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24th SIMP-AAIRI Joint Multidisciplinary Research Conference Proceedings

Business and Education Industry

ADDRESSING READING FRUSTRATION WITH LOCALIZED READING MATERIALS: AN INTERVENTION FOR GRADE 8 STUDENTS IN PEDRO S. TOLENTINO MEMORIAL INTEGRATED SCHOOL

Nancy Hatulan
Department of Education

Abstract

The main goal of this study is to enhance reading comprehension and reduce reading frustration among Grade 8 students of Pedro S. Tolentino Memorial Integrated School. By focusing on local surroundings, customs, people, and experiences, the study seeks to examine how the use of culturally and contextually relevant texts can increase student engagement, promote deeper text comprehension, and support struggling readers. The researcher employed both quantitative and qualitative data collection methods. The quantitative approach was used to measure improvements in reading performance before and after the intervention, while the qualitative approach provided in-depth insights into students' experiences and perceptions of the localized reading materials. Learning was considered to have occurred when a noticeable improvement was observed in the reading levels of learners who used the localized reading intervention materials. The use of localized reading materials had a significant impact on enhancing reading comprehension and reducing reading frustration among Grade 8 students of PSTMIS. The notable increase in post-test scores indicates that students were able to comprehend texts more effectively when the materials reflected local settings, experiences, and culture. These findings support the view that reading becomes more meaningful and accessible when learners can relate to the content. The Department of Education (DepEd) may consider offering workshops for teachers on developing materials aligned with its localization policy and contextualized instruction. Teachers may also be encouraged to create narratives that reflect students' communities, culture, and everyday experiences, as well as to continue using locally relevant reading materials in reading lessons to support struggling readers and reduce disengagement. Further research involving other grade levels or schools within the division is also recommended to explore the long-term impact of localized reading interventions.

Keywords: reading comprehension, frustration level, localized reading intervention material

APPLICATION OF ARTIFICIAL INTELLIGENCE AND CHALLENGES ENCOUNTERED BY SENIOR HIGH SCHOOL TEACHERS IN THE DIVISION OF BATANGAS CITY

Janice Perez
Department of Education

Abstract

This study examines the application of Artificial Intelligence (AI) and the challenges faced by Senior High School teachers in the Division of Batangas City. As AI increasingly shapes modern education, its integration offers benefits such as personalized instruction, automated assessment, and enhanced classroom management. However, concerns regarding teacher readiness, data privacy, and ethical use continue to pose significant challenges. Guided by the Web-Based Learning Theory, this study assessed AI use across four domains: pedagogical, social, managerial, and technical. A descriptive survey method was employed, with data collected through a validated questionnaire administered to randomly selected teachers. Statistical analyses, including weighted mean, t-test, and Pearson's r, were applied to interpret the results. The results indicated a high level of AI utilization, particularly in lesson delivery and performance monitoring. However, teachers faced challenges, including insufficient training, limited infrastructure, and student over-reliance on AI tools. A significant relationship was also observed between the extent of AI use and the challenges encountered. The study recommends targeted teacher training, the establishment of ethical guidelines, and the improvement of infrastructure to support effective AI integration. These findings can guide schools and policymakers in enhancing digital teaching practices.

Keywords: artificial intelligence, education, challenges

ARCADEMICS E-MATERIALS IN MULTIPLICATION OF WHOLE NUMBERS OF GRADE 4 LEARNERS

Renalyn Gallardo, Roselyn Galo, Jedda Kabigting, Kyla Mae Nepomuceno,
Angel Sinangote, Dr. Ryan Christopher Villalon
Bestlink College of the Philippines

