policies, programs, and action plans that allows to form utilize its resources to take advantage of opportunities in the competitive environment (Hamington 2006). Further, the researchers concluded that the dissemination materials could be developed to promote the "No Plastic Policy."

KEYWORDS: Policy, Ibaan, Public Market, No Plastic Policy

SUBMISSION ID: R04A-BATANP-2130

Public Participation in Solid Waste Management

Jimwel Macaraig, Kent Blanco, Lyka Mariz Sison, &Regine Lucero, Dr. Juan A.
Pastor MNHS, Ibaan, Batangas
(Adviser: Myrna De Castro)

Abstract

INTRODUCTION

The environment is the total of a person's surroundings which includes physical, chemical and other natural forces. Unfortunately, it is inevitable that these interactions with the environment would lead to different environmental problems. Different studies and researches were conducted and to start these actions, people must start within the smallest group that they are in. in relation to this, a study about public participation in solid waste management was conducted to measure the public participation of Ibaeños in solid waste management.

METHODS

A mixed method research design was employed by collecting the quantitative data from 237 household residents of Poblacion, Ibaan, Batangas using a researcher-made questionnaire and qualitative data from 10 residents of Poblacion and Local Government Unit of Ibaan using open-ended questions.

RESULTS

The survey result implies that the respondents strongly agreed that they accept the participation with regards to the solid waste management in terms of Oplan Linis, Biogas Digester, and in 10-Year Ecological Solid Waste Management Plan. in addition, the interview results show that the Local Government Unit of Ibaan have done and proposed different regulations, laws projects, and actions already to strengthen the Ecological Solid Waste Management Act.

DISCUSSIONS

Moreover, The LGUs and the residents have almost matched knowledge regarding the actions promoting solid waste management. These findings overall indicate that Ibaeños are aware of the regulations related to solid waste management.

KEYWORDS: Waste Management, Participation, Ibaeños, Biogas

SUBMISSION ID: R04A-BATANP-2127

**Solid Waste Management Practices: Manifestation of Cleanliness in
Quirino General High School**

Johannes Cris R. Indunan, Quirino General High School
(Adviser: Merlvin D. Ignacio)

Abstract

INTRODUCTION

to achieve effective and sustainable implementation of the proper waste management practices, awareness with participation is the key to be involved in the Solid Waste Management Program of an institution (Paghasian, 2017). The Senior High School student- researchers studied the waste management practices in Quirino General High School, its waste management system and how it affects the environment and if there are risk factors of waste management practices to the studentry.

METHODS

This study utilized a case study under the qualitative approach, a total of thirty-five (35) students and teachers of both the Junior and Senior High School Department were purposively selected by cluster quota sampling. Data were gathered through the use of a questionnaire. After the questionnaires were gathered by the researchers, the data recorded are organized relative to the questions given. The data is encoded from the written output of the participants. Moreover, the study used thematic analysis which is a fundamental tool in analyzing which is needed to be well-defined and labeled to solidify its part in qualitative research.

RESULTS

Putting the waste into trash bins is the common collection practice, there are intended trash bins for segregating waste and the institution's way of disposing of the waste material is through the help of garbage collectors. Majority of the participants haven't experienced any health- related problems, they also gained knowledge through SWM and cleanliness in the surrounding area is the effect of SWM. It gives a positive result to teachers and students while influencing the motives of cleaning.

DISCUSSIONS

With the result of this study, we could say that: School organizations and administration should conduct regular assessments and evaluations of the programs supporting Waste Management Practices. Students should be imposed with disciplinary actions/ sanctions for those who violate the rules and regulations on waste management practices and departments regarding waste management practices. The future researchers should have an extended study to cover more schools and include privately owned secondary schools in the province and future researchers may conduct a similar study using different variables and make it more reliable.

KEYWORDS: Awareness, Environment, Solid Waste Management,

SUBMISSION ID: R002-QUIRIN-0020

**Solid Waste-Related Problems at TNHS: Basis for a Proposed TNHS
Solid Waste Management Program**

Jesson Parale, Member/ TRAQ

Abstract

INTRODUCTION

Solid waste disposal is a worldwide problem that has significant environmental issues associated with it. The Talipan National High School, the biggest secondary school in Pagbilao District Experiences some problems related to waste management. The researcher is prompted to conduct this research to help the school in institutionalizing a program on management of wastes and propose a set of policies to systematize the waste segregation, on-site storage, collection, transfer and transport, processing and recovery and waste disposal.

METHODS

Descriptive- analysis and descriptive- comparative methods were used in finding research scientific inquiry. The researcher devised opinionnaire and questionnaire to gather relevant data from the teachers and students. For the completion of this research the data were treated statistically using frequency count, simple percentage, weighted arithmetic mean, and test-test.

RESULTS

The respondents noticed that (1) Trash bins are provided in the classroom and/or corridors. However, there are some individuals in the school who are just putting their trashes on the trash bins without considering the segregation of waste; (2) There is no appropriate on-site storage; (3) The collection of waste is done every MWF; (4) There are assigned students disposed their solid waste following the MWF schedule but some failed to do their task hence keeps overflowing garbage bins ; (5) SSG and class officers automatically separate recyclable materials from the disposable waste and kept in the classroom or any place designated by the SSG officers.

