

ISSN: 2661-457X



St. Paul University Philippines
Tuguegarao City, Cagayan Valley 3500

The SPUP

**GRADUATE SCHOOL
RESEARCH JOURNAL**

Vol. XV, No. 2

SY 2017-2018

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ISSN: 2661-457X

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Vol. XV, No. 2

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Published by

RESEARCH AND PUBLICATIONS OFFICE

St. Paul University Philippines Tuguegarao
City, Cagayan Valley 3500

Re-published by

Ascendens Asia Publishing Pte. Ltd.

NLB Publisher Reg. No. R2019061600009

Republic of Singapore

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**READING PERFORMANCE AND READING REMEDIATION PRACTICES
IN THE PUBLIC ELEMENTARY SCHOOLS OF TUAO WEST DISTRICT:
BASIS FOR A PROPOSED READING INTERVENTION PROGRAM**

Dave Shid Genoveza Cabbuag
Doctor of Philosophy in Education
Major in Educational Management

ABSTRACT

Reading is a basic life skill. It is a cornerstone for a child's success in school, and, indeed, throughout life. Without the ability to read well, opportunities for personal fulfillment and job success inevitably will be lost. This study sought to determine the pupils' reading performance and the teachers' remediation practices in the public elementary schools of Tuao West. This study utilized the descriptive survey and the participants were 995 pupils from Grades I to VI and 60 teachers who were chosen randomly among the 6 schools in Tuao West District for the school year 2016-2017. The 60 teacher-participants were the sources of data on reading remediation practices. The interview guide was used to gather data on the remediation practices of teachers in the public elementary schools of Tuao West District. To obtain data on the pupils' reading performance, the Phil Iri test was conducted to the pupil-participants. Data on pupils' reading performance, both on oral and silent readings, were extracted from the said document. The results revealed that there is a high proportion of pupils whose reading level fall within the frustration level which indicates pupils' poor comprehension skills. The teachers manifested their commitment to improve pupils' reading performance by the many reading remediation practices they explored, however, along the process; there are hindering factors that affected the successful implementation of the reading remediation activities.

Keywords: *Reading performance, reading remediation practices, reading intervention program*

INTRODUCTION

Reading is a complex cognitive process of decoding symbols in order to conduct or derive meaning. It is also a means of language acquisition, communication, and of sharing information and ideas. Like all languages, it is a complex interaction between the text and the reader which is shaped by the reader's prior knowledge, experiences, attitude and language community which is culturally and socially situated. There are no concrete laws in reading, but rather allows readers an escape to produce their own product introspectively. This promotes deep exploration of texts during interpretation. Readers use a variety of reading strategies to assist in decoding and comprehension. Readers may use context clues to identify the meaning of unknown words. Readers integrate the words they have to read into their existing framework of knowledge or schema (www.dictionary.com).

Reading is a very important aspect in education because competence and information in reading enables a person to have access to the store of knowledge and information. The ability to read unlocks the doors to information and stimulates literacy, proficiency, creative thinking and comprehension skills. Reading involves making sense of written symbols, building speaking and vocabulary skills.

Reading is an interactive process that encourages the readers to form new thoughts and ideas and to build imaginative skills. The importance of reading and reading comprehension is emphasized in the education community. Several studies were made to improve reading performance; however, there are skill pupils who struggle in reading and reading comprehension. Teachers therefore, have a very important role to play in helping their pupils get most out of reading and become good readers. They need to be given extensive reading remediation and guidance.

To improve reading performance, the Department of Education introduced standard reading assessment tools and programs, some of these are Philippine Informal Reading Inventory (Phil. Iri.), Every Child A Reader Program (ECARP) and many more. The predominant reading level in Tuao West District in the year 2012 shows that the reading performance of most or 47.99% of the pupils fall within

instructional level, 35.93% fall within frustration level and 16.08% fall within independent level. These data show that some pupils acquired the basic skills in reading; however, there are still some who have poor reading performance. Teachers have employed different strategies and intervention activities to improve the pupils' reading performance. However, despite all the preparations to avoid and maximize reading problems, some pupils still have poor reading performance. Teachers find this problem very alarming. In view of this problem, teachers find ways and means to lessen the number of slow readers. The conduct of the reading remediation activities and practices is an answer to solve the problem.

In view of the importance of reading and the existence of reading difficulties among elementary pupils, the researcher embarked on a study on reading performance and reading remediation practices of teachers in the public elementary schools of Tuao West District, the results of which were used as basis for a Proposed Reading Intervention Program for the School Year 2016-2017. This study hopes to document or find out the pupils' performance and teachers' remedial practices in reading to come up with an effective reading intervention plan.

Statement of the Problem

The study aimed to determine the pupils' reading performance and document the teachers' remediation practices in the public elementary schools of Tuao West.

Specifically, this study aimed to answer the following specific questions:

1. What is the profile of pupil-participants in terms of the following:
 - 1.1. gender;
 - 1.2. early childhood education experience;
 - 1.3. grade level;
 - 1.4. educational status of parents; and
 - 1.5. occupation of parents?

2. What is the reading performance level of pupils in each grade level with respect to the following reading indicators:
 - 2.1. oral reading:
 - 2.1.1. word recognition;
 - 2.1.2. comprehension;
 - 2.2. silent reading:
 - 2.2.1. reading speed; and
 - 2.2.2. comprehension?
3. Is there a significant difference on the reading performance level of pupils in each grade level with respect to the reading indicators when grouped according to school?
4. What are the reading remediation practices or activities undertaken by teachers in their respective schools for the past five years to enhance pupils' reading performance?
5. What are the strengths and weaknesses of the reading remediation activities that were implemented in the district?
6. What measures can be implemented to improve the reading remediation as suggested by teachers?
7. What reading intervention program can be proposed to enhance the reading performance of pupils in Tuao West District?

METHODOLOGY

Research Design

This study employed the descriptive survey for it gathered data on the reading performance of pupils and remediation practices of teachers in Tuao West District.

Participants of the Study

The participants of the study were 995 pupils from Grades I to VI and 60 teachers who were chosen randomly among the 6 schools in Tuao West District for the school year 2016-2017 excluding the

Kindergarten teachers, relieving teachers and school heads. The 995 pupils from Grades I to VI who were considered participants of the study had their reading performance obtained from the Phil Iri.

The 60 teacher-participants were sources of data on reading remediation practices.

Instrumentation

The interview guide was used to gather data on the remediation practices of teachers in the public elementary schools of Tuao West District. To obtain data on the pupils' reading performance, the Phil Iri test was administered to the pupil-participants. Data on pupils' reading performance both on oral and silent readings were extracted from the document. The Phil Iri Silent reading passages used were downloaded from the internet dated 2012 while the oral reading passages were taken from the Phil Iri Manual of 2003.

Data Gathering Procedure

In gathering data, the researcher sent letter of permission to the Schools Division Superintendent, to the Public School District Supervisor of Tuao West District, to the school heads of the thirteen public elementary schools of Tuao West District, to teachers from Grades I to VI, who were chosen randomly as participants for the interview. An informed consent was obtained personally by the researcher and contents of the informed consent form were discussed to them. Likewise, the researcher requested the school to set a meeting with the parents of the pupil-participants to explain personally the contents of the informed consent.

The researcher, with the help of the teachers, administered the Phil Iri test. The data gathered were collated, tallied, analyzed and interpreted to obtain a clear picture of the reading performance of pupils and reading remediation practices of teachers in the district.

Data Analysis

The following data analysis tools were used to analyze the data

obtained and answered each specific problem:

Frequency and Percentage. These were used to analyze the profile of the participant-schools. These were also used to present the reading performance of the pupils.

Narrative Analysis. This was used to analyze the reading remediation practices or activities undertaken by teachers in their respective schools to improve the reading abilities of pupils falling within frustration level.

Thematic Analysis. This was used to analyze the data on the strengths and weaknesses, and the reading remediation activities suggested by teachers.

Chi-Square. This was used to test for significant difference in the pupils' reading performance level in each grade level.

Mean. This was used to obtain the reading level of the pupils in terms of their oral and silent readings as to frustration, instructional and independent levels.

RESULTS AND DISCUSSION

Pupil-Participants' Profile

Majority or 53.37% of the pupil-participants are female. Almost all or 99.30% of the pupil-participants have early childhood experience. Almost all Grade levels in all schools covered have the same number of pupils. Most or 47.24% of the mothers of the pupil-participants are high school graduates. Most or 47.84% of fathers of the pupil-participants are high school graduates. Majority or 57.19% of the participants' mothers are housewives. With respect to occupation, majority or 88.63% of the participants' fathers are semi-skilled workers. Most or 49.05% of pupil-participants are from Tuao Central Elementary School.

On Reading Performance Level of Pupil-Participants

In Grade I, the reading level of the highest proportion of the

pupils both for oral and silent readings are within instructional level. In Grade II, the reading level of pupils both for oral and silent readings falls within instructional level. In Grade III, oral and silent reading level of pupils falls within instructional level. The reading level of most Grade IV pupils falls within instructional level for both oral and silent readings. Both the oral and silent reading levels of Grade V pupils fall within instructional level. The reading level of the majority of the Grade VI pupils, both for oral and silent readings falls within instructional level.

On the Test for Significant Difference on the Pupils' Reading Performance Level When Grouped According to School

There is a significant difference in the oral reading performance level for each grade level across schools except for Grade I. There is a significant difference in the silent reading performance level of pupils for each grade level across schools except for Grade III.

On the Reading Remediation Practices of Teachers

Most or 44% of the teacher-participants commonly used "paired reading" strategy in their reading remediation practice, followed by 30% in the "each one-teach-one strategy".

On the Strengths and Weaknesses of the Reading Remediation Activities that were Implemented in the District

One of the strengths of the reading remediation activities is flexibility with regard to time as claimed by most or 41.67% of the teachers. Other strengths were freedom to choose materials within the level of the pupils and support from school heads. However, among the weaknesses, lack of parents' follow up ranked first followed by lack of pupils' interest, poor reading habits and genetic and speech problems.

Suggestions to Improve Pupils' Reading Performance

Most or 41.67% of the teachers suggested that follow up from parents is needed. Other suggestions were: provide instructional materials for reading, expose pupils to varied reading materials, tutorial

for slow learners, provide a special teacher for reading remediation, and reading remediation must be religiously done.

Proposed Reading Intervention Program

A proposed reading intervention program was designed to improve the reading performance of pupils in Tuao West District.

CONCLUSION

Based on the findings presented, the following conclusions were derived:

The success of the learning process greatly lies on reading and comprehension skills of pupils. The high proportion of pupils whose reading level falls within the frustration level is indicative of their poor comprehension skills which implies that they find difficulty in reading and understanding materials presented to them and if not properly attended to could affect the academic standing of the pupils.

Teachers manifested their commitment to improve pupils' reading performance as evidenced by the many reading remediation practices they explored, however, along the process, there are hindering factors that affected the successful implementation of the remediation activities.

RECOMMENDATIONS

Based on the findings and conclusions, the following recommendations are given:

1. Continuous assessment on the reading progress of pupils should be made by the teacher.
2. Teachers should give more drills or exercises in oral and silent reading to improve word recognition and reading speed.
3. Teachers should give more meaningful activities to enhance pupils' reading comprehension.
4. Teachers should intensify reading by using up-to-date and innovative teaching strategies and techniques and activities that

- will develop pupils' reading ability and higher comprehension skills.
5. Teachers and school administrators should support and implement reading programs set by the Department of Education.
 6. Parents should follow up on their children in their progress in reading.
 7. The proposed intervention program designed in this study may be used and be modified if necessary to fit to the pupils' needs for this was designed to help improve pupils' reading performance and develop higher order thinking skills.
 8. The researcher should disseminate the result of the study to the school heads and teachers.
 9. The proposed reading intervention program may be implemented, monitored and evaluated in the different schools in Tuao West District.
 10. Other research studies may be conducted to further improve pupils' reading performance and teachers' reading remediation practices.