Abstract

This study investigates the impact of Arcademics e-materials on teaching multiplication to elementary students. With the rapid integration of technology in education, platforms like Arcademics offer interactive tools and personalized learning experiences that enhance mathematical understanding, particularly for students who face learning difficulties. The study explores how these e-materials support self-paced learning, provide immediate feedback, and give access to resources that extend beyond traditional classroom methods. This study employed a true experimental design with cluster sampling, involving 80 Grade 4 students divided into two groups: Non-Arcademics and Arcademics. Data were collected through pre-tests and post-tests, along with a survey questionnaire assessing student engagement, motivation, and interactivity. The results were analyzed using statistical methods, including frequency and percentage distributions, weighted means, and z-tests. Findings revealed that the use of Arcademics significantly enhanced student motivation, conceptual understanding, and interactivity. Students strongly agreed that the platform positively influenced their learning experience. Pre-test results indicated similar levels of multiplication proficiency across both groups. However, post-test results showed a marked improvement in the Arcademics group, with a mean score of 17.90 compared to 8.78 for the Non-Arcademics group. Statistical analysis confirmed a significant difference between the two groups ($p < 0.00001$), supporting the effectiveness of Arcademics in improving multiplication skills, consistent with the MCI E-learning theory (Jeong Yong Ahn, 2023). Additionally, limited access to devices was noted as a factor affecting student participation and engagement. Based on these findings, the researchers developed guidelines for effectively integrating Arcademics into the curriculum. These include providing clear instructions, incorporating follow-up activities that connect multiplication concepts to real-life applications, and implementing strategies to actively engage students. The study highlights the potential of educational games like Arcademics to enhance multiplication skills while emphasizing the importance of teacher competence, device accessibility, and thoughtful integration of digital tools to maximize learning outcomes.

Keywords: arcademics, multiplication, and true experimental

ARTICULATING THE TECHNOLOGY MEDIATED COMMUNICATION OF ELEMENTARY TEACHERS, AN INPUT FOR SCHOOL PLANNING

Dr. Alma Aranded
Ampid I Elementary School

Abstract

Vygotsky's concept of the "zone of proximal development" defines the gap between the developmental level a learner can achieve independently and the level attainable with guidance from more experienced peers or adult supervision. Guided by this framework, the study aimed to examine the knowledge and utilization of technologically mediated communication (TMC) among local and international teachers. Specifically, it addressed the following research questions: What is the extent of TMC utilization by teacher-respondents in terms of (1) types of TMC, (2) procedures for using TMC, and (3) effects of TMC? Data for this study were collected from a total of 60 teacher-respondents using a validated, researcher-designed questionnaire. The questionnaire consisted of two parts: the first part addressed the types of Technologically Mediated Communication (TMC), while the second part focused on the utilization of TMC. The overall mean for the types of TMC was 4.23, verbally interpreted as "high extent." Regarding specific TMC activities, the weighted mean for recording and uploading a message using podcasting tools was 3.27, while creating and uploading blog content to a personal or school blog and logging into a video conference both had a weighted mean of 3.40; these are verbally interpreted as "moderate extent." Concerning the effects of TMC, the weighted means for the statements "interactions are more productive than face-to-face interactions," "using TMC is more efficient than other forms of communication," and "TMC technologies are tremendous time-savers for my work" were 4.53, 4.50, and 4.60, respectively, all verbally interpreted as "very high extent." The statement "a tremendous amount of work will be accomplished" had a weighted mean of 4.40, interpreted as "high extent." Teacher-respondents demonstrated a low to moderate level of knowledge regarding the use of podcasting, blogging, and videoconferencing in TMC, which corresponded to a moderate extent of utilization in their workplace. Furthermore, the use of TMC was largely limited to mobile phones and emails.