DISCUSSIONS

The Results demonstrate the need to properly addressed some problems to make solid waste management effective. Some existing good practices of solid waste management can be implemented and there are possible ways and means to manage solid waste. in the light of the findings, the following are hereby recommended; (1) Implement the SWMP policies framed by the researcher; (2) Create a committee who will rigidly monitor the SWMP policies and procedures; (3) Involve the AP and TLE areas in the implementation of the SWMP; (4) Properly label trash bins provided in every classroom, offices and corridors; and (5) Designate a place that will serve as the on-site storage of wastes and make concrete plan on solid waste processing.

KEYWORDS: Solid Waste Related Problems, Proposed Solid Waste Management Program

SUBMISSION ID: R04A-QUEZON-0310

Students Engagement in Mining: Its Impact on Health and Educational Outcomes

Sheryl Paquita, Gumaus National High School

Abstract

INTRODUCTION

This study focused on the impact of mining on health & educational outcomes of selected students of GNHS exposed to mining activities. Specifically, it answered the following subproblem: 1. What is the status of the students engaged in mining activities in terms of their profile along with age, gender & grade level, types of mining-related activities, mining site, & a number of times engaged per week? 2. What are the possible reasons why students are engaging in mining activities? 3. What are the possible impacts of mining activities along with health & academic concerns? & 4. What interventions may be proposed to address the impacts on students exposed to mining activities?

METHODS

This study utilized the descriptive research. The study also utilized a survey questionnaire checklist, interview guide & documentary analysis. Focus Group Discussion was also conducted. The respondents were selected students from Gumaus National High School for the school year 2017-2018. Relative to this, the researcher decided to select purposively 54 samples for the research study.

RESULTS

in the light of the findings of the study, the following conclusions were drawn: 1) The students engaged in mining activities were aged ranged from 13-16 years old, both male & female & from Grade 7-10. 2) The students were engaged in mining activities because they were influenced by their family members/relatives. 3) Students who were engaged in mining activities did not regularly attend classes. They did not participate in extra-curricular activities; & 4) The researcher proposed an indigenized material entitled: "Gintong Pangarap" w/c was localized suited to the learning abilities of the students. It is in the form of Comics.

DISCUSSIONS

Based from the conclusions, the researcher hereby recommends the following: 1) Department of Education specifically the respondent schools should be aware in terms of who are the students engage in the mining activity so they can make the necessary interventions. 2) Parental education may be conducted to the parents of the 4 respondent schools for them to be aware and realized the long term effect of the engagement of their children into mining activities. 3) An indigenized material to address the impacts as to health & educational outcomes is hereby recommended.

KEYWORDS: Engagement in Mining, Health and Educational Outcomes

SUBMISSION ID: R005-CAMNOR-0045

The Effect of Wi-Fi Radiation in the Growth of Mongo (*Phaseolus aureus*) Plants

Kristine S. Jimenez, Sico 1.0 National High School (Grade 7-12)
(Adviser: Emerson Dalangin)

Abstract

INTRODUCTION

All radio devices like cellphones, radios, televisions, and Wi-Fi devices communicate via electromagnetic radiation. The World Health Organization and the International Agency for Research on Cancer have classified mobile phones as a possible carcinogen. This study aimed to find the effect of Wi-Fi radiation on living things. The researchers used mongo plants as test specimens.

METHODS

This study used experimental design. In Treatment A, the plants were planted far from the Wi-Fi router and Treatment B were placed near the Wi-Fi router. The plants in treatment A were 8 meters away from the source of radiation. The growth of plants was observed for ten days.

RESULTS

The quality of plants was evaluated in terms of health and height. The plants near the Wi-Fi router were moderately healthy (mean = 2.8) according to respondents while the plants far from the Wi-Fi radiation were very healthy (mean = 4.48). The average height of these plants was 64.73 mm while the plants away from Wi-Fi radiation had an average height of 228.47 mm. Using Smith's Statistical Package, it was shown that plants away from the Wi-Fi radiation were statistically healthier and taller than the plants near the Wi-Fi radiation.

DISCUSSIONS

Since long exposure to Wi-Fi radiation had an effect on living things, the researchers recommended that cellphone users should not sleep with the mobile next to their bed. They should put their phones far away or put it in another room. They could turn them off when not in use.

KEYWORDS: WiFi, Radiation, Effect on Organism, Sico 1.0 National High School

SUBMISSION ID: R04A-BATANP-0601

**Verde Island Marine Conservation Youth Advocates (VIMYA):
Problems and Local Programs Supporting Marine Conservation in San
Andres, Isla Verde**

Cedric M. Delos Reyes, Conde Labac Integrated School
(Adviser: Gaylee Masangcay)

Abstract

INTRODUCTION

Isla Verde Passage is the world's renowned center of the center of marine biodiversity which contains the highest concentration of marine species. However, as a young marine advocate, the researchers wanted to know the current state of conservation of sea resources in San Andres, Isla Verde. This study aimed to describe the problems encountered related to marine conservation on the island. It aimed to assess the programs and laws with the aim of safeguarding sailing resources in the area.