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**LEADERSHIP BEHAVIORS OF NURSE ADMINISTRATORS AND
CARING BEHAVIORS OF STAFF NURSES AT THE
CAGAYAN VALLEY MEDICAL CENTER**

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Major in Nursing Administration

ABSTRACT

This study sought to describe the leadership behaviors of nurse administrators as well as the staff nurses' caring behaviors and to compare the nurse administrators' leadership behaviors as assessed by themselves and by their staff nurses. Caring behaviors of staff nurses were described according to profile variables. Leadership behaviors of nurse administrators have been associated with the caring behaviors of staff nurses. This descriptive correlational study was conducted in a 500-bed capacity tertiary, teaching, training hospital, the Cagayan Valley Medical Center, the 3rd largest hospital in the Philippines. All 53 nurse administrators and 89 regular staff nurses in this hospital were the participants of the study. The Leadership Behavior Checklist developed by Cornelius & Associates (2010) for nurse administrators and the Caring Behaviors Inventory established by Wolf (1994) for staff nurses were used as data gathering instruments of this study. Leadership behaviors were very highly manifested by nurse administrators in all dimensions as assessed by themselves, however, these manifestations were not slightly concurred by staff nurses in some dimensions. The leadership behavior of nurse administrators reflects high manifestation of staff nurses caring behaviors. The caring behavior manifested by staff nurses was not affected when the staff nurses were grouped according to their profile variables. This study also provides further evidences regarding perceptions of nurse administrators and staff nurses on the leadership behaviors of their nurse administrators which demonstrate agreements and disagreements on the different dimensions of leadership behaviors.

Keywords: *Nurses' leadership behavior, caring behavior, Cagayan Valley Medical Center*

INTRODUCTION

Effective leadership is an important factor in delivering high-quality patient care by nurses. This calls for the role of nurse administrators on the hospital settings to influence and create an environment where professional nursing practices can succeed. Providing a caring environment in the management of nurses is necessary to ensure caring and recovery of patients while they are in the hospital. Hospitals need nurse administrators who can provide support to the nursing profession and develop nursing care through their effective leadership. Nurse administrators as leaders are responsible for establishing suitable conditions in the nursing workplace. This workplace is where the staff nurses are highly involved in caring for their patients and will perform to the best of their ability. A simple act of caring according to Pellicer (2008) is “a leader’s single most powerful tool for creating a workplace environment in which employees feel appreciated and respected.”

When applied in a nursing workplace this could mean that when staff nurses feel that their leaders care about them, they become motivated resulting to better quality of nursing care.

Williams, McDowell & Kautz (2011) believed that role modeling with the principles of caring, blended with the principles of leadership, can transform the way nurses do things in the workplace, the best place to work and the best place to receive care.

The importance of nursing administrators’ leadership role in developing professional nurses’ skills and capability must be acknowledged. According to Watson (2006), the nurse administrators’ responsibilities include caring and administrative leadership. As such, nurse administrators “understand and communicate caring as a philosophy/ ethic for organizational process and develop skills of caring behaviors/presence in formal-informal relationships with individuals and groups.” Thus, when nurse administrators are engaged in incorporating caring in their daily leadership practice, they become agents of change. Hence, healthcare organizations need nurse leaders who can develop nursing care through their leadership (Frankel, 2008).

The Cagayan Valley Medical Center is a growing community of health care providers in which nurses are to provide direct contact and total care to patients 24 hours a day. Changes have been constantly inflowing as felt by the growing number of newly hired nurses brought about by the increasing demands of healthcare and the expansion of hospital services through the years. Quality patient care is the utmost vision of the hospital in which the institution sustains all activities towards attaining quality healthcare services. This includes enhancing the nursing manpower is skills through various professional trainings and development, leadership and supervisory seminars, management short courses, research and series of evaluation programs to ensure a fully structured and equipped staff nurses and nursing administrators amidst the dynamic changes in manpower of the nursing service.

Growing future nurse leaders is a long-term quest that requires both planning and action. It is important to ensure that nurses develop the skills and competencies that will be needed for them to succeed. The development of healthy workplaces that are responsive to ever-changing healthcare environment will be in their hands (Sherman & Pross, 2010). These qualities are believed to have an impact on how the nursing services of Cagayan Valley Medical Center would be at par with the demands of care now and in the future.

This study explored the leadership behaviors of nurse administrators as assessed by nurse administrators themselves and as assessed by their respective staff nurses and this also assessed the caring behaviors of staff nurses. Furthermore, the relationship of the leadership behavior of nurse administrators was determined with the caring behaviors of staff nurses.

Statement of the Problem

The study aimed to determine the relationship between nurse administrators' leadership behaviors and staff nurses' caring behaviors in Cagayan Valley Medical Center.

Specifically, the study sought answers to the following questions:

1. What is the profile of the two groups of participants in terms of

- 1.1 Age;
 - 1.2 Unit of assignment; and
 - 1.3 Length of service?
2. What are the leadership behaviors of nurse administrators as measured by the leadership behavior checklist?
 3. Is there a significant difference in the assessment of two groups of participants on the leadership behavior of the nurse administrators?
 4. What is the assessment of staff nurses on their caring behavior along the following dimensions as measured by the Caring Behavior Inventory:
 - 4.1 Respectful deference to others;
 - 4.2 Assurance of human presence;
 - 4.3 Positive connectedness;
 - 4.4 Professional knowledge and skill; and
 - 4.5 Attentiveness to the other's experience?
 5. Is there a significant difference on the caring behaviors of the staff nurses when they are grouped according to profile variables?
 6. Is there a significant relationship between the leadership behaviors of the nurse administrators and the caring behaviors of their staff nurses?

METHODOLOGY

Research Design

The research design was a cross-sectional, descriptive and correlational study. In a cross-sectional study, variables are identified one point at a time and the relationships between them are determined. Descriptive correlational studies describe the variables and the relationships that occur naturally between and among them (Burns & Grove, 2013). In this study, leadership and caring behaviors were described and the relationship between them was determined.

Participants of the Study

The participants of the study included all nurse administrators and regular staff nurses with at least six months of experience at the Cagayan Valley Medical Center. Nurse administrators include senior nurses, nursing supervisors, and an assistant chief nurse.

The participants of this study were the 89 staff nurses and the 53 nurse administrators.

Instrumentation

Nurse administrators' leadership behavior was assessed using the Leader Behavior Checklist (LBC) by Cornelius and Associates (2010). The instrument was designed to measure "leadership" behaviors as opposed to "management" behaviors. Factors assessed by this instrument were derived from a leadership model (Bennis, 1991) based on leadership defined as "an interpersonal influence process of setting direction and inspiring others to achieve goals". The factors on this instrument define the kinds of behaviors involved in "setting direction" and in "inspiring others". It is based on a published research, the ideas of various authors in the leadership literature and on observations of developing leaders in an organization across a variety of industries for the last fifteen years. It was designed to be generic enough to be applicable for all levels of leadership that include senior executive, department head, supervisor and even team leader.

The items on this checklist are clustered under the following nine categories of leadership behaviors:

1. **Communicating Purpose and Direction.** It is the extent to which a leader is engaging in the behaviors that are needed to ensure that the organization has a clear understanding of its purpose (mission) and direction (vision).
2. **Communicating and Behaving According to Values.** It is the extent to which a leader is doing those things that will ensure that others in the organization unambiguously understand the principles for which the leader stands.

3. Showing Enthusiasm for People. It is the ability to show support and enthusiasm for people in the organization.
4. Instilling in People the Belief They Are Powerful. It is the extent to which the leader engages in the behaviors that will help people feel important and powerful.
5. Being Consistent in the Face of Adversity. It is the tendency of a leader to persevere during difficult times and hold to a course of action, even in the face of adversity.
6. Planning and Leading Change. It is the extent to which a leader carries out the behavior needed to produce change in organizations.
7. Releasing Potential and Energy. It is the extent to which the leader carries out the actions needed to “release” the full potential and energy of the organization.
8. Creating a Flexible and “Ready-for-Change” Culture. It is the extent to which a leader creates a business literate organization that is better able to understand and react quickly to any change.
9. Developing Leaders in the Organization. It is the extent to which the leader understands that a critical leader’s role is to teach, coach and develop the talent within the organization.

On the other hand, caring behaviors were assessed using the Caring Behaviors Inventory (CBI) by Wolf (1988) published by Watson (2002). The original 75-item CBI was developed by Wolf in 1981 and later revised into a 42-item Survey. This study used the updated 42-item tool with a four-point Likert Scale to elicit responses (1=never; 2=occasionally; 3=usually; 4=always). Each of the 42-items describes nursing behaviors that are further grouped into five dimensions or subscales that includes respectful deference to others (12 items), assurance of human presence (12 items), positive connectedness (9 items), professional knowledge and skill (5 items), and attentiveness to other’s experience (4 items). In this study the following scale was adopted: 1=never; 2=occasionally; 3=usually; 4=always.

Internal consistency was demonstrated by a Cronbach's alpha of .974 (Wolf et al., 1998). This corresponds with findings of a study done by Hayes and Ball (2007) who used the tool with more than 200 trauma patients in a southeastern US hospital. Their Cronbach's alpha was 0.98.

Data Gathering Procedure

As a protocol, approval of the conduct of the study was obtained from the Graduate School Dean of St. Paul University Philippines. After getting the Dean's approval, a letter requesting permission to conduct the study and float the questionnaires to the nurse administrators and staff nurses was obtained from the Medical Center Chief of the Cagayan Valley Medical Center, Tuguegarao City.

Following formal approval of the permission to conduct the study from the Medical Center Chief, the researcher gave personally the packet containing the cover letter and the Leadership Behavior Checklist, to the Nurse Administrators. Another packet containing the cover letter, the Leadership Behavior Checklist and Caring Behavior Inventory was also given to the staff nurses.

The completed questionnaires were retrieved personally by the researcher. The completion and return of the questionnaire by the participants are indicative of their consent to participate in the study.

Data Analysis

All data were aggregated and were statistically treated using the Statistical Package for the Social Science (SPSS 15.0). Descriptive Statistics was used to measure the leadership behavior of nurse administrators and the caring behaviors of the staff nurses. These include frequency count, percentage and mean.

The Leadership Behavior Checklist (LBC) consists of 61 items scored in Likert format ranging from 1 (I have not yet started to do this.) to 4 (I have done this very well.). Scoring the LBC involves:

- (1). Calculating the total number of points for each of the nine

factors measured on the instrument and entering each score, called the raw score, in the space provided in the table below:

Leadership Factor	Raw Score
Communicating Purpose and Direction	
Communicating and Behaving According to Values	
Showing Enthusiasm for People	
Instilling in People the Belief They can be Powerful	
Being consistent in the Face of Adversity	
Planning and Leading Change	
Releasing Potential and Energy	
Creating a Flexible and "Ready-For-Change" Culture	
Developing Leaders in the Organization	

(2). Determining a "Converted Score" for each factor involves finding the raw score range in the columns of the table below. Table entries are raw score ranges for each factor.

Categories of Leadership Behavior	Converted Score = 1	Converted Score = 2	Converted Score = 3	Converted Score = 4
Communicating Purpose and Direction	(8-12)	(13-20)	(21-28)	(29 or higher)
Communicating and Behaving According to Values	(10-15)	(16-25)	(26-35)	(36 or higher)
Showing Enthusiasm for People	(6-9)	(10-15)	(16-21)	(22 or higher)
Instilling in People the Belief They are Powerful	(7-11)	(12-18)	(19-24)	(25 or higher)

(table continues)

Table (continued)

Being Consistent in the Face of Adversity	(3-5)	(6-8)	(9-11)	(12 or higher)
Planning and Leading Change	(8-12)	(13-20)	(21-28)	(22 or higher)
Releasing Potential and Energy	(7-11)	(12-18)	(19-24)	(25 or higher)
Creating a Flexible and “Ready-for-Change” Culture	(8-12)	(13-20)	(21-28)	(29 or higher)
Developing Leaders in the Organization	(4-6)	(7-10)	(11-14)	(15 or higher)

(3). Entering the Converted Score for each factor in the table below:

A	B	C	D	E	F	G	H	I
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Scores from each factor range from Level Four (the highest) through Level One (the lowest). In terms of leadership effectiveness, factor scores of 3 and 4 indicate areas of strength, whereas scores of 1 and 2 indicate opportunities for improvement. In general, the more scores of 3 and 4 that an individual has, the more likely that he/she is engaged in behaviors that are known to be characteristics of effective leaders.

To give more meaning to the findings of this study, the instrument used arbitrary descriptive values for each of the categories. These descriptive values are very competent (4), competent (3), needs improvement (2) and incompetent (1).

The converted scores for each dimension of leadership behaviors were manifested by the nurse administrators with respect to the 9 dimensions of leadership determined by the converted scores. The

converted scores were further interpreted using the given table:

Converted Score	Descriptive Value	
4	Strength	Very Highly Manifested
3		Highly Manifested
2	Weakness	Less Manifested
1		Not Manifested

The frequency and percentage were used to present the nurses' profile in terms of their Caring Behavior which is based on the qualitative interpretation of their individual mean scores for each dimension. The qualitative interpretation was based on the given scale:

Mean Range	Qualitative Interpretation
3.25 – 4.00	I have done this very well./ Very High Manifested
2.50 – 3.24	I have done this somewhat well./ Highly Manifested
1.75 – 2.49	I need some improvement./ Less Manifested
1.00 – 1.74	I have not yet started to do this./ Not Manifested

To test the hypothesis that there is no significant difference in the leadership behavior of the nurse administrators as assessed by the staff nurses and the nurse administrators themselves, Chi-Square test was used. Likewise, this was used to test for the significant difference on the caring behaviors of the staff nurses when grouped according to their unit of assignment, and to determine if there is a significant correlation between the leadership behaviors of the nurse administrators and the caring behaviors of their staff nurses.