Keywords: technology-mediated communication, teacher communication, technology

FACTORS THAT INFLUENCE NON-BOARD GRADUATES IN PURSUING PROFESSIONAL CERTIFICATION: FOR CAREER ADVANCEMENT

Crizza Mae Bation, Angelica Labro, Darrell Gamboa, Joana Pascua,
Aine Key Salonga, Jenelyn Sosa, Bryan Tubao
Bestlink College of the Philippines

Abstract

The existence of professional certification plays a significant role in shaping career opportunities, particularly for non-board graduates who do not undergo licensure examinations. Understanding the impact of professional certification on employment prospects can provide valuable insights for developing a comprehensive guide for future business program graduates. However, research on the relationship between influencing factors in pursuing professional certification and employability remains limited. This study seeks to examine the factors that influence non-board graduates from higher education institutions (HEIs) in Quezon City to pursue professional certification, with the aim of providing insights into career advancement opportunities for entry-level graduates. The study utilized a quantitative-descriptive approach to examine how professional certifications contribute to enhancing career opportunities, particularly for non-board programs. Using convenience sampling, the researchers selected 20 alumni from business programs who had obtained professional certifications to participate in the data-gathering process. After reviewing the gathered data, the researcher identified a significant relationship between the factors influencing the decision to pursue professional certification and its impact on the current employment of non-board graduates from Bestlink College of the Philippines. The analysis revealed that alumni agreed accessibility to training and resources significantly enhanced the skills and knowledge required in their present jobs. Survey results also indicated varying beliefs and perceptions regarding different aspects of pursuing professional certifications. These findings highlight the need to develop a structured and comprehensive guide for entry-level graduates to pursue certifications aligned with their career goals. To boost the confidence of non-board graduates in the job market, several actionable strategies and recommendations have been identified. First, students should maximize their time in college by obtaining professional certifications while the assessment coverage is still fresh in their minds. Additionally, they should pursue certifications aligned with their future career objectives to make efficient use of both time and assessment fees. Lastly, careful planning of one's desired career path is essential. By adopting these strategies, non-board students can better navigate the challenges associated with pursuing professional certification.

Keywords: professional certification, non-board programs, career advancement, business programs

INTEGRATION OF VIRTUAL REALITY SIMULATION IN TEACHING SOCIAL STUDIES: A GUIDE TOWARDS EFFECTIVE LEARNING

Angelo Belicano, Romulo Cabuhat III, Angelica Imperial, Shiena Mea Isnani,
Edmar Semblante, Dr. Abraham Muyrong II
Bestlink College of the Philippines

Abstract

Research on incorporating Virtual Reality (VR) into Social Studies classrooms is ongoing, but no established methodologies currently exist. Teachers often face challenges in identifying suitable VR content, designing engaging lesson plans, and evaluating the impact on student performance. Developing a practical guide can assist teachers in integrating VR into lesson plans, aligning VR content with curriculum objectives, and assessing student participation. Insights from this study can inform future instructional practices and curriculum design. The project employs descriptive research design and quantitative methods to explore the incorporation of virtual reality (VR) simulations into Social Studies instruction. For the 2024–2025 school year, the study will focus on 33 Social Studies instructors at Maligaya High School. A survey questionnaire will be created, validated, and verified by subject matter specialists. Data will be analyzed using frequency and percentage distributions, weighted means, and ranking methods, with instructors' beliefs, attitudes, and behaviors assessed using a Likert scale. The study examined the use of virtual reality (VR) by 33 Social Studies instructors. Most participants held bachelor's degrees and had 11–15 years of teaching experience. VR tools were employed for motivation, presentations, examinations, and videoconferencing. Platforms such as YouTube VR and instructional apps were found to be beneficial, while VR-enabled field trips enhanced education on cultural diversity. The findings indicate that there is still considerable potential for further development in VR-based Social Studies instruction. The study indicates that experienced teachers with a bachelor's degree and 11–15 years of teaching experience are well-positioned to integrate virtual reality (VR) simulations into their instruction. VR simulations significantly enhance educational outcomes, including student motivation, presentations, assessments, and online sessions via platforms such as Google Meet. Tools like Quizlet, Google Docs, and Google Classroom were found to support student engagement and foster dynamic learning environments. Teachers reported confidence in using VR to provide immersive experiences, such as virtual field trips and cultural diversity explorations. These strategies have the potential to transform Social Studies education by offering experiential learning opportunities, bridging the gap between theoretical understanding and real-world experiences.