METHODS

This study used a descriptive type of research. The respondents of the study are the 40 local residents, barangay officials, students and fisherman of San Andres, Isla Verde, July 2018. to get specific research data, researchers designed a questionnaire based on relevant issues, local ordinances and programs related to conservation of marine resources in Isla Verde. Weighted and composite mean are utilized to analyze the data gathered.

RESULTS

Problems related to the conservation of aquaculture are sometimes observed in Isla Verde. Occupation to seaside and overpopulation that leads to garbage problems seemingly an issue in marine conservation. Programs and laws on the protection of marine resources on the island are strongly implemented with a high emphasis on the ban to dynamite fishing and illegal collection of coral reef. However, data revealed that there should be a strong emphasis on programs on limiting the number of fishermen and illegal collection of aquarium fish.

DISCUSSIONS

in terms of marine conservation problems encountered in Brgy. San Andres, human living on the coast posts several problems such as garbage and pollution. This makes sea susceptible to human waste and chemicals that can contaminate water supplies and food chain by affecting the marine life involved. Overpopulation would lead to fisheries that are already fully exploited or overfished. Programs on anti-dynamite and cyanide fishing make the waters of Isla Verde preserve its coral reef and aquarium fisheries. Marine conservation programs from youth advocates are emphasized. An action plan comprised of specific activities called Verde Island Marine Conservation Youth Advocates (VIMYA) Camp and Junior-Senior SEAtizens Seminar. The action plan also includes the development of an informative video titled VIP DIVEscoveries.

KEYWORDS: marine tourism, barangay marine programs, local ordinances, marine conservation

SUBMISSION ID: R04A-BATANC-0339

**Waste Management Practice at Home of G12 TVL - CSS Students in
CNHS - SHS AY 2018 - 2019**

Ivan Lalan
(Adviser: Dr. Ruel S. Arcon)

Abstract

INTRODUCTION

Waste management should be the concern of everyone because it is of global implications - polluted bodies of water resulting in the death of marine species is one implication that this research was conducted. The concept of managing waste should really start at home. Why are then the surroundings look like dumping sites for waste? Look at our coastal areas, garbage everywhere. The study will look at the waste management practices at home. What is the level of awareness of the respondents regarding waste management? What is the level of compliance of the respondents to waste management practices at home?

METHODS

This study was conducted to obtain baseline information about waste management practices at the home of G12 TVL-CSS Students in CNHS-SHS. This cross-sectional study was conducted using a well-designed and validated Likert type of questionnaire. Out of 289 students from G12 TVL-CSS Cavite City, 60 were randomly selected. The questionnaires were administered last November 2019 at Cavite National High School Senior High School Department. Interpretation and analysis of data followed.

RESULTS

The result of the study revealed the level of awareness in the different waste management practices observed at home by the respondents. The respondents are very aware of reuse. They are aware of the other waste management practices like composting, recycling, waste-waste and segregation. and the result of Waste management practices observed at home by respondents are the highest percentage of awareness that observed recycling and reusing and the respondents observed proper disposal of E-waste are the second highest aware of the respondents observed and the last is segregation and reducing in the level of practices at home.

DISCUSSIONS

The waste management remains important in human life because of the waste in our environment and Findings of this study revealed that waste management is practiced at home by students and positively affect student's performance and outcome in their homes. The best way to maintain a clean environment is to practice different waste management at home.

KEYWORDS: environment, waste management, awareness

SUBMISSION ID: R04A-CAVITC-0024

EPIDEMIOLOGY & HEALTH STATISTICS

**Communicable Diseases: A Basis for Sanitary Interventions on Cases
Reported in Donsol District Hospital**

Leean Queennie Llenas
(Adviser: Julius Caesar Averilla)

Abstract

INTRODUCTION

Republic Act. 3573 Reporting of Communicable Diseases. It stated that all individuals and health facilities are required to report notifiable diseases to local or national Public Health Authorities. in connection is the Intensity IEC or the Information, Education and Communication about the Communicable Diseases. in view of this, the main objective of the researchers in this study is to focus on how to reduce the increasing rate of reported cases of Communicable Diseases and to differentiate the different Communicable Diseases in Donsol, Sorsogon to serve as a basis for Sanitary Interventions.

METHODS

The study's primary source of data was from Donsol District Hospital itself through conducting a formal interview. The formal interview was held at the Chief Nurse Office to know and provide the best solution and also, to serve as a basis for Sanitary Interventions in Communicable Diseases. This study used a descriptive-analytic design. Data were triangulated, analyzed and interpreted.

RESULTS

The reported cases of communicable diseases in Donsol District Hospital were 24 in total, with an alternate result of cases in the last five years. The total rate number of diseases was 18 that has Acute Gastroenteritis as the top rate and Systematic Viral Infection as the lowest rank of communicable diseases reported. Proposed awareness campaign to the people in the community of Donsol, Sorsogon. Based on significant findings, the following conclusions are deduced as a basis for the recommendation of the study: (1) Increasing rate of communicable diseases from the year 2014-2018. (2) Acute Gastroenteritis was the top communicable diseases reported. (3) The lowest rank of cases of communicable disease falls on Systematic Viral Infection. (4) A proposed awareness campaign designed to advance the knowledge of the citizens in Donsol, Sorsogon.