RESULTS AND DISCUSSION

Participants' Profile

The regular staff nurses in Cagayan Valley Medical Center were young adults ranging from 21 – 40 years of age and for the distribution of nurse administrators, majority were from ages 31 – 50 years which denote that nurse administrators were among the senior age range compared to the regular staff nurses.

For the distribution of nurse managers and staff according to unit of assignment, it showed that the nursing service workforce was proportionately distributed in Cutting and Non-Cutting Areas. The bulk of the nursing manpower is assigned in the Non-cutting Areas in which the General wards, Out-Patient Department, and Emergency Department belonged.

For the length of service, staff nurses have shorter experience in the hospital as compared to nurse administrators. This suggests that nurse administrators are far more experienced than that of regular staff nurses.

Leadership Behavior of Nurse Administrators

Nurse administrators were likely to demonstrate the leadership behaviors as defined by the nine dimensions. This finding supports that nurse administrators influence the strategic direction of the organization through their inputs regarding service delivery, resource allocation, workforce planning and devilmnt, governance arrangements and clinical quality assurance (White, 2011).

Comparative Analysis on the Assessment of the Staff Nurses and Nurse Administrators on the Leadership Behavior of Nurse Administrators

There is a significant difference in the assessment of staff nurses and the nurse administrators on the leadership behavior of the nurse administrators in terms of the following leadership behaviors: communicating and behaving according to values; showing enthusiasm for people; instilling in people the belief they are powerful; creating a flexible and “Ready-for-change” culture and developing leaders in the organization.

This finding supports the results of a study by Kleinman, (2004) which concluded that nurse managers perceived that they demonstrated a higher frequency of the leadership behaviors as compared with staff nurses.

However, no significant difference was observed on the assessment of the two groups with respect to the following leadership dimensions: communicating purpose and direction; being consistent in the face of adversity; planning and leading change; and releasing potential and energy.

Assessment of Staff Nurses' Caring Behaviors as Measured by the Caring Behavior Inventory

Staff nurses were likely to exercise behaviors mentioned in all dimensions of the Caring Behavior Inventory.

Staff Nurses Caring Behavior as Measured by the Five Dimensions of the Caring Behavior when Grouped According to Profile Variables

There is no significant difference in the caring behavior of nurses when grouped according to age, unit of assignment and length of service in all dimensions of caring behavior.

Comparative Analysis on the Relationship Between Leadership Behaviors of Nurse Administrators and the Caring Behaviors of their Staff Nurses

There is a significant relationship on the assessment of staff nurses and the nurse administrators on the leadership behaviors of nurse administrators in terms of the following dimensions of leadership behavior: communicating purpose and direction; showing enthusiasm for people; instilling the belief they are powerful; being consistent in the face of adversity, releasing potential and energy, creating a flexible and "Ready for Change" culture and developing leaders in the organization.

However, no significant relationship was observed on the assessment of the two groups of assessors with respect to communicating and behaving according to values and planning and leading change leadership dimensions.

CONCLUSION

Based on the findings of the study, the following conclusions were derived:

The Nurse Administrators of Cagayan Valley Medical Center are likely to exhibit competence in the way they mobilize the Staff Nurses in all categories of leadership behaviors. Meanwhile, there is just a slight shift on their assessment on the degree of competence experienced by their staff nurses.

The Regular Staff Nurses of Cagayan Valley Medical Center manifest their nursing care in accordance with the behaviors in the Caring Behavior Inventory. This manifestation of behavior proves that the staff nurses are aware of their institutions' vision and mission as a health care provider towards the fulfillment of the demands of their clients. This means that there is currently a considerable emphasis on the provision of patient-centered care in all aspects of healthcare to improve quality and increase client satisfaction (Michie et al., 2003).

RECOMMENDATIONS

In view of the results, discussions and the conclusions derived from this study, the following recommendations were made:

1. Staff Nurses of the Cagayan Valley Medical Center shall maintain the genuine behavior reflected on this assessment which shall contribute to a valuable impression of patients that the worth of caring of nurses is instilled in the culture of the hospital.
2. As such exemplary behaviors of staff nurses, the Nurse Administrators of the hospital could serve as the backbone of the Nursing Service to stand as a true leader in which the expressed behaviors were inculcated in every aspect of care and leadership while serving as an icon for the future administrators.
3. The Nurse Training Officer, being the one who plans the activities of nurses shall adopt and highlight in every nursing program the Caring Behaviors of Staff Nurses and the Leadership Behaviors of Nurse Administrators that every member of the Nursing Service must recognize in every aspect of nursing care.

4. As the mother of the Nursing Service, the Chief Nursing Officer should continuously embrace the values of Leadership and Caring in the incessant dynamics of Nursing Care towards the vision of a Globally Competent Nursing Service.
5. The Medical Center Chief shall continuously support the activities relevant to the conservation and development of Leadership Behavior of Nurse Managers and Caring Behavior of Staff Nurses through continuing professional development and research in order to emerge as a champion in Nursing Service.
6. For Affiliating Schools and the Academe, this study shall likewise be an instrument to be developed and utilized for students as they spearhead the foundation of future Nurses' Behaviors which accord to the demands of the profession and of the community people.
7. It is highly recommended for future researchers to have a parallel research on Caring Behaviors of Staff Nurses in CVMC and to compare with the Caring Behaviors of Staff Nurses as assessed by patients admitted in all Clinical or certain clinical areas.

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**CAREER MANAGEMENT OF THE PHILIPPINE MILITARY ACADEMY
GRADUATES: BASIS FOR POLICY IMPROVEMENTS**

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ABSTRACT

This study attempts to determine how relevant are the programs of both the Philippine Military Academy (PMA) and the Armed Forces of the Philippines concerning the training, deployment and ultimately their career administration and development to the graduates of the Academy. It sought to determine the career management of the Philippine Military Academy graduates from 1997 to 2001 and aimed to determine the current status, assignments, designations, challenges while in the service and recommendations of the PMA graduates. The study made use of the mixed-method research design that involved 123 Army Officers who graduated from the Philippine Military Academy in the academic year 1997-1998 to 2000-2001 as participants. The study utilized the following instruments: the Career Management Assessment Tool, the Document Review Form and Work Life Balance or Fulfillment questionnaire, Compliance and Implementation questionnaire. The officers' career compliance and personnel management implementation are at "moderate extent" on their career management. The officers have a "great extent" of fulfillment which is affected by the marital status, specifically on the relationship category. The participants wanted some improvements in terms of the policies on career management. The challenges experienced by the participants in the service can be appropriately improved through the implementation or enhancement of some policies on career management.

Keywords: *Career management, Philippine military academy, army officers*

INTRODUCTION

The idea that an individual career management and the organizational career management when combined will result to a successful organization is absolutely true, though individual career management will solely depend on the person itself. There are different factors that affect a successful career; one of these is the support of the organization in the management of the career of the individual employee that enhances the development of every individual's career.

Individual Career Management is a process where an individual person is required to assess his/her own self, he/she must set the goals, and most importantly to take actions, and if it fails, there's a need to be reassessed or evaluated. Individual employee should set his/her personal compass for the future or make his/her personal roadmap to guide his actions to realize whatever dream he desires and to be fulfilled and ultimately be happy, whether in the aspects of health and wellness, financial security, and work/life balance.

Organizational Career Management is likewise a process where every company has the responsibility to take care on their employees' welfare, it has different roles to play to motivate their employees, to plan their career, coach, clarify concerns, assist in their goal setting and acts as an adviser.

In the military organization, career management of the officer corps is accomplished by following the promotion system. The AFP maintains a standard career progression for its officer corps. All officers in the AFP start as second Lieutenant and are promoted based on time in grade and performance through the rank of Colonel. It manages its officers by year group or as a class. A year group or a class is a group of officers who are commissioned in a specific fiscal year.

For the AFP, it follows the concept of the proper selection of officers for training and education opportunities which is the initial step of the promotion process. Training and education is a function of career management such that after graduation from such courses, selected officers are designated or assigned to key positions which will eventually qualify them for promotion if they perform very well.

For almost two decades, the Academy has produced several female graduates who are now serving in the different branches of service in the Armed Forces of the Philippines. It is quite clear that the Philippine Military Academy and the Armed Forces of the Philippines have already a vast experience of having female trainees and eventually serving in the military. Although several adjustments in its systems and policies were already made along the way to enhance the training and deployment of these female officers, a formal study is yet to be done to come up with appropriate findings, suggestions and recommendations to improve the current systems.

In comparison to foreign Armed Forces, the gender issue is no longer a problem. They have already accomplished much. Specifically, in the United States Armed Forces, all positions in the military are already open to both genders. In the Armed Forces of the Philippines, the current policies and regulations stating that duties of female soldiers are restricted to administrative and non-combatant duties are still in effect. Researches and studies, both foreign and local, have shown that female officers are capable of performing not only administrative but also combat duties in the field.

Hence, this study attempts to determine how relevant are the programs of both the Philippine Military Academy and the Armed Forces of the Philippines concerning the training, deployment and ultimately their career administration and development as graduates of the Academy.

Statement of the Problem

Generally, the study sought to determine the career management of the Philippine Military Academy graduates from 1997 to 2001. It aimed to determine the current status, assignments, designations, challenges while in the service and recommendations of the graduates of Philippine Military Academy (PMA).

Specifically, the study sought to answer the following questions:

1. What is the profile of the participants in terms of:
1.1 age;

- 1.2 gender;
 - 1.3 civil status;
 - 1.4 rank;
 - 1.5 Armed Forces of the Philippines Occupational Specialty (AFPOS);
 - 1.6 years in military service; and
 - 1.7 year of graduation?
2. What is the promotion rate of the participants?
 3. What is the extent of compliance to the career pattern of the participants?
 4. Is there a significant difference on the extent of compliance to the career pattern when grouped according to the profile variables?
 5. What is the participants' extent of fulfillment in terms of:
 - 5.1 health;
 - 5.2 spiritual;
 - 5.3 relationship;
 - 5.4 work-life balance; and
 - 5.5 financial?
 6. Is there a significant difference in the participants' extent of fulfillment when grouped according to profile?
 7. What is the extent of implementation of the policies pertaining to career management?
 8. Is there a significant difference in the extent of implementation of the policies pertaining to career management when grouped according to gender?
 9. What are the challenges experienced by the officers in the service in terms of:
 - 9.1 deployment;
 - 9.2 workload;
 - 9.3 relationship towards juniors/seniors/peers; and
 - 9.4 physical and medical problems?

10. What are the policies affecting the officers in the AFP?
11. What are the participants' suggestions and recommendations to improve the administration and programs for the female officers in the armed forces?
12. What policy can be introduced to improve the career management of the graduates?

METHODOLOGY

Research Design

This study made use of mixed-methods. Mixed methods is a research approach, in which the researcher collects, analyzes and integrates both quantitative and qualitative data in a single study (Creswell, 2013). In this study, the researcher collected the quantitative data, specifically the profile, promotion rate and compliance to the career pattern of each class and the assessed extent of implementation of the policies on career management. For the qualitative data, this was used to find out the participants' current status in the military service, experiences, challenges encountered for the duration of the service and gather recommendations to improve the system of training, policies on career management in the military.

Participants of the Study

The participants of the study are the Army officers who graduated from the Philippine Military Academy of the academic year 1997-1998 to 2000-2001. From the total number of graduates, all of the female army graduates who are still active in the service and have graduated from 1997 to 2001 were included in the study.

Table 1

Distribution of Participants When Grouped According to Year of Graduation

Batch (Classes)	Frequency	Percentage
2001	28	22.76
2000	41	33.33
1999	18	14.64
1998	10	8.13
1997	26	21.14
Total	123	100.00

There were one hundred twenty-three officers (123) who responded and answered the questionnaire. The number was taken from the active officers with the total number of three hundred forty-five (345).

Instrumentation

The study utilized the following instruments: the Career Management Assessment Tool, the Document Review Form and Work life balance or Fulfillment questionnaire. Compliance and implementation questionnaires were also utilized.