Keywords: established methodologies, virtual reality, virtual field, experiential learning, cultural diversity, curriculum

ROBO EXP: ROBOTICS TRAINING WORKSHOP IN ELEVATING THE 21ST CENTURY SKILLS OF JUNIOR HIGH SCHOOL STUDENTS OF DISTRICT IX

Marry Grace Gayeta
Department of Education

Abstract

Filipino students' risk being left behind if Robotics is not integrated into the curriculum, as it is already part of education systems in many other countries. At present, only a limited number of public-school students have access to Robotics education due to its exclusion from the curriculum and the lack of available robot kits. This study seeks to expand access to Robotics education and develop learners' 21st-century skills, thereby enhancing their global competitiveness. The researcher hopes that the findings will provide both evidence and inspiration for strengthening Robotics education in the Philippines. The study employed a quantitative descriptive research design with purposive sampling, involving 50 junior high school students from District IX. Participants completed pre- and post-surveys to assess their knowledge of robotics and their 21st-century skills. Data were analyzed using frequency, weighted mean, and ranking, while a t-test was applied to determine significant differences in skill levels. A significant difference was found in the robotics skills of junior high school students in District IX, particularly in construction and design, as well as coding and programming. Similarly, significant improvements were observed in their 21st-century skills—including information, media, and technology skills; learning and innovation skills; communication skills; and life and career skills—when comparing results before and after the implementation of the Robotics Training Workshop. The results demonstrated that the Robotics Training Workshop effectively enhanced both the robotics and 21st-century skills of the students. Its positive impact was further evidenced by the students' active participation and success in robotics competitions.

Keywords: robotics skills, 21st century skills, training workshop

SELF-REGULATION AND COPING MECHANISM OF SENIOR HIGH SCHOOL STUDENTS DURING SHIFTING TO MODULAR LEARNING MODALITY

Rey Garcia
Taytay Senior High School

Abstract

Self-regulated learners possess cognitive and metacognitive abilities, as well as the motivational beliefs and attitudes necessary to understand, monitor, and direct their own learning. The research questions addressed in this study are as follows: 1) How do senior high school students manage their studies during class transitions after participating in various psychosocial learning activities and seminars? 2) Is there a significant difference between students' profiles and psychosocial status in relation to their academic performance? 3) Is there a significant relationship between students' mental health status and their academic performance? Descriptive surveys and feedback were collected to examine the effects of psychosocial activities on students' self-regulation and coping mechanisms. A total of 448 senior high school students participated in the study. The descriptive survey was used to assess the level of readiness and self-regulation among the students, while thematic analysis, employing unit analysis, was conducted to explore how students adapted to changes in learning modalities over time. Students remained determined to complete their studies at any cost and often used self-talk, such as "kaya mo yan, go ka lang." Quantitatively, the mean scores were 3.66 for the TVL track and 3.68 for the Academic track on a 4-point rating scale, indicating the positive effects of the interventions. After a semester, a follow-up survey was conducted to assess continued outcomes. Nearly 50% of students reported feeling stressed; however, when correlated with academic performance, stress showed a negligible negative relationship, with an r-value of 0.028. This study concludes that, despite the emotional struggles students may experience, these emotions do not significantly affect their academic performance; students continue to perform effectively.

Keywords: self-regulation, face-to-face classes, cognitive abilities, metacognitive abilities