DISCUSSIONS

According to the findings, a quick act or response to any Communicable Diseases should be practice to Donsol District Hospital to help lessen the rate of cases reported. Enhancement of medical practices in order to strengthen the response in fighting Communicable Diseases and to lessen its uprating case. Studies affirmed that hospital heads are 50% responsible for the increasing rate of Communicable Diseases, 50% for the people in the community. The findings of this current study stimulate future researchers to conduct an in-depth analysis of gathered data, which may serve as a basis for training and seminars in other hospitals/health institutions or facilities.

KEYWORDS: communicable diseases, health, health programs

SUBMISSION ID: R005-SORSOP-0002

**Evaluating the Effect of Nutrition Education and Dietary Modification
on the Health Status of Kindergarten Children in Dacanlao Gregorio
Agoncillo Elementary School**

Reisa Manalo, Department of Education

Abstract

INTRODUCTION

in school, children need to be given all the opportunities to learn in order to acquire skills and abilities to fully develop their potentials. Good health and proper nutrition give children a greater ability to learn and do more, thereby enhancing their physical, intellectual, social, emotional and moral development. Nutritionally at-risk children are already handicapped in terms of learning abilities and even opportunities. This study aims to assess the effect of comprehensive nutrition education and dietary modification on the health and nutritional status of severely wasted and wasted kindergarten in Dacanlao G. Agoncillo Elementary School.

METHODS

This study utilized the mixed method of quantitative and qualitative research where anthropometric measurements before and after the intervention were gathered as well as interview and focused-group discussion was done. This prospective case-control study was executed on 91 kindergarten children with severely wasted and wasted nutritional status. After anthropometrically segregating the Kindergarten children from the normative to those who are wasted and severely wasted, the first primary data including socio-demographic, clinical and dietary assessments were noted using observation and interview method. Later, nutrition education and dietary modification workshops once a month were intervened as well as enrollment of pupils to the school-wide feeding program for 3 months. After three months of follow-up, the second primary data were obtained and compared with the initial findings. Obtained results were statistically analyzed using the paired t- test.

RESULTS

After analyzing the results, the number of wasted and severely wasted pupils taking optimal nutritional intake decreased by 60% after the trial period of three months. There was a significant increase in the anthropometric status of the pupils particularly in height noted.

DISCUSSIONS

This concludes that optimal dietary changes incorporated with rigorous nutrition education showed the improved health status of the kindergarten children in comparison to the controls which can further up-regulate their growth and development. Providing nutrition education to students at a young age would be beneficial for improving their nutritional status for lifelong learning.

KEYWORDS: Keywords: nutrition, optimal, rigorous, paired t-test, anthropometric

SUBMISSION ID: R04A-BATANP-0376

ETHICS

**An Action Research on the Management of Grade Five Pupils with
Disruptive Behaviors in Sta. Maria Magdalena Elementary School Year
2018-2019**

Maria Cristina Reyes, Ruzzel B. Portinto, & Sergio P. Cornista, Department of
Education - San Pablo City

Abstract

INTRODUCTION

The impelling prevalence of behavior problems among school children is one of the major problems that pose a threat to all the people concerned - educators, administrators, and classroom teachers. However, there are always possible solutions for such misbehavior. To be successful, policies and practices for improving pupil's discipline must attack the problem at the school, classroom, and individual levels. School goals, missions, and normative climates can be focused on academics and pro-social behavior by redefining common forms of misconduct as unattractive behavior for pupils.

METHODS

This study was limited only to twenty-two (22) Grade V pupils in Sta. Maria Magdalena Elementary School during the school year 2018- 2019, who needs to solve the disruptive behaviors of pupils inside the school and classroom.

RESULTS

Based on the findings of the study, the level of self-concept of the behaved pupils was very high, while their counterpart had a lower level of self-concept. Behaved pupils perceived themselves as intelligent pupils, who can think well and always have the abilities to do things. This was only seldom possessed by the misbehaved pupils. Being happy in the family was felt by the behaved pupils. Behave pupils had a better outlook in life and they perceived to be successful someday. Misbehaved pupils had no definite perception for their future: whether they would be successful or not when they would grow.

DISCUSSIONS

Teachers should establish a meaningful relationship with pupils showing respect for them and their feelings when dealing with chronic rule breakers, it helps to consider that pupils who have disruptive behaviors generally have bigger problems at home. Often, they dislike themselves, feel that they are not liked by adults and have a little self-control. Pupil tends to imitate the behavior of their role. Teachers must assume a leadership role in the classroom by initiating a code of discipline and establishing classroom routines that would provide pupils with the points of reference required to adjust their behavior to the social norms of school life. The school and the classroom must have a cooperatively developed discipline code with outlined procedures and consequences.