The Career Management Assessment Tool has three parts: Part I covered the profile of the participants which include the age, civil status, rank, AFPFOS and number of years in the military service. Part II covered the assignment and designations of the participants, units they have been assigned to and the inclusive dates. Part III covered the problems or challenges experienced by the participants in terms of deployment/ settlement; workload, relationships, physical and medical problems, policies concerning female officers in the AFP and programs related to female officers in the AFP together with the suggestions and recommendations to improve the administration and programs for the female officers in the Armed Forces.

Another tool is the Document Review Form. The researcher validated the participants' profiles from the Army Personnel

Management Centre specifically the officers' summary of information. It is from there that the latest promotion of the officers was checked so that the promotion rates of each batch can be computed.

The third tool was the Extent of Fulfillment, Compliance and Implementation questionnaire. Part I covered the extent of fulfillment. It has 25 statements in which the participants can rate as strongly agree (5) to strongly disagree (1). The questionnaire measures the extent of fulfillment in the different areas, specifically health (1-5), spiritual (6-10), relationship (11-15), work-life balance (16-20), and financial (21-25). The items from the questionnaire were taken from the review of related literatures on fulfillment.

For part II, it asked the question, what is your extent of compliance to your career pattern? The percentage computation is taken from the number of the participants with the degree of extent chosen over the total number of the participants, multiplied by 100.

And in part III, it asked the participants to rate the extent of implementation of the policy on career management. The percentage computation is taken from the number of the participants with the degree of extent chosen over the total number of the participants, multiplied by 100.

Data Gathering Procedure

Initially, the proposal of the study was approved by St. Paul University Philippines Ethics Review Committee. After which, a visit was made to the Philippine Military Academy Registrar's Office to obtain the list of graduates specifically from 1997-2001.

To obtain the list of current and actual officers in the active service, the researcher contacted the Army Personnel Management Office. Personal meeting with the participants was conducted from their respective office assignments in the Armed Forces of the Philippines and informed consent was sought. The objectives of the study were explained along with the procedures of the study. The benefits of the study were also explained to the participants. Their consent to access their personal data from the personnel office was sought. Voluntary

participation, privacy and confidentiality of data were emphasized and assured. For those who were accessible to the researcher, the contact numbers and emails were taken from the personnel office. The informed consent form was emailed to them and the researcher exerted effort to contact them to ensure informed consent before data collection started.

The Career Management Assessment Tool for the participants was distributed through the use of mail and electronic mail. For the collection of the accomplished survey questionnaires, the researcher personally retrieved them wherein the participants were requested to send through mail or electronic mail.

For the promotion rate, the percentage of graduates promoted from one rank to another was taken from the promotional data list and seniority lineal list of graduates of each class. For the Extent of Compliance to Career Pattern, the percentage is taken from the participants with the degree of extent chosen over the total number of participants multiplied by 100. After which, the tally was taken for the computation of the percentage and likewise, for the assessed extent of implementation of the policies.

Data Analysis

To analyze and interpret the gathered data, the following statistical tools were used:

1. Frequency count and percentage distribution were used to determine the profile of the participants and total male and female graduates within the five-year period. The same statistical tool was used to determine the profile of the participants in terms of personal, service related information, and promotion rate.
2. The promotion rate was computed based on the total number of officers of each class by considering the actual number of officers promoted to the next rank after a time period over the total number of officers of the class multiplied by 100. Example is: (Major to LTC) actual number of officers promoted over total number of officers per class multiplied by 100%.
3. Mean was used to determine the extent of fulfillment, compliance

to career pattern, extent of implementation of the policies on career management. The table below was used in describing the extent of fulfillment, compliance and implementation of the policies on career management.

Table 2
Mean Range and Its Qualitative Description

Mean	Qualitative Description
4.20 - 5.00	Very Great Extent
3.40 - 4.19	Great Extent
2.60 - 3.39	Moderate Extent
1.80 - 2.59	Less Extent
1.00 - 1.79	Least Extent

4. The use of ANOVA is to test significant difference in the extent of fulfillment, the extent of compliance to the career pattern and the extent of implementation to the policy on career management when participants are grouped according to profile variables.
5. Thematic Analysis was utilized to analyze the challenges and recommendations provided by the participants.

RESULTS AND DISCUSSION

Profile of the Participants

The participants are composed of PMA Graduates from class 1997 to 2001. The total number of active army officers that were considered in the survey is 345. However, only 123 responded. Other officers who were not included in the survey are in foreign schooling/posting or deployment. Some are on the process of retirement while others are out of contact. On age profile, majority belong to age bracket 41 to 45. On gender, 94% are male officers and only 6% are female. On civil status profile, the married officers comprise 98%. On rank profile of the participants, 55% are LTC and 45% are Major. For the military occupational specialty (AFPOS) 60% belong to the infantry, 10% for

cavalry, 7% for military intelligence, 6% for ordinance service, 4% for engineering and field artillery, 3% on signal corps and quartermaster service and only 2% for finance service. For the profile of participants per batch (class) based on the years in service and year, graduated class 1997 is 21%, class 1998 is 8%, class 1999 is 15%, class 2000 is 33% and class 2001 is 23%.

Promotion Rate of Participants

The promotion rate of the participants is computed by class. It is the number of promoted officers over the total number in class multiplied by 100. Class 1997 has 95% rate of promotion, class 1998 has 88.88%, class 1999 has 89.53% while class 2000 and 2001 has 100% rate in their current rank.

Extent of Compliance to the Career Pattern of the Participants

The participants have a “moderate extent” of compliance with their career pattern set by the army.

Test for Significant Difference in the Extent of Compliance to the Career Pattern When Grouped According to Profile Variables

There is no significant difference in the participants’ compliance on the extent of career pattern when grouped according to age, gender, civil status, rank, year in service, year of graduation. However, there is a significant difference with respect to AFPOS.

Extent of Fulfillment

The extent of fulfillment of the participants in terms of health, spiritual, work is at “great extent,” relationship and financial are at “very great extent.” Overall extent of fulfillment is “great extent.”

Test for Significant Difference in the Extent of Fulfillment When Grouped According to Profile Variables

Based on the findings, there is no significant difference in the participants’ extent of fulfillment when grouped according to age,

gender, rank, AFPOS, year in the service and year of graduation. However, there is a significant difference when grouped according to civil status.

Challenges Experienced by the Officers

The challenges encountered by the officers include lack of administrative and logistical support, social isolation, lack of personnel and multi-tasking, mismatch of acquired specialty, transition of personnel, professional treatment among colleagues and poor health facilities.

Extent of Implementation of the Policies

Based on the findings, the personnel management office for the career management of army officers gained 59.35% implementation rate which is “moderate extent” as assessed by the participants and 19.51% with “great extent” as the second highest rate of implementation.

Test for Significant Difference in the Extent of the Implementation of the Policies to Career Management When Grouped According to Gender

The extent of the implementation of the policies to career management with regards to gender is at “moderate extent” with a mean 3.28 for female and 2.98 for male. The extent of implementation of the policies rated by female officers is significantly higher than the male officers.

Suggestions and Recommendations to Improve the Administration and Programs for the Female Officers in the AFP

The following are the suggestions given: Increase the number of female personnel in the AFP; improve leadership training and development programs for women in the early stages of their careers; actively solicit feedback from women, particularly junior women, about how to address the challenges they face, and implement some of their recommended solutions; establish a public dialogue between the most senior military and private sector women on improving women’s

leadership and career development; jointly conduct leadership and skills programs for female high school and college students; help female veterans transition effectively and fairly to the private sector; include men in the solution, through initiatives like the UN's "He or She" campaign; ensure that the first women to serve in combat positions are set up for success; and consider more formal mentorship programs for women.

The Proposed Policies to be Reviewed

The following are the different policies that need enhancements and improvements in the career management:

First is improvement of promotion policy in relation to the quantitative rating system. More consideration or points should be given to the degree of responsibility and sensitivity of assignment.

Second is attrition policy should be reviewed and strictly implemented.

Third is policy on housing - sincere and equitable awarding of quarters without familiarity and 'palakasan' system.

Fourth is equal opportunity in offering foreign schooling and should be based on merit system.

Lastly, is the rotation policy (assignment and re assignment). Number of years in certain areas of deployment (geographical assignment in Luzon, Visayas and Mindanao).

CONCLUSION

Based on the findings of the study, the researcher concludes that the officers' career compliance and personnel management implementation are at "moderate extent" on their career management. The fulfillment of the officers is to a "great extent" and affected by the marital status, specifically on the relationship category. The participants wanted some improvement in terms of the policies on career management. The challenges experienced by the participants in

the service can be appropriately improved through the implementation or enhancement of some policies on career management.

RECOMMENDATIONS

Considering the findings of the study, the researcher recommends the following:

1. Personnel management office of the Armed Forces of the Philippines, may consider to:
 - Increase the number of female personnel in the AFP.
 - Consider more formal mentorship programs for women.
 - Provide facility support to new assignments like quarters, access to school and good medical facilities. - Prioritize mobility and logistical support to reporting personnel.
2. Human resource department,
 - May assign officers to units with specific functions in consideration with their respective occupational specialty to address common concerns on workload; Strict implementation of attrition policies and directives.
 - Enhancement of the current SOI reflecting the minimum career management requirement with corresponding QRS points/rating.

For future researchers to consider the specifics of promotion rate of each level of the rank, and to improve on the procedures of this study and to cover other batches or classes and also include the officers coming from the OCS and commission.

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**DEVELOPMENT AND EVALUATION OF A PROPOSED
WORKTEXT IN SOLID MENSURATION**

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ABSTRACT

The main purpose of this study is to develop and evaluate a proposed worktext in Solid Mensuration along the quality of elements: course content, manner of presentation and usefulness of the material. The participants consisted of 50 freshmen engineering students from the University of Saint Louis, Summer 2016. A quasi – experimental method was used to determine whether the use of worktext in teaching and learning Solid Mensuration will improve students' understanding and performance. The data were collected from two groups (control and experimental), analyzed and were interpreted using mean, standard deviation and weighted mean and independent samples t-test. The findings showed that the proposed worktext in Solid Mensuration is effective in enhancing students' understanding of the concepts in Solid Mensuration. Also, the experts and the students have similar assessment along the different quality of elements of the proposed worktext; therefore the proposed worktext can be utilized as a supplementary instructional tool by both the students and teachers for facilitating teaching and learning process in Solid Mensuration.

Keywords: *Development, evaluation, worktext, solid mensuration*

INTRODUCTION

Solid Mensuration particularly in college is highly important in engineering and architecture applications. This course is used extensively in the practice of engineering. Knowledge of this course is a necessity for engineers in any project construction. Understanding objects in three-dimensional space helps engineers create models and scenarios and solve problems mathematically before actually using or building any resources. Some lessons in Solid Mensuration are too complicated to analyze, so it is difficult for the students to understand the subject (Lavador and Calderon, 2012). Indeed, teaching Solid Mensuration is one of the most challenging tasks among Mathematics teachers.

Solid Mensuration which is one of the major Mathematics courses in the engineering curriculum at the University of Saint Louis is a prerequisite of Differential Calculus. For the past years, students were exposed to the traditional method of learning the course. The lessons were presented in a lecture format where the teacher explains new concepts and then provides examples of the new concept. The only instrument of instruction was a textbook. As cited by Gak (2010), a textbook is used as a standard source of information for formal study of a subject and an instrument for teaching and learning. However, the researcher, with her years of experience teaching Solid Mensuration, observed that with this method and medium of instruction, majority of the students consider the course to be difficult which consequently caused them to perform poorly in the course. As a result, an increasing number of engineering students at the end of the grading period get a failing grade as indicated in the percentage of failures of 14.61% from SY 2011 – 2012 to SY 2015 – 2016. Thus, the teaching and learning of Solid Mensuration should be further improved.

With the current shift from Inputs-based Education (IBE) to Outcomes-based Education (OBE), particularly in the tertiary level, it is necessary for the teachers to carefully design activities placing the students at the center of all educational planning. Teachers handling Solid Mensuration must therefore use instruction suited to the level of understanding of their students. They must employ current instructional materials as tools to make instruction more effective,

efficient and appealing to the learners. One way to enhance instruction is to provide the learners with carefully developed lessons. Teachers must design activities that engage students in the learning process, activities that build mastery of concepts in Solid Mensuration and consequently, activities that support learners with varying levels of ability and skills.

Numerous studies over the years have introduced a range of instructional materials such as worktexts, workbooks and modules to meet the learners' needs and equip them with skills required for their level (Adora, 2014).