THE IMPACT OF PEER TEACHING AND LEVEL OF PERFORMANCE OF JUNIOR HIGH SCHOOL IN MATHEMATICS: BASIS FOR A DEVELOPMENT PLAN

Marie Cris De Castro
Department of Education

Abstract

The present study focused on analyzing the impact of peer teaching on the performance of junior high school students in Mathematics in selected secondary schools in Batangas City. Specifically, it examined the demographic profile of the respondents, the influence of peer teaching on students' performance in Mathematics, and the overall level of performance of junior high school students in the subject. The target respondents were junior high school Mathematics teachers during the Academic Year 2022–2023. The study employed a survey questionnaire as the primary instrument for data collection. The researcher concluded that most junior high school teachers have already accumulated significant teaching experience, which has enabled them to recognize the benefits of incorporating peer teaching into the regular teaching and learning process. The impact of peer teaching was observed primarily in how it helped students develop skills, enhance their knowledge, and work harmoniously and effectively during group activities in the classroom. The researcher recommended that school heads or principals conduct regular classroom observations and evaluations to ensure that peer teaching is properly and effectively integrated into the teaching and learning process. It was also suggested to gather feedback and evaluations from junior high school students to compare and contrast their perspectives on the effectiveness of peer teaching. Furthermore, integrating peer teaching with other instructional strategies was recommended to determine whether it could produce additional positive outcomes for student learning.

Keywords: peer teaching, impact, mathematics performance

THE INTERPLAY OF SUSTAINABLE TOURISM AND RESPONSIBLE DEVELOPMENT: A PATH TO GREEN INSPIRED PROGRESS

Dr. Milagros Gamboa
University of Perpetual Help System – DALTA

Abstract

This study explored the relationship between sustainable tourism and responsible development in response to the growing demands of the local tourism industry in Coron. Although the Philippines is globally recognized as a leading tourist destination, there is limited localized evidence on how stakeholder participation promotes sustainability. To address this gap, the study examined stakeholder involvement in areas of resilience and transformation and how such involvement contributes to responsible tourism development. A descriptive-correlational design with a quantitative approach was employed in this study. A total of 335 purposively selected stakeholders—including residents, business owners, government employees, and tourism workers—participated in a validated survey. Data were collected both online and face-to-face and analyzed using SPSS Version 27. Statistical analyses included frequency distributions, weighted means, t-tests, ANOVA, and Pearson's correlation. Ethical standards, including voluntary participation, confidentiality, and instrument validation, were strictly observed. Results indicated high levels of stakeholder involvement across all indicators of resilience and transformation, with technology innovation ($M = 4.74$) and societal well-being ($M = 4.66$) receiving the highest ratings. No significant differences were observed across age, sex, or stakeholder classification ($p > 0.05$). Stakeholder involvement was also rated as "very useful" in promoting responsible development, particularly through consultation ($M = 4.70$), partnership ($M = 4.66$), and collaboration ($M = 4.60$). A moderate but statistically significant correlation was found between involvement and perceived usefulness ($r = 0.329$, $p = 0.000$). Challenges were rated "very challenging," with visitor satisfaction ($M = 4.78$) and national-level concerns ($M = 4.72$) receiving the highest scores. These findings highlight the critical role of stakeholder engagement in promoting sustainable tourism and align with global research emphasizing inclusive governance. However, persistent systemic barriers, such as policy misalignment and limited coordination, underscore the need for further research on targeted, locally driven strategies. Future tourism initiatives should incorporate participatory governance, structured feedback mechanisms, and long-term planning processes to ensure environmentally responsible development that benefits both communities and the broader ecosystem.

Keywords: sustainable tourism, responsible development, stakeholder involvement, resilience, transformation, green-inspired progress, coron palawan

UTILIZATION OF LOCALIZED SCIENCE INTERVENTION MATERIAL TO IMPROVE THE ACADEMIC PERFORMANCE AMONG GRADE 8 LEARNERS IN PEDRO S. TOLENTINO MEMORIAL INTEGRATED SCHOOL