KEYWORDS: Disruptive, aspirations, chronic rule, imitate

SUBMISSION ID: R04A-SANPAB-0023

Bullying as Related to Emotional Quotient: Basis for Intervention Program

Josefina C. Lopez & Maribeth N. Chua

Abstract

INTRODUCTION

Every school in this country has a policy to provide safe and nurturing environment for all students. It's a problem that can have negative consequences for the general school climate and for a safe environment without fear. Bullying can also have negative consequences both for students who bully, for their victims and to the persons who have witnessed bullying situations. School bullying is always related in some way to the acts of violence, and that's why the Education Department is stressing more on the idea behind making schools violence-free and urging students, parents, and teachers to act on fighting any act of violence in school.

METHODS

This study employed the descriptive survey design within its attempt to determine, describe, and analyze the difference and relationship of the pupil's extent of being bullied or bullies and emotional quotient. The respondents were selected randomly such that each member of a population had an equal chance of being included in this study. The study was based primarily on the survey using sets of questionnaires.

RESULTS

Most of the bullies practiced moderate extent of physical, verbal and indirect bullying. Generally, a moderate extent of bullying is practiced. Majority of the bullied experience moderate extent of verbal and physical bullying. Most of the bullies have low emotional quotient, unfavorable ways of managing emotions. There is a significant difference in the emotional quotients between the bullies and the bullied. Chi-Square results of the extent of bullying and emotional quotient of the bullies and the bullied. The extents of verbal, indirect and intimidation bullying are related to the emotional quotient of the bullies while physical, social interaction and cyberbullying are not related to their emotional quotient.

DISCUSSIONS

Bullying is a serious problem that can affect the ability of pupils to progress academically and socially. A comprehensive intervention program that involves all pupils, parents, and school staff is necessary to ensure that all pupils can learn in a safe and fear-free environment. This intervention program is prepared for the implementation to address the problems of bullying based on the findings of the study with the aim of preventing bullying at school, improve behavior and enhance the pupils' emotional quotient.

KEYWORDS: : bullying, emotional quotient, intervention program

SUBMISSION ID: R04A-BATANP-1903

Discipline Problems as Related to Academic Achievement of Grade V Pupils of Balayan East Central School: Basis for an Enhanced Guidance Program

Basiliza Sacdalan, Department of Education - Balayan East

Abstract

INTRODUCTION

Education aims at character building and training where a newborn individual is transformed into becoming a productive member of a given society. Part of these pieces of training is teaching to read and write, discipline, conforming to school rules and regulations, human rights and respecting others rights. The primary purpose of this study was to determine the discipline problems and academic achievements of grade five pupils at Balayan East Central School, Balayan, Batangas as a basis for an enhanced guidance program.

METHODS

This study employed a descriptive research method. This method describes the nature of a situation as it exists at the time of the study and explores the causes of particular phenomena. A stratified simple random sampling of Grade V pupils and teachers was applied. An approval to conduct the study was requested from the School Principal and parents of the pupils. The researcher used the percentage, frequency, mean, standard deviation and Pearson r as statistical tools in determining the results and answers to the statement of the problem

RESULTS

As to Demographic Profile. in gender, there are equal number of male and female pupils. in birth order, the students are in the middle ordinal position. in the number of siblings, the family on the average ranges from 3-4 number of siblings in the family. Majority of fathers are non-professional workers and the majority of mothers are housewife or jobless.

As to the level of discipline. The pupils obtain a low extent of discipline problems. Meaning 50% -69% is the extent of discipline problems experienced by teachers. Students have few manifestations of various discipline problems. The group is heterogeneous. in academic achievement, the students obtain approaching proficiency. Meaning the students at this level have developed the fundamental skills and understanding and with little guidance from the teacher and or with some assistance from peers, can transfer these understanding through authentic performance task. The group is heterogeneous.

DISCUSSIONS

The results demonstrate the need for the active implementation of the existing Guidance Program to meet the needs of every learner. The researcher believes that proper knowledge of the appropriate disciplinary measures suited to the needs of individual students and digging further into the root cause of the problem makes it possible to help these students become more humane, compassionate, and effective.

KEYWORDS: discipline, academic achievement, guidance program

SUBMISSION ID: R04A-BATANP-1901

**Level of Satisfaction of the Consumers of Honesty Store of Bernardo F.
San Juan National High School**

Edward Arabit, Teacher II

Abstract

INTRODUCTION

"Honesty is the Best Policy", according to Benjamin Franklin. But how can we instill honesty if we are dealing with the diversity of millennial learners? Villan, Tyne(2019), cited in his column in the Inquirer.net that when it comes to honesty, Filipinos are somewhere between the spectrum of being extremely honest and dishonest but there is no way to gauge one's honesty and integrity unless we do a social experiment about it. The Division of Rizal(as stated in Memorandum M-18-0120)has launched the project "MP4: Moral na Pagpapahalaga: Panindigan, Pakilusin, Palaganapin" .The objective of the program is to established honesty with everyone. to support the project Bernardo F. San Juan National High School has put up an Honesty Store.

METHODS

The main purpose of the study is to evaluate the level of satisfaction of the consumers of honesty store of Bernardo F. San Juan National High School through a questionnaire checklist. The evaluation was given to 67 loyal consumers of honesty stores in the first week of the opening of the store. The respondents were chosen through purposive sampling. The study used a descriptive research design which is a technique to the quantitative description which determines the prevailing conditions in a group of cases chosen for the study.