Selga (2013) explained that worktexts are helpful in keeping one child occupied while working with another. As revealed in her study, the proposed worktext was found to be valid. She further concluded that worktexts contribute to the achievement of specific objectives of the subject and provide activities for the development of higher cognitive skills. Worktexts of better quality include problem-solving exercises that encourage higher-level thinking in addition to the traditional fill-in-the-blank and define-the-term exercises (Knapp, 2006).

Auditor and Naval (2014) addressed the need to improve the performance of all students across schools as manifested in the results of the 2012 National Achievement Test (NAT). The main purpose of their study was to develop and validate physics modules based on the least mastered competencies and assess the impact of the developed modules on students' knowledge acquisition. As revealed in their study, the developed modules were found acceptable for the 10th grade physics students. Also, the developed set of modules was found to be effective in terms of knowledge acquisition. Thus, they recommended that the adoption of the developed module can be a useful tool for teaching and learning basic physics.

The integration of enrichment activities such as computer animations in the proposed instructional material generated a more innovative and interesting learning environment. Thus, through this material, students found Mathematics learning more meaningful and interesting (Dacanay, 2010).

Worksheets are materials by which students are given transaction steps regarding what they are supposed to learn. Also, they include activities which give the students main responsibility in their own learning. Thus worksheets are known to help students gain scientific process skills such as setting up experimental mechanism, recording data, interpreting the data, and so on so that they can conceptualize the concepts in their mind (Kurt & Akdeniz , 2002).

Books in Solid Mensuration which are available in the university library at the University of Saint Louis (USL) are limited, most of which are written by foreign authors and some are even old or outdated. The contents of the textbooks are not tailored to the specific attributes and interests of the engineering students at USL. The examples presented in the textbooks are sometimes irrelevant to the students and often do not reflect the interests and needs of students. The researcher observed that foreign books used terms that are not easily understood by students. In particular, students prefer terms that are commonly used in the local setting. She also noticed that there were books which contain limited examples having shortcuts in the discussion.

Realizing the need for a more effective supplementary material, the researcher developed a simplified instructional material in Solid Mensuration to enhance students' learning of the subject and to stimulate their interest in the subject for better achievement.

Statement of the Problem

The study aimed to determine the effectiveness of a proposed instructional material in the teaching and learning of Solid Mensuration.

Specifically, it sought to answer the following:

1. What are the pre-test mean performances of the students in the control and experimental groups?
2. What are the post-test mean performances of the students in the control and experimental groups?
3. Is there a significant difference between the:
 - 3.1 pre-test performances of students in the control and experimental groups?

- 3.2 post-test performances of students in the control and experimental groups?
- 3.3 pre-test and post-test performances of students in the control and experimental groups?
4. What is the assessment of the mathematics experts along the quality of elements of the proposed instructional material in Solid Mensuration in terms of:
 - 4.1 course content
 - 4.2 manner of presentation
 - 4.3 usefulness of the material?
5. What is the assessment of the students along the quality of elements of the proposed instructional material in Solid Mensuration in terms of:
 - 5.1 course content
 - 5.2 manner of presentation
 - 5.3 usefulness of the material?
6. Is there a significant difference on the assessment of the instructional material in Solid Mensuration between the experts and the students in terms of :
 - 6.1 course content
 - 6.2 manner of presentation
 - 6.3 usefulness of the material?

METHODOLOGY

Research Design

The research design used in the study was quasi-experimental. Specifically, a pre-test and post-test of matched groups in which two different learning environments were compared to determine the effectiveness of the proposed worktext in Solid Mensuration. The experimental group was taught using the proposed worktext while the control group was taught using the textbook in Solid Mensuration.

Group	Pre-test	Approach	Post-test
E	O1	X1	O2
C	O3	X2	O4

Note. E = Experimental group; C = Control group; O1 = pre-test of the experimental group; O2 = post-test of the experimental group; O3 = pre-test of the control group taught; O4 = post-test of the control group; X1 = use of proposed worktext in teaching Solid Mensuration; X2 = use of textbook in teaching Solid Mensuration

Participants of the Study

The participants of the study were composed of two groups.

Student-participants. Two classes of Solid Mensuration were offered last Summer 2016 to freshmen engineering students in the University of Saint Louis. Twenty-five participants were taken from each of the classes and were grouped into two – the experimental group and the control group. The participants of the two groups were identified and carefully matched based on their average grade in College Algebra and Plane & Spherical Trigonometry, which are pre-requisites of Solid Mensuration. Students with an average grade of 76 – 90 were included in the study. Result of the pre-test administered before the conduct of the study was also considered in the selection. The control group was randomly assigned to a class from 7:00 AM to 8:30 AM, MWF and from 8:30AM to 10:00AM, TTTH while the experimental group was randomly assigned to a class from 8:30AM to 10:00AM, MWF and from 7:00 AM to 8:30 AM, TTTH.

Experts. This group was composed of 3 Mathematics instructors, 3 Engineering Sciences instructors and 3 external experts. The Mathematics instructors and Engineering Sciences instructors were faculty members from the University of Saint Louis while the external experts were from the University of Cagayan Valley (UCV), St. Paul University Philippines (SPUP) and USL – High School Department. This group assessed the proposed worktext in Solid Mensuration in terms of content, manner of presentation and usefulness of the material.

Instrumentation

The research instruments that were used in this study are the questionnaire and pre-test and post-test. The results were supplemented with data from an informal interview.

The questionnaire on worktext evaluation tool was administered to the teacher-participants to assess and to evaluate the quality of the proposed instructional material in terms of content, manner of presentation and usefulness of material. The same set of questionnaire was administered to the experimental group after the try-out period of the material.

The worktext evaluation tool that was used in the study was adopted from the evaluation tool used by Romero (2008) in his study "The Development and Validation of a Proposed Worktext in Biostatistics". He aimed to assess the effectiveness of a Proposed Worktext in Biostatistics in terms of content, manner of presentation and usefulness of material.

The main instrument used in this study was the pre-test/post-test administered to the student-participants. The pre-test/post-test was piloted for validation to the students who already finished Solid Mensuration. The pre-post test was piloted for validation to the students who already finished Solid Mensuration. The pre-test/post-test consisted of a 45-item multiple choice test that specifically measured the effectiveness of the proposed worktext in Solid Mensuration and the competencies required of students in Solid Mensuration. A table of specification was prepared for fair distribution of items among the topics in Solid Mensuration.

Unstructured/informal interviews were likewise conducted with the experts to elicit comments and suggestions to further improve the proposed worktext in Solid Mensuration.

The initial draft of the proposed worktext consisted of six chapters. Each chapter included the following parts (1) Topic which is the lesson to be learned; (2) Learning Outcomes which describes what the learner should know and be able to do at the end of each

lesson; (3) Concept Development which allows students to investigate, explore and discover concepts on their own; (3) Key Concepts which is a summary of ideas or concepts drawn from students' discovery, investigation and exploration; (4) Guided Practice which serves as an approach to instruction where the teacher leads the activity but solicits help from students; (5) Self-Test which consists of items for additional drills and practice; and (6) Evaluation to assess students' learning. The format of the worktext was carefully designed to easily capture the attention of the learners.

Data Gathering Procedure

The research procedure followed three phases:

Pre-treatment Phase

The researcher sought permission from the Academic Dean of the School of Engineering, Architecture and Interior Design (SEAID) with the approval from the University President for the conduct of the study. In the first phase of USL, the researcher made use of the course syllabus in Solid Mensuration to review the competencies of the course as basis for formulating the learning outcomes. Also, survey of books available at the university library, informal interviews with the experts, library work and use of internet were employed by the researcher for concept development and drill activities in order to come up with the initial draft of the proposed worktext in Solid Mensuration. The researcher adopted the format used by Batulan (2003) but modified some parts to wit: Topic, Learning Outcomes, Key Concepts, Guided Practice, Self – Test and Evaluation. Lessons were organized based on the course syllabus to ensure that the content is sufficient and the presentation of the examples is progressive. The initial draft of the proposed worktext was presented to experts to elicit suggestions and comments regarding the course content, manner of presentation and usefulness of the material.

Refinement in the proposed worktext was made based on the evaluation, comments and suggestions of the experts.

A pre-test was administered to both experimental and control

group before the use of the proposed worktext to initially determine the extent of knowledge on the topics to be introduced to them.

Treatment Phase

The proposed worktext was utilized by the experimental group for the duration of 33 hours for a total of 22 meetings. The control group was taught using the textbook in Solid Mensuration for the same duration of time. Throughout this period, the lessons, references through internet sites for additional information and learning conditions were the same for both groups. However, parallel items in the quizzes and assignments were administered.

Post-treatment Phase

After the topics had been taught through the proposed worktext in the experimental group and textbook in the control group, the same test was re-administered to the two groups at the same time as post-test. Their scores were evaluated and compared to determine if there was any significant difference.

A worktext evaluation tool was administered to the experimental group and to the experts to evaluate the quality of the proposed worktext in Solid Mensuration in terms of course content, manner of presentation and usefulness of the material.

Data Analysis

The data gathered were analyzed using the following descriptive statistics:

Weighted Mean. The weighted mean was used to determine the mean assessment of the participants on the proposed instructional material in Solid Mensuration in terms of content, manner of presentation and usefulness of the material. The following scale was used to interpret the weighted mean.

Range	Qualitative Description
4.20 – 5.00	Very Highly Evident/Excellent/Very Useful
3.40 – 4.19	Highly Evident/Very Good/Useful
2.60 – 3.39	Evident/Good/Moderate
1.80 – 2.59	Less Evident/Fair/Less Useful
1.00 – 1.79	Least Evident/Poor/Not Useful

Mean. The mean was used to answer the problems posed in the study such as the pre-test and post-test performances of the two groups.

Pre-posttest Results Scale. This scale which is patterned from Dacanay (2010) was used in interpreting the pre-posttest results of the students.

Range	Qualitative Description
40 – 45	Excellent
34 – 39	Very Good
28 – 33	Good
22 – 27	Fair
0 – 21	Poor

T-test. The t-test for independent samples was employed to test the significant difference between:

1. pretest scores of the control group and the experimental group
2. posttest scores of the control group and the experimental group
3. the assessment of the participants (experts and experimental group) on the proposed instructional material in Solid Mensuration in terms of Course Content, Manner of Presentation and Usefulness of the Material.

The t–test for dependent samples was used to test for significant difference between:

1. pretest and posttest scores of the control group
2. pretest and posttest scores of the experimental group

RESULTS AND DISCUSSION

Pretest and Posttest Mean Performances of the Control and experimental groups

Both groups had a poor performance in the pretest. The control group had a fair performance in the posttest while the experimental group had a very good performance in the posttest.

Test for Significant Difference in the Pretest Mean Performances of the Control Group and the Experimental Group

There is no statistically significant difference in the pretest mean performances of the control group and the experimental group.

Test for Significant Difference in the Posttest Mean Performances of the Control Group and the Experimental Group

There is a statistically significant difference in the posttest mean performances of the control and experimental group.

Test for Significant Difference in the Pretest and Posttest Mean Performances of the Control and Experimental Groups

There is a statistically significant difference in the pretest and posttest mean performances of the control and experimental groups.

Assessment of the Mathematics Experts Along the Quality of Elements of the Proposed Instructional Material in Solid Mensuration

Course Content

The assessment of the experts in terms of the course content was very highly evident.

Manner of Presentation

The assessment of the experts in terms of the manner of presentation was excellent.

Usefulness of the Material

The assessment of the experts in terms of the usefulness of the material was very useful.

Assessment of the Experimental Group After the use of the Proposed Worktext Along the Quality of Elements of the Proposed Instructional Material in Solid Mensuration

Course Content

The assessment of the experimental group in terms of the course content was very highly evident.

Manner of Presentation

The assessment of the experimental group in terms of the manner of presentation was excellent.

Usefulness of the Material

The assessment of the experimental group in terms of the usefulness of the material was very useful.

Test for Significant Difference Between the Assessment of the Mathematics Experts and the Experimental Group Along the Quality of Elements of the Proposed Instructional Material in Solid Mensuration

Course Content

There is no statistically significant difference between the assessment of the mathematics experts and the students in terms of the elements in the course content.

Manner of Presentation

There is no statistically significant difference between the assessment of the mathematics experts and the students in terms

of the elements in the manner of presentation.

Usefulness of the Material

There is no statistically significant difference between the assessment of the mathematics experts and the students in terms of the elements in the usefulness of the material.