Geralyn Castro
Department of Education

Abstract

This action research study was conducted to enhance the science performance of Grade 8 students at Pedro S. Tolentino National High School through the use of a localized science intervention material. The study specifically targeted students who obtained low scores in the pretest and focused on examining their performance before and after the implementation of the intervention. The researcher will employ a quantitative research method to achieve the study's objectives. To determine the effectiveness of the localized science intervention material for Grade 8 learners, a t-test for correlated samples will be used to assess whether there is a significant difference between the learners' pretest and post-test scores. Learning is considered to have occurred if there is a noticeable improvement in the scores of students who used the intervention material. The learners obtained a mean percentage score on the pretest that corresponds to a descriptive equivalent of "low," and a mean score on the post-test with a descriptive equivalent of "average." The computed t-value and p-value indicate that the difference between the pretest and post-test scores is statistically significant. This suggests that the administration of the localized Video Tutorial had a significant positive effect on the science performance of Grade 8 learners, leading to the rejection of the null hypothesis. The Department of Education may consider offering seminar-workshops for teachers on designing toolkits that include a wide range of materials, activities, and resources to foster a love for science and promote a deeper understanding of scientific concepts. The materials developed can be used not only by educators but also by parents to support their children's learning. Output of the study: The primary output of this study is the localized intervention materials designed for teaching Grade 8 science at Pedro S. Tolentino Memorial Integrated School.

Keywords: science, localized science intervention material

Engineering, Information, and Communication Technology

DEVELOPMENT OF GREEN TECHNOLOGY SMART BUILDING USING ESP32 AND ARDUINO MCU WITH AUTOMATED MECHATRONICS PARKING

Rhinehart Dejucos, Nesel John Almeniana, Aira Cruz, Rafaela Marie Enriquez,
Jamie Ann Faye Portillo, Engr. Reynante Ponay
Bestlink College of the Philippines

Abstract

The rapid advancement of technology offers opportunities to transform traditional construction toward greater sustainability. This research addresses the need for more integrated and efficient building systems. Although smart building technologies are available, seamless integration and user-friendly automation remain challenges. This study explores the development of a Green Technology Smart Building using accessible microcontrollers (ESP32/Arduino) with an Automated Mechatronics Parking system as a potential solution, aiming to enhance efficiency through the integration of modern technologies for more responsible and sustainable construction. The project followed an Experimental Prototyping Methodology. The system layout was visualized in both 2D and 3D using SketchUp. Microcontrollers, including ESP32 and Arduino MCU, were programmed in C++ using the Arduino IDE. Various sensors and actuators, such as DC motors and stepper motors, were integrated with the microcontrollers to create automated functions. These automations also communicated with a MySQL database through HTTP protocols via Wi-Fi. A solar power system was incorporated to harness green energy. User feedback was collected using a purposive sampling technique and evaluated using a 4-point Likert scale. The ESP32 successfully facilitated communication between the actuators and the database. The room security system, QR attendance system, QR security system, and automated mechatronics parking system all effectively interacted with the database via the ESP32 to control their respective actuations. The Arduino Mega enabled the creation of a fully functional elevator system, with IR sensors and limit switches ensuring precise operation. The HTML web server allowed comprehensive user management and generated QR codes for system use. Additionally, the solar power system was capable of powering the entire setup, with an automatic switch to the main grid in the event of a solar power outage. The findings confirm the feasibility of creating a smart building using ESP32 and Arduino microcontrollers. Renewable energy proved to be both feasible and efficient for the system. Future research should focus on real-world testing, GUI enhancement, predictive maintenance, improved security, optimized energy utilization, AI integration, refined QR code logging, and exploring commercialization potential. These findings suggest a promising direction for developing more efficient and environmentally responsible building designs.

Keywords: smart building, esp32, arduino, renewable energy, automated mechatronics parking, iot, sustainable construction

LOCAL GOVERNMENT UNIT 1: EMERGENCY RESPONSE AND DISASTER MANAGEMENT SYSTEM (AI CHAT ASSISTANT, REAL-TIME EMERGENCY ALERTS, COMMUNITY PORTAL, GIS-INTEGRATED EMERGENCY SUPPORT OPERATIONS)

Mark Daniel Edillor, Julian Jules Pardi, Daryl Hans Ocao, Vhie Jay Alcantara,
Reyvi John Tagatac, Richelyn Villasor
Bestlink College of the Philippines