RESULTS

The study showed that males are much satisfied than females in terms of accessibility of the store. in terms of structure, both of the respondents are much satisfied. While in terms of services, males are very much satisfied than females. The study concluded that in terms of structure, there is no significant difference in the level of satisfaction of the consumers of honesty store but in terms of accessibility and services, there is a significant difference in the level of satisfaction of the consumers of honesty store of Bernardo F. San Juan National High School as evaluated by the two groups of respondents.

DISCUSSIONS

The study aims to establish honesty to everyone which indeed the objective of the Honesty Store of the Manila Police District. As cited by Villan, Tyne(2019) in his column in the Inquirer.net that the MPD has launched their very first "Honesty Store" in the PNP in 2018 in an attempt to test everyone's honesty. The store is considered to be the first of its kind selling basic food items. Since there are more female respondents than male, the study recommends that there should have equal respondents between male and female and a relevant study must be conducted considering other variables for future studies.

KEYWORDS: Honesty Store

SUBMISSION ID: R04A-RIZALP-0458

**Temper Management in Dealing with Pupils' Misbehavior in the Grade
Three Level**

Jean Lapitan, BRAVE

Abstract

INTRODUCTION

The misbehavior of pupils is one of the dismayed realities in the education.

METHODS

The researcher made a checklist to determine the pupil's misbehavior and another for teachers who are experiencing a heightened emotion.

RESULTS

The researchers noted that children in the Grade 3 possess traits that fall under Piaget's Cognitive Development.

DISCUSSIONS

The result demonstrates that if teachers cannot control the pupil's misbehavior, they can manage their own emotions.

KEYWORDS: temper management, cognitive development, reflection

SUBMISSION ID: R04A-BATANP-0588

The Effects of Bullying and Its Influence on the Pupils' Academic Achievement

Avelino B. Mortel & Lea C. Adove

Abstract

INTRODUCTION

This study on bullying serves as a guide for educators on the importance of determining the safety of the school against bullying, its prevalence, and its relevance to the academic achievement of pupils and will finally lead to the formulation of helpful counseling activities that will help control bullying in school.

METHODS

By random sampling, the bullies, victims and pro-social are identified using the bullying survey and the bullying prevalence questionnaire (BPQ). Using the descriptive survey method of research, the extent of bullying in schools and its attempt to relate it to the academic achievement, safety level against bullying as well as its prevalence were determined. The study is entirely based on a survey using a questionnaire. The statistical tools were used to provide for answers to the problems of the study are weighted mean, standard deviation, and chi square.

RESULTS

It has been found out that 1) Both male and female feel unsafe about being bullied in their class. On the contrary, they feel safest of being bullied by other kids in school. 2) There are more bullies than victims and there are most victims than pro-socials. 3) among the groups, pro-socials tend to have higher academic achievement than pupils who belong to victims and bullies. 4) Bullies have low academic achievement compared to victims.

The result shows that pupils with higher academic achievement tend to feel safe than those children with lower academic achievement. Pupils with poor academic achievement feel scared and not so safe.

There is a significant relationship between the prevalence level of bullying and academic achievement. Those pupils who have very low, low and average prevalence levels tend to have fair academic achievement. Those with high and very high prevalence levels have poor academic achievement. There is a significant relationship between safety level against bullying and academic achievement. Those children who feel very safe and safe tend to have outstanding, very satisfactory, satisfactory and fair academic achievement. Those not so safe have fair academic achievement. Those with unsafe and scared level against bullying have poor academic achievement.

DISCUSSIONS

The result demonstrated the academic achievement of pupils has a significant relationship with the safety level and prevalence level of bullying. For this reason, bullying should be controlled and gradually be eradicated from occurring in schools.

KEYWORDS: prevalence, bullying, academic achievement

SUBMISSION ID: R04A-BATANP-1907

**The Extent of Gender and Development Implementation in Balayan
East Central School: Basis for the Development of Academic Related
Activities**

Jocelyn Robles

Abstract

INTRODUCTION

The Department of Education (Department of Education) issues the enclosed Gender- Responsive Basic Education Policy in line with its Gender and Development (GAD) mandate as stipulated in 1987 Philippine Constitution, Republic Act (RA) No. 9710 or the Magna Carta of Women (MCW), RA 10533 or the Enhanced Basic Education Act of 2013, convention on the elimination of all Forms of Discrimination Against Women (CEDAW) and the convention on the rights of the child (CRC) among others. Through this policy, the Department of Education commits to integrating the principles of Gender equality, gender equity, gender equity, gender sensitivity, on discrimination and human rights in the provision and governance of Basic Education.

METHODS

This research utilized both descriptive and correlational. It describes what is and it also depicts with emphasis on what actually existed such as current conditions, practices, situations or any phenomena. The descriptive part of the research pertains to describing the organizational commitments and time management skills. The authors further explain that in correlational research "the relationships among two or more variables are studied without any attempt to influence them" | there is no manipulation of variables in correlational research.