CONCLUSION

The proposed worktext in Solid Mensuration is effective in improving students' performance. Effective and well-developed instructional materials are tools which include active learning and enhance students' conceptual understanding. A well developed worktext should be appropriate to the level and needs of the students. The following quality of elements in terms of course content, manner of presentation and usefulness of the material were assessed by the experts and students as very highly evident, excellent and very useful, respectively. Moreover, the worktext which contains information and directions that are clearly written and explained, may help the learners enhance their own knowledge, thus, making learning more significant, enjoyable, meaningful and interesting.

RECOMMENDATIONS

From the foregoing conclusions, the following are the recommendations:

1. Mathematics teachers are encouraged to develop their own instructional materials not only in Solid Mensuration but also in other Mathematics subjects to facilitate teaching and learning.
2. The researcher may further validate the proposed worktext by a large pool of experts and may be utilized or tried-out to a large group of students to further test its effectiveness.
3. The University should consider the proposed worktext as an instructional material and be used in the teaching-learning process of Solid Mensuration.
4. The administration should financially support teachers who have the potential in developing instructional materials.

5. Future researchers may conduct similar studies that focus on the learning outcomes of the students in the course.
6. The administration should support the utilization of the proposed worktext in the University.

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ENHANCING QUALITY ASSURANCE MECHANISM THROUGH DATA ANALYSIS APPROACH

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Doctor in Information Technology

ABSTRACT

Quality assurance is a holistic approach utilized in higher education institutions which covers all the elements of educational processes. It is aimed at providing better services to students and other stakeholders ensuring that these services meet certain quality standards. This study sought to develop an enhanced quality assurance mechanism intended to expedite the process of a state university's leveling by developing an information system that incorporated the useful functions of data consolidation and clustering and supported by data analytics technologies. The study utilized the descriptive mixed methods research design and included fifteen (15) participants who are involved in the operation of the leveling instrument tool for the State Universities and Colleges (SUCs). Relevant data were gathered using questionnaires and through observations and interviews. The developed SUCs Leveling tool has a high level of validity as assessed by the information technology experts. The overall results of the participants' evaluation, the enhanced SUC Leveling Tool for SUCs were found to be compliant to a very great extent with the quality standard characteristics defined by ISO/IEC 9126-1 in terms of functionality, reliability, usability, efficiency, maintainability and portability. The developed system has the ability to extract knowledge hidden in complex and varied sources of data and visualize them in human-readable form. The data mining and analytics tool is freely available for academic use and uses the data sets generated by the developed system as its input.

Keywords: *Quality assurance mechanism, data analysis approach, higher education institutions, ISO/IEC 9126*

INTRODUCTION

State Universities and Colleges in the Philippines are ranked by the use of a “leveling” instrument jointly prescribed by the Philippine Government’s Commission on Higher Education and the Department of Budget and Management. This is part of the country’s Quality Assurance process mandated for these educational institutions. Performed annually, the “leveling” process determines the rank of the university or college by means of a five-point typology, with Level I as the lowest and Level V as the highest. The intent of the process is to reward institutional performance and to provide incentives for improvement. The rank or “level” of the institution determines the level of state support and the level of bonuses awarded to individual employees. It is also a matter of prestige among the schools to attain the highest possible rank.

The process of determining the ranking level of an educational institution requires the analysis of voluminous amounts of data. Each educational institution is required to assemble and collate the data and submit it to the national government for final processing. In actual practice, gathering the required data is labor-intensive and time consuming. There is no existing information system in use for rapid data entry, collation and analysis. This study titled “Enhancing Quality Assurance Mechanism through Data Analysis Approach” was intended to expedite the process of SUC Leveling. Supported by data analytics technologies, the developed information system incorporated useful functions such as data consolidation and clustering. Piloted at the Mariano Marcos State University in Northern Philippines, the researcher intended to eventually deploy the developed information system at a regional and nationwide basis.

Statement of the Problem

This study aimed to develop an enhanced quality assurance mechanism that utilizes the data analytics approach.

Specifically, it attempted to answer the following questions:

1. What is the profile of the participants in terms of:
 - 1.1 Unit of Work;
 - 1.2 Position;
 - 1.3 Academic Rank;
 - 1.4 Highest Educational Attainment; and
 - 1.5 Field of Specialization?
2. What is the performance level of the existing system as assessed by the participants in terms of:
 - 2.1 Functionality;
 - 2.2 Reliability;
 - 2.3 Usability;
 - 2.4 Efficiency;
 - 2.5 Maintainability; and
 - 2.6 Portability?
3. Is there a significant difference in the assessment of the participants when grouped according to the profile variables with respect to:
 - 3.1 Functionality;
 - 3.2 Reliability;
 - 3.3 Usability;
 - 3.4 Efficiency;
 - 3.5 Maintainability; and
 - 3.6 Portability?
4. To what extent does the developed enhanced leveling tool for SUCs comply with the quality standard characteristics of software as defined by ISO/IEC 9126-1 in terms of:
 - 4.1 Functionality;
 - 4.2 Reliability;
 - 4.3 Usability;
 - 4.4 Efficiency;
 - 4.5 Maintainability; and
 - 4.6 Portability?
5. What is the degree of validity of the developed enhanced leveling tool system as evaluated by the information technology experts?
6. Is there a significant difference between the features of the existing system and the developed system as assessed by the participants?
7. What is the source data generated by the developed enhanced leveling tool system that is needed for data modeling and analysis?

METHODOLOGY

Research Design

The Descriptive Qualitative-Method was used for this study. The method was used as it describes the nature of the situation as it exists at the time of the study. It involved gathering data that describe events and then organizes, tabulates, depicts, and describes the data. It also used description as a tool to organize data into patterns that emerge during analysis (Myers, 2012).

Moreover, it is concerned with conditions of relations of relationships that exist; practices that prevail; beliefs, processes that are going on; effects that are being felt, or trends that are developing. The process of descriptive research goes beyond mere gathering and tabulation of data. It involves an element or interpretation of meaning or significance of what is described. Thus, description is often combined with comparison and contrast involving measurements, classifications, interpretation and evaluation. This method was used since it can greatly assess, determine and pin-point the impact of the proposed system to its future users. Moreover, this method allows a flexible approach, thus, when important new issues and questions arise within the duration of the study, further investigation may be conducted.

Descriptive research, on the other hand, is a type of research that is mainly concerned with describing the nature or condition and the degree in detail of the present situation. This method is used to describe the nature of a situation, as it exists at the time of the study and to explore the causes of a particular phenomenon. The aim of descriptive research is to obtain an accurate profile of the people, events or situations. With this research type, it is essential that the researcher already has a clear view or picture of the phenomenon being investigated before the data collection procedure is carried out. The researcher used this method to obtain first hand data from the participants so as to formulate rational and sound conclusions and recommendations for the study. The descriptive approach is quick and practical in terms of the financial aspect.

In this study, the descriptive research method was implemented

specifically the summative evaluation type to address issues concerning the usage, implementation, and to track problems that may arise during the deployment of the technology. The Research and Development (R&D) Method by Penuel, et al. (2011) and Burkhardt, et al. (2003) was also employed as a guide for the activities conducted in the research particularly with the development of the software. With the end product being a software system for actual production use, the sequential nature of R&D is particularly suitable for the application of basic research, applied research and project development.

Software Development Methodology

The researcher selected the relatively new, widely accepted Scrum methodology / management framework for the software development portion of this study. The name “Scrum” is said to have originated from the “Scrum Formation” of the Rugby sport. Scrum is an Agile type of methodology that aims to develop a software product incrementally or iteratively by building a series of prototypes and constantly adjusting them to user requirements (Sommerville & Sawyer, 1997).

Participants of the Study

For the needs assessment, the researcher included participants involved in the operation of the leveling instrument tool for the SUCs to get the necessary information needed for the study.

The personnel included in the process of getting the baseline information as shown in Table 1 are the participants of the study.

Table 1
Study Participants

Participants	Frequency
CHED IT Coordinator	1
IT Experts	4
Administrative Staff	2
Support Staff	8
Total	15

Instrumentation

The instruments were based on PIECES Framework by Wetherbe (1984). Relevant data were gathered using questionnaires and through observation checklist and interview guide. These instruments were utilized to collect sufficient information needed for the study.

Observation. This is an approach of analyzing computer system requirements. This extensively helped the researcher in terms of step-by-step proceeding in developing the system. The researcher used this technique to supplement the facts that were adopted in this study. The researcher personally observed and experienced how the job would be handled, performed and accomplished in the workplace by the participants.

Interview. The researcher used this technique in gathering significant facts and information that were utilized in the study. Casual interviews were conducted with the ones who have direct involvement in the proposed system in order to understand the current system and determine their opinions towards the proposed system.

Questionnaire. This instrument was used to gather additional data and information needed for the study. The survey questionnaire was constructed based on ISO 9126-1, a model to standardize the quality factors of software. This tool was the primary source of data and information. The researcher prepared a questionnaire that was validated by a panel of experts and the adviser and distributed to the participants.

Document Analysis/ Records Review. Office documents were sources of the records containing performance rating data for offices involved in the SUC leveling process.

Data Gathering Procedure

The researcher sought permission from the presidents of involved SUCs, and the CHED Regional Director to gather data from their concerned agencies or offices. The concerned offices include the university registrar, university accountant, directors of the different

offices involved in the leveling tool (SSD, Alumni Affairs, HRMO, QAO, Research and Extension and the CMR). Face to face interviews with the focal persons were conducted and a survey was conducted via questionnaire to determine the needs and to evaluate the solution. Relevant documents and records from the offices were analyzed to gain additional insights needed in formulating a solution.

Data Analysis

After gathering data, the statistical tools used in the analysis of data were the Weighted Mean, Standard Deviation and, Analysis of Variance (ANOVA). The weighted mean was used to determine the average responses on each item of the five (5) options in the questionnaire namely, 5 (Very Great Extent /Accepted Unconditionally), 4 (Great Extent /Accepted with minor condition), 3 (Moderate Extent), 2 (Low Extent/Accepted with major condition) and 1 (Very Low Extent/Reject).

The points that were used are:

- 5 points = Very Great Extent/Accepted Unconditionally
- 4 points = Great Extent/Accepted with minor condition
- 3 points = Moderate Extent
- 2 points = Low Extent/Accepted with major condition
- 1 point = Very Low Extent/Reject

Table 2
Range of Weighted Mean and Its Interpretation

Mean Range	Qualitative Interpretation
4.20 – 5.00	Very Great Extent (as a computer user) The Proposed System is Accepted unconditionally
3.40 – 4.19	Great Extent (as a computer user) The Proposed System is Accepted with minor condition
2.60 – 3.39	Moderate Extent
1.80 – 2.59	Low Extent (as a computer user) The Proposed System is Accepted with major condition
1.00 – 1.79	Very Low Extent (as a computer user) The Proposed System is Rejected

Table 2 shows the mean range and the qualitative interpretation. This was used as a guide to determine the acceptability of the newly developed system from the different users involved in the SUC leveling tool. Standard deviation was used to determine the degree of dispersion or disagreement among the participants. A low standard deviation indicates that the data points tend to be close to the mean (also called the expected value) of the set, while a high standard deviation indicates that the data points are spread out over a wider range of values.

T-test or Analysis of Variance. It was used to determine if there is a significant difference in the assessment of the participants when grouped according to the profile variables with respect to the system's functionality, reliability, usability, efficiency, maintainability and portability.

Also to determine if there is a significant difference between the features of the existing system and the proposed system as assessed by the participants, the level of significance was set at 0.05.

RESULTS AND DISCUSSION

Profile of the Participants

A substantial number of the participants or forty percent (40%) hold the rank of director who works in administrative offices. Twenty percent (20%) of the participants hold ranks of Professor I and Associate Professor V, respectively, while those who are Assistant Professor II, Associate Professors III and IV account for 13.33% each, respectively. The smallest number of participants hold ranks of Supervising Administrative Officer, Administrative Officer V, Associate Professor I, and Professor III account for 6.70% each, respectively. A sizable number of the participants at 46.70% are information technology specialists who hold master's degrees or have earned doctorate units in relation to the discipline. This is followed by specialists in the field of public administration account for 13.33% of the participants. All other specializations account for 6.70% each of the participants.

The findings for the profile of participants can be correlated to

the relevant sections of the MMSU Operations Manual (2nd Edition 2016). Section 2.0 “Organization and Governance” and Sub-section 2.5 “Officials and Administration” of the said manual enumerate and define the position titles as well as the associated duties and responsibilities that are consistent with the findings for the profile of the participants.

Performance Level of the Existing System as Assessed by the Participants

All of the participants (100%) agreed that the performance level of the existing system is compliant only to a moderate extent with the particular attributes of functionality, reliability, usability, efficiency, maintainability and portability.

Test for Significant Difference in the Assessment of the Participants When Grouped According to the Profile Variables

There is no significant difference in the features of the existing system as assessed by the participants.