Abstract

The increasing frequency of natural disasters worldwide underscores the need for effective and efficient disaster management systems. Traditional emergency responses in many areas are hampered by slow reaction times, fragmented communication, and manual processes that struggle to coordinate human and material resources during large-scale emergencies. Even brief delays can result in significant casualties. This study introduces a technology-driven Emergency Response and Disaster Management System (ERDMS) designed to address these challenges by integrating real-time communication, data-driven decision-making, and situational awareness through advanced mapping technologies. The system was developed and evaluated using Agile methodology, implemented through rapid iterative cycles with continuous involvement from local government officials, emergency responders, and residents. In this real-time prototyping and testing process, adjustments were made quickly to address emerging requirements. The system's effectiveness was assessed by combining quantitative data from surveys with qualitative insights gathered from interviews and focus group discussions. A total of 53 participants, including residents, LGU personnel, and emergency responders, evaluated the system under simulated emergency conditions. Participants tested the system across various emergency scenarios, providing positive feedback while also identifying areas where certain features could be improved to ensure effectiveness under real-world stress. The feedback was thorough and constructive, allowing the assessment of a significant portion of the system's features, which received 100% positive feedback at a 95% confidence level. The research demonstrates the effectiveness of the proposed framework in enhancing disaster response. Stakeholders rated the system highly on critical attributes, such as alertness, and the development team implemented numerous improvements based on real-time feedback from tests and simulated life-threatening scenarios. While the framework effectively facilitates communication and perception formation among diverse stakeholders, its performance could be further enhanced by integrating advanced augmented reality capabilities.

Keywords: disaster management system, emergency response, agile development, real-time alerts, gis mapping, ai chat assistant

PRIORITIZING INFORMATION SECURITY: ANALYSIS OF SOFTWARE DEVELOPMENT LIFE CYCLE METHODOLOGIES USING THE NIST CYBERSECURITY FRAMEWORK

Owen Harvey Balocon
Polytechnic University of the Philippines

Abstract

Information security has become a critical concern for companies seeking to protect data, customer information, and other sensitive assets. In addition to safeguarding data, software development now faces growing threats from hackers and malicious actors in the IT field. The challenge extends beyond ensuring the final product can withstand attacks—it also involves securing the software throughout the development process. This study drew upon existing research and literature to develop its framework and insights. Sources were obtained from reputable, indexed journals. Studies related to software development, lifecycles and the NIST Cybersecurity Framework were carefully analyzed to inform the research and achieve the study's final objectives. The study revealed how each Software Development Life Cycle (SDLC) model can incorporate the five phases of the NIST Cybersecurity Framework. During the initiation phase, all models follow a similar process for data gathering and consideration of information, data, and security requirements. The primary difference lies in how each model maintains this information and transfers it to subsequent phases. Based on the study's findings, it is recommended that future researchers examine other Software Development Life Cycles (SDLCs), such as Iterative Waterfall, Agile Scrum, and emerging models, to explore the integration of information security and its benefits for the development process. Additionally, it is recommended that existing SDLCs incorporate new phases addressing data transition, storage, archival, and disposal to align with the final phase of the NIST framework. These recommendations can help project managers better understand the importance of information security and its advantages in terms of project development and organizational economic efficiency.

Keywords: information security, cybersecurity, software development life cycle, waterfall, rapid application development model, v-model, spiral model, agile model, national institute of standards

Humanities and Social Sciences

CORRELATION BETWEEN AI THERAPY CHATBOTS AND ACADEMIC STRESS REDUCTION AMONG PSYCHOLOGY STUDENTS AT BESTLINK COLLEGE OF THE PHILIPPINES

Regina Marie Nepomuceno, Princess Mae Salvador, Lovely Joy Azares,
John Michael Batuampo, Dr. Adora Angeline Babia
Bestlink College of the Philippines