RESULTS

The meajority of the student and administrator respondents are female; in terms of ordinal position, majority of the respondents are second born in the family; in terms of family structure, majority of the student respondents are with their father and mother, faculty and administrators respondents, the majority are single. in terms of the status of gender and development implementation, the majority of the indicators are " high extent" which implies that the status of implementation of gender and development according to administrators, faculty and student respondents are adequately evident. There is no significant difference between administrators, faculty and student respondents in the status of gender and development implementation. Their perceptions are the same

DISCUSSIONS

The findings reveal the need for the active dissemination of the different programs and projects for the continuous implementation of the Gender and Development to improve the curriculum and syllabus content of the general education subjects, to enhance the knowledge of the faculty members on the guidelines of implementation and to let the pupils fully aware of the gender and development program, guidelines and its implementation.

KEYWORDS: Gender and Development, implementation

SUBMISSION ID: R04A-BATANP-1904

**Work Ethics, Human Values, and Ethical Leadership of Teaching and
Non-Teaching Personnel of Ternate Central Elementary School S.Y.
2018-2019**

Carlene Gahoy, Ternate Central Elementary School

Abstract

INTRODUCTION

Leadership is widely seen as having an important role in fostering ethical conduct in organizations. This study was aimed at the identification of work ethics, values orientation, and ethical leadership, school grounding educational practices in the school as an organization in the context of a learning organization of 27 teaching and non-teaching personnel of Ternate Central Elementary and how employees perceive them. The underlying purpose of this study is to ensure that Ternate Central Elementary School provides a high-quality service to its pupils and stakeholders in accordance with its mission statement and to promote public confidence in the integrity of the School.

METHODS

Assessment requires that programs evaluate the work ethics of a teaching and non-teaching personnel of Ternate Central Elementary School. It includes the Human Scale and Work Ethics Assessment. This was done through a survey and Interview method.

RESULTS

Based on the research study and all the data gathered we conclude that the of Human Value Scale, Ethical Leadership and Work ethics of teaching and non-teaching staff of Ternate Central Elementary School in Ternate, Cavite was very high.

DISCUSSIONS

The research data allow us to conclude that teachers perceived their organizations as potentially learning organizations, but also the barriers to the development of the school into a learning organization can be identified. The results demonstrate a deeper look into the situation that may affect the behavior and further study should be made investigating the factors affecting the cause of moderate work ethics of the respondents

KEYWORDS: ethical leadership, human values, work ethics, organization

SUBMISSION ID: R04A-CAVITP-1418

EXERCISE PHYSIOLOGY

Effect of High Intensity Interval Training in Weight Reduction of Junior High School Students

Kim Roldan Andaya, Department of Education, Gulod NHS

Abstract

INTRODUCTION

Wellness is an active process of making choices toward a healthy and fulfilling life. High-intensity interval training (HIIT) is a form of interval training of a cardiovascular exercise strategy alternating short periods of intense anaerobic exercise with less intense recovery periods. The Food and Nutrition Research Institute (FNRI, 2013) survey shows that among 10 to 19 years old, the prevalence of obese and overweight children increased by 2.5 points, from 5.8 percent in 2003 to 8.3 percent in 2013. The significant increase in physical inactivity of children who are obese is aggravating the problem. As a PE teacher, how do we address the problem of overweight and obese students?

METHODS

Using quasi-experimental design; the respondents were selected through stratified random sampling. The HIIT program started with warm up, HIIT exercises and finished with cool down exercises. It was two weeks of moderate intensity workout and two weeks of heavy intensity workout. The researcher, with the nutritionist and school nurse, assessed the BMI and food intake of the respondents. The different statistical treatments of data used were frequency, percent distribution, weighted arithmetic mean, cross tabulation, –Chi-square, and independent T-test.

RESULTS

There are more obese and overweight students who belong to the younger age group. Moreover, the experimental and comparison group interpreted to have both inadequate food intake and the body mass indices of student were decreased gradually at the end of each workout. There were significant differences in the effect of high-intensity interval training using moderate and heavy intensity workout. Finally, there was a highly significant difference in the effect of high-intensity interval training in a weight reduction of the students.

DISCUSSIONS

High-intensity interval training programs may be administered to any age group regardless of sex. Implementation of moderate intensity workout of the training program may be extended to come up for a more effective result. Heavy intensity workout strengthens components of physical fitness and HIIT program may be done regularly in school especially in addressing the problem of overweight and obese students. Motivation and attendance of the students must improve to persuade more of them in getting a fit body and healthy lifestyle. The student must learn the positive consequences of proper diet and physical fitness so they can make educated decisions about their current lifestyles and practices.

KEYWORDS: HIIT, Weight Reduction, Junior High School

SUBMISSION ID: R04A-CABUYA-0081

FINANCIAL ANALYSIS

Financial Literacy, Personal Financial Management Practices and Retirement Readiness of the Teachers in Pedro A. Paterno National High School

Geraldine P. Signo, Teacher I, Ma. Eva D. Marasigan, & Magdalena A. Nibay,
Teacher III

Abstract

INTRODUCTION

One of the most controversial issues regarding teachers is how to manage their salary in order to avoid loans and debts with friends and families. This concerned the researchers to conduct this study and aimed to correlate the employees' state of financial literacy, personal financial management practices, and retirement readiness. The study aimed to determine the significant relationship of the employees' demographic profile, state of financial literacy and personal financial management practices with their retirement readiness, as well as the relationship of personal financial management practices with their state of financial literacy

METHODS

A descriptive-correlation was employed by the researchers as research design. Purposive sampling was used to select the 44 teachers in Pedro A. Paterno National High School.