The Extent of Compliance by the Enhanced SUC Leveling Tool with the Quality Standard Characteristics of Software as Defined by ISO/IEC 9126-1

Based on the overall results of the participants’ evaluation, the enhanced SUCs Leveling Tool was found to be compliant to a very great extent with the quality standard characteristics defined by ISO/IEC 9126-1 in terms of functionality, reliability, usability, efficiency, maintainability and portability.

Degree of Validity of the Developed Enhanced Leveling Tool System as Evaluated by the Information Technology Experts

The developed SUC leveling system was found to have a high degree of validity based on the results of the validation by information technology experts.

Test for Significant Difference Between the Features of the Existing and the Developed System as Assessed by the Participants

Based on the obtained t-test value, the probability is less than 0.001 which is lower than the level of significance at 0.05. Thus, there is a significant difference between the features of the existing and developed system as assessed by the participants.

Data Analytics Method

The Data Analytics approach utilized the methods of Clustering, Decision Trees, and Cross Validation to discover knowledge from the data collated by the developed system.

CONCLUSION

Based on the findings, the following conclusions are drawn:

Most of the participants possess advanced educational qualifications and hold mid-level to high ranking positions in the University. Thus, the work assignments involved in the SUC Leveling process require highly qualified personnel. This is supported by the mandates set by the MMSU Operations Manual.

The participants considered the performance level of the existing system to be only moderately functional, reliable, usable, maintainable and portable. As a manual, paper-based scheme, the existing system has inherent inefficiencies and flaws that do not exist in modern information systems.

The participants' assessment on the different features of the existing system is the same. The individual capabilities of the users of the existing system are similar to each other. They share common experiences in using the existing system, thus, their similar assessments.

The high extent of compliance of the developed SUC Leveling Tool with the quality standard characteristics of software as defined by ISO/IEC 9126-1 shows that it is ready for production use. This high level of compliance with this internationally accepted standard means that

the developed tool satisfactorily met the needs of its users and of the host University.

The developed SUC Leveling tool has a high level of validity as revealed in the evaluation done by the information technology experts. This shows that it is technically sound from an information technology perspective and is corroborated by the evaluation of the tool by the participants.

There is a significant difference in the features of the existing and developed system, in favor of the latter. As assessed by the participants, the developed system has a substantial improvement compared to the existing one. This implies that the developed system solves the problems of the existing approach and introduces a better tool for performing SUC Leveling work.

The visualized knowledge generated by the Rapid Miner application was validated by the Planning and Quality Assurance Office. Derived from the data organized by the developed system, this knowledge was deemed to be highly useful for SUC leveling work and for supplying the information required by accreditors.

Generally, the participants are aware of some problems existing in the academic community, specifically, on SUC Leveling Tool. On the other hand, the participants expressed their willingness to adopt the new system to improve their workflow and solve the existing problems in the course of SUC leveling tool system.

Since the participants rated the system “strongly agree” in terms of all the six (6) attributes in the ISO 9126-1 characteristics of a good software product, they would be willing to adopt it.

On the data analytics approach, the participants specifically the Director of Planning and Quality Assurance Office (PQAO), appreciated the tool due to its ability to extract various knowledge hidden in the complex and varied sources of data and visualize them in human-readable form. The data mining and analytics tool is freely available for academic use and uses the data sets generated by the developed system as its input.

RECOMMENDATIONS

From the foregoing conclusions, the following are the researcher's recommendations:

1. The developed enhanced leveling tool for SUCs be deployed to eventually supplant the existing system in order to meet the University objectives as set in the MMSU Information Systems Strategic Plan.
2. The study could be presented to the Commission on Higher Education and the system may be eventually hosted by its web information systems for use of other SUCs in the whole country.
3. High-level personnel who are to use the software may be provided with trainings and knowledge enhancement in data mining and analytics.
4. More research could be conducted to adopt the system for nationwide usage as well as to enhance its capabilities.

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**CLASSROOM TALK IN EFL CLASSES IN THE
KINGDOM OF SAUDI ARABIA**

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ABSTRACT

This study sought to examine the patterns of talk and other patterns that emerged in the classroom talk and aimed to investigate the level of questions, the syntactic structure of questions, and the initiated repairs used by teachers in classroom interaction. There were 10 English teachers from 5 colleges who were randomly selected as participants. The instrument used in the study was the recorded teaching observation of the teachers. The verbatim transcriptions of the video materials were used as the main instrument in examining the teachers' patterns of talk; their syntactic and cognitive level of questions; and the other-initiation repairs used by them to resolve the issues and to sustain the smooth flow of conversation. The study made use of the qualitative and quantitative approaches and revealed that teacher Initiation-Response-Feedback pattern was mostly used by teachers which signify the restricted adherence of teachers in a one cycle turn of asking questions by the teacher, providing response by student and giving feedback by the teacher. Whereas on the emerging patterns of talk, Initiation-Response pattern emerged which was predominantly used by teachers. This shows that there are deviations on the IRF pattern of eliciting verbal responses from the learners. Teachers used low level type of questions both in the cognitive level and syntactic structure of questions posted by teachers. This means that questions used were not intended to develop students' creativity. Most teachers preferred to use the hearing repair which is the least sensitive approach in resolving issues. This provided the teachers more opportunities to address the problems in the course of the conversation. The teachers have to accept the responsibility of providing solutions to the identified problems instead of delegating the responsibility to the students to solve the problem.

Keywords: *Classroom talk, EFL classes, Kingdom of Saudi Arabia*

INTRODUCTION

Talk serves as a channel to encompass widely the interrelated realms of interaction in the classroom. The initiation of talk between interactants starts if there are questions raised either by the teacher or the student. The pattern of talk varies depending on how the interactants start, sustain, or end a cycle of conversation.

In the EFL classroom discussion, the life of interaction depends on the quality of questions posted by the teacher and how the interactants address the intervening problems in the course of the conversation. These factors serve as initiators to facilitate the effectiveness of talk between the instructor and the students. This means that the quality of communication really matters to facilitate the smooth flow of transaction and negotiation of meaning in order to produce an effective result of interaction. According to Tofade, et al. (2013), embracing the ideal practices in teaching and using questions in teaching are among the most powerful tools and are sufficiently important in the development of excellent standards of instruction.

Thorns (2008); Hellermann (2005); Cazden (2001); Marshall, Smagorinsky, & Smith, (1995), emphasized that in the construction of social meaning in a classroom the context of teacher and students' talk is affected by a variety of factors. These might be the ones which would hold, produce and sustain the discourse. In this sense, it is important to see the different factors that may affect the flow of interaction between the teacher and students in order to uncover these aspects. It is significant to investigate the different patterns of talk and other emerging patterns, the cognitive and syntactic structures of questioning, and the initiated repairs used by teachers. These variables can be used as instruments to improve classroom teaching and learning.

To reveal the different patterns of talk in the classroom, the Sinclair and Coulthard's IRF model was used. The Bloom's Taxonomy of learning is also utilized to identify the teacher's syntactic structure of questioning and the cognitive level of questioning. Further, the other-initiation repair is employed to identify the teachers' preference of addressing and repairing identified problems in classroom interactions.

In a socio-cultural perspective, the introduction of English in the Kingdom of Saudi Arabia was introduced as early as nineteen twenties. According to Alshahrani (2016) and Al-Shabbi (1989), the English language was formally introduced to Saudi Arabian education by the United Kingdom and the United States of America with the purpose of speeding up its integration with other countries. This started when the General Directorate of Education was established in 1924. Additionally, Alshahrani (2016) cited the work of Baghdadi (1985), that English as a school subject was first introduced in Saudi elementary schools in 1924. However, it was believed by Al-Seghyer (2014) that English started to be taught in KSA only after five years, when the Directorate of Education was established in 1923. It was further cited by claim of Al-Johani (2009), that English was introduced in 1930s in the KSA after the discovery of oil. This was only then used in business transactions until such time that it was introduced into the syllabus for schools in 1950s. As explained by Mahboob and Elyas (2014); Al-Ghamdi and Al-Saadat (2002), the teaching of English was first introduced in school in KSA when the Scholarship Preparation School (SPS) was established in 1936 in Makkah. The purpose was to respond to the needs of the Saudis who travel and study in the Western countries where English is used as the medium of communication. This marks the “beginning of modern day high school education in the KSA”. However, the school was only limited to Saudis who were going abroad.

Alshahrani (2016) and Mahboob and Elyas (2014) cited that Al-Braik (2007) made clear that as early as 1978, the economic development of KSA was mostly contributed by foreign companies and most of the workers in almost all establishments like restaurants, hospitals, and shopping malls were expatriates. This resulted to the perceived value of English in the Saudi Arabian educational system which was one of its main objectives in the teaching of EFL in the country. It was necessary then to teach students to communicate satisfactorily in English in order to communicate with the expatriates in the kingdom. Also, it became more significant with the establishment of the Arabian American Oil Company in 1933. The company dominated the Saudi economy and influenced the framing of EFL instruction in the country. Its great influence was due to the fact that Saudis must learn the English language as a priority to communicate with foreign workers and managers. In addition, Rahman and Alhaisoni (2013) believed that

English is one of the major subjects in the system of education in Saudi Arabia. This was due to its significance as a language which is used in business and commerce, science and technology and others. These were only some of the substantial reasons why the study of English grew rapidly in the kingdom.

The researcher had observed teachers during classroom visits in five colleges of Al Ghad International Colleges for Applied Medical Sciences. The classroom scenarios were mostly teacher-centered rather than learner-centered. The students had limited time to be communicative and develop other skills that they are expected to gain. In a microscopic view, it was noticed that the utterances used by teachers played an important role in encouraging students to speak their ideas. It is believed that the use of effective and quality questions encourage the learners to express and elaborate their ideas which could result in a productive classroom talk. To shed light on the aforementioned observation and to provide research based solutions, the researcher became interested to determine the reasons behind the limited opportunities for student talk and the barriers that hinder the students to become more communicative during class discussions.

The purpose of this study is to generally examine the pattern of talk and other patterns that emerge in the classroom talk; examine the syntactic and cognitive types of questioning; and investigate the initiated repairs used by teachers in classroom interaction.

Statement of the Problem

This study generally aimed to describe and analyze the classroom talk of teacher - student in an EFL classroom interaction in five branches of Al-Ghad International Colleges for Applied Medical Sciences.

Specifically, it answers the following questions:

1. How frequent do the teachers use the patterns of talk as defined by Sinclair?
2. What emerging patterns of talk are observed in the classroom?
3. What levels of questions are asked during classroom interactions?
4. What are the types of syntactic structures in the questions asked

during the classroom interaction?

5. What repair actions do teachers use in classroom interactions?
6. What teacher-enhancement training program could be proposed to improve classroom interactions?

METHODOLOGY

Research Design

The descriptive multi-method was employed using the qualitative and quantitative approaches. The use of qualitative data gathering method allows greater spontaneity and employed a flexible, emergent but systematic process. Moreover, the textual data which was obtained were from the video materials. This means that the description and interpretation using the method produced findings that solved interaction problems and led to the establishment or development of new concepts in organizing classroom interaction after thorough analysis of the data.

In addition, to quantify and synthesize the data gathered the quantitative method was also used.

Participants of the Study

The participants of the study were ten (10) male English teachers in the following colleges: Riyadh College, Dammam College, Burraidah College, Jeddah College, and Abha College. The participants were randomly selected per branch regardless of the instructors' experience in teaching, educational attainment, nationality, and the students' IQ level.

Table 1.

Frequency and Percentage Distribution of Participants in terms of Nationality

Nationality	Frequency	Percentage
Egyptian	3	30.00
Filipino	1	10.00
Jordanian	5	50.00
Pakistani	1	10.00
Total	10	100.00

Table 1 shows the frequency and percentage distribution of participants in terms of nationality. Most of the participants were Jordanian with 5 (50%) participants. This is followed by the Egyptian with 3 (30%) of the total number of participants. Since Jordan and Egypt are geographically proximal with the Kingdom of Saudi Arabia and the recruitment process is faster and easier compared to the Philippines and Pakistan. Besides, Jordan, Egypt, and Saudi Arabia used the same Arabic language in daily conversation and in teaching some academic courses.

Instrumentation

The research instrument which was used in gathering the data was the recorded teaching observation of the teachers in five colleges. The video materials were transcribed by English teachers who have experienced and background in transcribing videos. The transcripts were then validated by their heads for their accuracy.

Data Gathering Procedure

The researcher undertook the following procedure in the conduct of the study:

1. The researcher sought permission from the Director of English Language Center for the use of the collected video materials.
2. After the approval was secured, the researcher sought consent from the randomly selected teachers for their videos to be used.