Abstract

In the Philippines, access to mental health services remains limited due to high therapy costs and a shortage of professionals. Therapy sessions can cost between ₱1,000 and ₱4,500 (Isla, 2023), while there are only three mental health professionals available per 100,000 people (De Villa, 2022). Consequently, AI therapy chatbots have emerged as accessible alternatives for stress management. This study is grounded in Digital Cognitive Behavioral Theory (dCBT), which supports the use of digital tools for stress management, and Self-Monitoring Theory, which highlights the role of self-awareness in emotional regulation. This study employed a correlational quantitative design to examine the relationship between AI therapy chatbot use and academic stress levels among 200 purposively selected psychology students (50 from each year level). Data were collected using a researcher-made questionnaire and a modified Academic Stress Scale (ASS), focusing on chatbot usage patterns, perceived effectiveness, and challenges encountered. The study revealed that most respondents—predominantly females aged 21–23 from middle-income backgrounds—frequently used AI therapy chatbots. These tools were generally rated as effective (mean = 3.27) and reliable (mean = 3.12), though their responses were perceived as somewhat generic (mean = 3.09). Respondents also reported high levels of academic stress, primarily attributed to poor teacher communication (mean = 2.42) and limited social support (mean = 2.31). Pearson correlation analysis indicated a weak but statistically significant negative correlation ($r = –0.31$, $p = 0.03$) between increased chatbot use and reduced stress levels. Based on the findings, it is recommended that AI therapy chatbots be enhanced to provide more personalized and emotionally responsive support. A student-friendly chatbot platform was developed on Facebook to offer online counseling and stress management, accompanied by a framework to guide further improvements in chatbot design. Educational institutions are encouraged to adopt such tools as supplementary mental health support, particularly in contexts where professional resources are limited.

Keywords: ai therapy chatbots, academic stress, mental health, digital cognitive behavioral therapy, self-monitoring theory

Natural Science and Mathematics, Curriculum, and Instructions

HAND SOAP OUT OF LANTANA CAMARA L. EXTRACT AND IT'S CHARACTERIZATION AND RESIDUE COUNTS COMPARED WITH OTHER SOAPS

Dr. Ma Victoria Magayon
Taytay Senior High School

Abstract

The phytochemical composition of Lantana camara (Lantana camara L.) has been extensively studied over the past few decades, revealing the presence of phenolic compounds, essential oils, alkaloids, proteins, carbohydrates, flavonoids, glycosides, phenylethanoids, iridoid glycosides, oligosaccharides, triterpenes, steroids, quinine, saponins, and tannins. In this study, the essential oil extracted from the flowers of Lantana camara L. was used as a key ingredient in the formulation of hand soap. The prototype soap was subsequently analyzed for its physicochemical properties, including pH, conductivity, salt content, and temperature. To test the physicochemical characteristics (pH level, conductivity, salt content, and temperature), a water quality tester was used. Residue counts were measured by filtering the samples with a coffee filter and weighing the residues using an analytical balance. Measures of central tendency were applied to compute the mean, while standard deviation was used to analyze the variability of the physicochemical characteristics and residue counts of the selected soaps. A two-way ANOVA without replication at $\alpha = 0.01$ was employed to determine the significant differences between the soaps. The results of the experimentation and data analysis showed that among the 11 soaps tested, Soap J exhibited the highest salt concentration at approximately 0.4%, while Soap K (Lantana camara L.) had the lowest level at around 0.07%. The recorded pH values indicated that most soaps were alkaline, with values exceeding 7, except for Soap J, which was strongly acidic (pH 3.96). Furthermore, the two-factor ANOVA without replication yielded a p-value of 0.461, which is greater than the significance level of 0.01. This indicates that the type of soap used had no statistically significant effect on the measured outcomes. Higher conductivity indicates higher water salinity, as conductivity is directly proportional to salinity. The electrical conductivity of soap is significantly influenced by its purity, with the presence of impurities potentially limiting the mobility of charges within the soap solution.

Keywords: lantana camara l, hand soap, residue counts

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connect@aairi.org

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287 Tanglin Road, Singapore 247940
www.ascendensasia.com