RESULTS

As the results, the data showed that most of the teachers are financially literate but have poor personal financial management practices. Although they manifest financial literacy, their overall saving, credit and investing practices are poor which signifies that they lack actions involving the use of financial knowledge. It showed that half of the respondents are not yet ready for retirement and the other half are somewhat ready. It means that employees are indifferent when it comes to retirement readiness. On the other hand, employees' age, educational attainment, salary, state of financial literacy and personal financial management practices have positive significant relationship with retirement readiness.

DISCUSSIONS

Teachers in Pedro A. Paterno National High School showed that their personal financial management practices and the state of financial literacy also have positive significant relationship with each other. Thru this, it is recommended that the government should encourage the teachers to be more educated about financial literacy and proper personal financial management practices by conducting different trainings and seminars, because these two were identified in the study to have a relationship with their readiness towards retirement.

KEYWORDS: Financial Literacy, Personal Financial Management, Retirement

SUBMISSION ID: R04A-BATANP-0605

Financial Services of the Department of Education Albay Division: Its Implications to the Financial Management Policies

Marianne Bustamante, Department of Education

Abstract

INTRODUCTION

This study was an evaluation of the financial services of secondary schools in the Department of Education (Department of Education) Division of Albay. It focused on the degree of implementation, the weaknesses, the determined factors which contributed to the weaknesses of the financial services. The findings of the study were utilized to formulate policy recommendations to improve the implementation of financial services.

METHODS

The research method employed was a descriptive method with mixed quantitative and qualitative methods. This study gathered primary data through the survey method utilizing a researcher-made questionnaire. Purposive sampling was employed in the choice of the Department of Education Division of Albay. It used total enumeration with 14 Administrative Officers and 37 Senior Bookkeepers as respondents of the study. The data were analyzed and presented using frequency, percentage, and weighted mean.

RESULTS

Based on the findings, the following are the conclusions (1) The degree of Implementation of the Financial Services of the Department of Education Division of Albay is "much implemented". (2) The financial services which need improvement in its implementation are the preparation and submission of financial plan which entails the physical activities of the school, School Improvement Plan (SIP), and Annual Improvement Plan (AIP), and measurement of actual performance compared to standards set; (3) The weaknesses in the implementation are delayed submission to the Commission on Audit, inappropriate and disorganized workflow for fast and reliable transactions, and inability to render overtime to finish the reports due to limited source of savings; (4) The factor which moderately contributed to the weakness of the implementation was overwhelming related and non-related paper works; (5) The policy recommendations address the weaknesses and the factors contributing to the weaknesses of the implementation of the financial services.

DISCUSSIONS

It is recommended that (1) Modification and improvement of all financial reporting services be made to create easier way and more user friendly reporting system; (2) adapt a strategic and operational plan to provide a framework so that the most important priority of the school will be well taken care of; (3) Full composition of staff in charge of the financial services be hired, comprising of Senior Bookkeepers and Administrative Officers in the implementing secondary school to lessen the overwhelming related and non-related paper works; and (4) The formulated policy recommendations be implemented.

KEYWORDS: Financial Services, Financial Management, Financial Management Policies

SUBMISSION ID: R005-ALBAYP-0002

Financial Status of The Grade 11 ABM-B Family: A Survey

Pauline Rabulan

(Adviser: Julius Caesar Averilla)

Abstract

INTRODUCTION

This study focused in determining the financial status of Grade 11 ABM-B S.Y. 2018 - 2019. A financial status is mainly affected by a person or family's income, and it also includes other elements, such as assets, savings, property, number of dependents, and pension or pension's arrangements. The researcher conducted this research to know how every family of Grade 11 ABM-B managed their finances for their daily needs and how they overcome problems that arise. in this study, the researcher was able to propose solutions that can help every family of Grade 11 ABM-B in terms of finances.

METHODS

This study used descriptive-survey method in gathering data. Participants answered question through a survey questionnaire which was facilitated by the researcher. Data gathered were triangulated, analyzed and interpreted using simple statistical treatment such as frequency count, percentage, weighted mean and rank. Simple focus group discussion was also conducted.

RESULTS

in this study, results have shown that most of the parents/ guardians of the Grade 11 ABM-B spend their money wisely and that their family income is enough for their expenses. Also, these parents/guardians stated that the advantage of saving money is it can help them to become financially secure like in case of emergency, they can provide for it. Lastly, most parents/guardians proposed that they should be taught of how to budget their money wisely.

DISCUSSIONS

The parents of the Grade 11 ABM-B should attend seminars and training on how to effectively control their cash and finances for them to be financially literate. One benefit of being financially literate is you will know how to invest your money and by that, you can save something for educational and retirement.

KEYWORDS: financial status, finances, financially literate

SUBMISSION ID: R005-SORSOP-0005