3. Then, the researcher hired three transcriptionists who have backgrounds in transcribing recorded discourse from the video file into a printed text for analysis and interpretation. The transcriptionists had the following assigned task. Two transcriptionists were tasked to transcribe the videos and the other one was assigned as the head of the team to validate the accuracy of the transcribed materials. To further validate the content of the transcribed text, the three transcriptionists exchanged video materials to validate the content of the scripts.
4. The patterns of utterances were identified per one complete cycle of talk. The cognitive levels of questioning and the syntactic structures of questioning were taken per question.
5. The researcher tabulated and made the appropriate treatment of data. The analysis and interpretation of the treated data commenced.

Data Analysis

The researcher utilized statistical methods to analyze and interpret the data obtained through the use of frequency and percentage distribution to describe the participants' discourse structure in terms of pattern of talk, emerging patterns of talk, syntactic structure of questioning, cognitive level of questioning, and initiated repair actions used by teachers.

RESULTS AND DISCUSSION

On the pattern of talk

Majority of the pattern of talk used by teachers on free exchanges were 60.61% IRF (Teacher Elicit) followed by 20.03% IRF (Check).

On the emerging patterns of talk

There were 57 identified emerging patterns. The dominant pattern in the classroom interaction was IR (Initiation-Response) in a T-Elicit exchange which is 63.34% of the 461 total number of exchanges, followed by 7.38% IR (Initiation-Response) pattern in Repeat exchange.

On the cognitive levels of questions

Most cognitive questions posted were 77.05% remembering questions, followed by 12.40% understanding questions; 6.35% evaluating questions; 2.83% analyzing questions; and 1.37% applying questions.

On the types of syntactic structure of questions

Majority of the syntactic structure of questions used by teachers were 55.57% display questions; followed by 26.37% convergent questions; 16.80% referential questions; and 1.27% divergent questions.

On other-initiation repairs

The teachers preferred to use hearing repair with 51.97% compared to understanding repair with 43.31% and acceptability repair with 4.72%.

CONCLUSION

Based on the summary of findings, the following conclusions were derived:

Majority of the teachers in the five colleges used IRF (Initiation-Response-Follow-up) pattern of exchanges in eliciting verbal response from the students during classroom interaction. While on the emerging patterns, IR (Initiation-Response) is the most used pattern of talk in eliciting students' responses.

The teachers' cognitive level and syntactic structure of questioning mostly focused on the use of low level questions which do not require critical thinking and inhibit the learners' creativity to practice and use the English language.

The teachers preferred to use hearing repair in addressing problems in classroom interaction that provided more opportunity for the teachers to address the problem in a least sensitive approach.

However, the teacher has to accept the responsibility to provide solutions to the identified problems instead of delegating them to the students.

RECOMMENDATIONS

Based on the aforementioned summary of findings and conclusions, the following recommendations are formulated:

For the Teachers to:

1. Initiate questions that facilitate open discussion and not merely eliciting single utterance from the students.
2. Design a planned negotiated interaction activity that necessitates higher order thinking skills.
3. Employ giving follow up questions to help and guide students particularly coping learners to produce the target language.
4. Plan and tailor activities that require higher order thinking skills but suited to students' level of learning in order to maximize classroom interaction.
5. Allow the learners to discover ways on repairing the problems encountered in classroom conversation.

For the English Language Center to:

6. Conduct seminar workshops to English teachers on teaching strategies and methodologies in the art of questioning, creating an interactive classroom, and repairing problems in classroom conversation.
7. Conduct similar studies with more participants in order to validate the results of the present study.

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**THE ACCOUNTING SERVICES OF THE DEPARTMENT OF SCIENCE
AND TECHNOLOGY REGION 2 AS TO THE IMPLEMENTATION
OF SMALL ENTERPRISE TECHNOLOGY UPGRADING
PROGRAM (SETUP)**

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ABSTRACT

Accounting and governance are important at the organizational level and image, because accounting governance strengthens the organization. It establishes the organization's reputation in the public disclosure data reliability and creates a competitive advantage in the business. This study seeks to assess the extent of implementation, degree of relevance, degree of reliability and timeliness of the accounting services in the implementation of Small Enterprise Technology Upgrading Program (SETUP). This study used the descriptive and quantitative analyses with the use of questionnaire and interview to get information on the assessment of the participants on the accounting services of DOST Region 02. It involved a total of one hundred eighty three (183) participants. The study revealed that the Accounting Services of the Department of Science and Technology Region 02 provided in their SETUP Program generally possess the hallmarks of quality from the assessment of both its internal and external users and clients. This is particularly true with respect to the extent of its implementation, degree of relevance, reliability and timeliness. The assessment of the quality of the Accounting Services is consistently done across its various users and clients with high rating of evaluation.

Keywords: *Accounting services, department of science and technology, small enterprise technology upgrading program (SETUP)*

INTRODUCTION

In today's modern and highly competitive business environment, the management's concern is to provide quality and timely information on products/services to customers. And since financial aspect is critical to the operation of the entire organization, accountants should become more aware of the importance of having one information system that will embrace all components of all transactions needed to deliver prompt service. An accounting system may either be manual or electronic. In manual accounting system, each transaction is entered manually in the journals and posted manually in the general ledgers. To obtain general ledger account balances and to prepare financial statements and other financial reports, manual computation is being made. In an electronic accounting system, a computer is used to process transaction data in disseminating information to interested parties.

The Department of Science and Technology (DOST) is the executive department of the Philippine government for the coordination of science and technology-related projects and to formulate policies and projects in the field of science and technology in support to national development. A program called Small Enterprise Technology Upgrading (SETUP) was established in 2002. SETUP is a nationwide strategy to encourage and assist micro, small and medium enterprises as well as private and government institutions to implement technological innovations in order to enhance their competitiveness and support the economic development especially in the countryside.

The program enables MSMEs to address their technological requirements and improve productivity through the infusion of appropriate technologies, human resource training, technical assistance and consultancy services, design and execution of functional packages and labels, assistance for compliance with regulatory and market standards including testing and the provision of assistance for technology acquisition.

SETUP focuses assistance on the following priority sectors: food processing, furniture, gifts, decors and handicrafts, agriculture/marine/aquaculture, metals & engineering and others (including ICT,

pharmaceuticals and health products).

The DOST Regional Office in Cagayan Valley has released an amount of P182M to 248 projects from 2002-2015. On food processing, there are 90 projects, 38 on furniture, 55 on horticulture/agriculture, 4 on gifts, decors & handicrafts, 15 on aquaculture, 40 on metals and 6 under ICT. SETUP assistance can be refunded within 3-5 years without interest. However, penalty and default charges shall be imposed for unpaid due amounts.

DOST Region 02 releases the fund assistance for the technology acquisition to the beneficiaries/customers after the evaluation and approval of a project proposal. The amount of assistance is based on the projected cash flow of the business and a Memorandum of Agreement between DOST and the beneficiary, duly signed and notarized is prepared.

The accounting section of DOST Region 02 for the implementation of SETUP provides the following services: processing of vouchers for the release of SETUP fund, recording the releases and collection of refunds, maintenance of records, review and certification of financial statements and reports, internal audit services, tax services, preparation of billing statements and preparation of monitoring reports. The accounting section performs these services that results in providing accounting information for the internal and external users.

The accounting section of the DOST Region 02 functions as internal control in the releases of funds and the collection of repayments for SETUP. It maintains records on the financial aspect and is responsible for providing financial reports to the internal and external users.

The implementation of the SETUP produced a number of difficulties as years passed by. Implementers have encountered difficulty in monitoring the aging of repayments from customers, difficulty in preparing reports needed by the central office, difficulty in monitoring the releases and collection of SETUP refunds and difficulty in making an analysis of SETUP funded projects. Likewise, SETUP customers are also hard up in monitoring their repayments because of delayed delivery of billing statements which are done manually by the

accounting section. Penalties and default charges are also computed manually thus SETUP individual ledgers are not updated on time and computational errors cannot be avoided.

The success of project implementation of government agencies contributes to the national economy. There is a need to evaluate the accounting practices and the value they add to the successes of these government agencies and what development should further be made to make the role of management be of high efficiency.

Statement of the Problem

The study sought to assess the DOST Accounting Services in the implementation of SETUP in Region 2.

Specifically, it aimed to answer the following:

1. What is the profile of the participants in terms of:
 - 1.1 age;
 - 1.2 educational attainment;
 - 1.3 position/designation;
 - 1.4 length of service; and
 - 1.5 role in the SETUP?
2. What is the extent of quality of the accounting services of DOST Region 02 with respect to:
 - 2.1 extent of implementation;
 - 2.2 degree of relevance;
 - 2.3 reliability; and
 - 2.4 timeliness?
3. Is there a significant difference on the participants' assessment on the extent of quality of the accounting services of DOST Region 02 when grouped according to profile variables?
4. What are the problems encountered by the internal and external users in the accounting services provided for the SETUP implementation?
5. What are the participants' suggestions to improve the accounting services of DOST Region 02 SETUP?
6. What innovative tools/strategies can be proposed for the improvement of these services?

METHODOLOGY

Research Design

This study used the descriptive and quantitative analyses with the use of questionnaires to get information on the assessment of the participants on the accounting services of DOST Region 02 . A guided interview was conducted to ask pertinent questions and to verify gathered information from the survey questionnaire.

Participants of the Study

This study involved a total of one hundred eighty three (183) participants. The participants were classified as internal and external. The internal participants are composed of the Provincial Science and Technology Directors and their SETUP Staff and the SETUP Coordinating Team. The Provincial Directors were the primary participants taking into consideration their need for accurate, reliable and timely accounting information in accomplishing monthly, quarterly and annual reports of accomplishments of SETUP customers.

The members of the DOST Region 02 SETUP Coordinating Team were likewise included as participants because of their significant role as facilitators in the region-wide implementation of the program. And, the external participants were SETUP Customers to ascertain which accounting practices are beneficial to them.

Table 1

Frequency and Percentage Distribution of the Participants

Type of Participants	Frequency	Percentage
Provincial Science & Technology Directors	5	2.00
Provincial SETUP Staff	10	4.00
SETUP Coordinating Team	4	1.00
SETUP Customers	248	93 .00
Total	267	100 .00

Instrumentation

The survey questionnaire and the personal interview were the primary data gathering instruments used in this study. Other pieces of information were obtained through secondary sources like theses, dissertations, researches, publications and articles.

The statements in the questionnaire were taken from the functions that are assigned to the accounting section as reflected in the Individual Performance Commitment Review (IPCR).

Data Gathering Procedure

For this study, the survey questionnaire was the primary data collection tool. The questionnaire consisted of a brief introduction and explanation of how to answer the questions. This is done with the intention of orienting them with the process of answering the questions so that participants are able to understand the process before commencing and be able to ask questions. The target participants of these questionnaires were the Provincial Science and Technology Directors, Provincial SETUP Staff, SETUP Coordinating Team and SETUP Customers in Region 2 who are directly affected by the program.

Data Analysis

The statistical tools that were used to analyze the data consisted of the following:

Frequency and Percentage Distribution. These were used to describe the profile of participants in terms of their age, educational attainment, position/designation and length of service.

Weighted Mean. This was used to determine the extent of implementation and the degree of relevance, reliability and timeliness of the DOST Region 02 accounting services in the implementation of SETUP.

Independent Sample t-test or One-Way Analysis of Variance. These were used to test for significant difference in the participants'

assessment on the extent of implementation and degree of relevance, reliability and timeliness of accounting services provided when grouped according to profile variables.

To interpret the mean responses of the participants, the following qualitative descriptions were used.

Mean Range	Qualitative Description
4.20 – 5.00	Very Great Extent
3.40 – 4.19	Great Extent
2.60 – 3.39	Moderate Extent
1.80 – 2.59	Little Extent
1.00 – 1.79	Very Little Extent

RESULTS AND DISCUSSION

Profile of the Participants

1. Age Range. Majority of the participants belong to age range 36 to 40 years.
2. Highest Educational Attainment. Majority of the participants are college graduates.
3. Position/Designation. Majority of the participants are owners of the SETUP projects.
4. Length of Service. Most of the participants had been in work service for 6 to 10 years.
5. Role. Most of the participants are customers of the DOST SETUP program

Extent of Quality of the Accounting Services of DOST Region 02

1. The Accounting Services of DOST Region 02 is implemented to a “Very Great Extent”.
2. The Accounting Services of DOST Region 02 is relevant to a “Very Great Extent”.
3. The Accounting Services of DOST Region 02 is reliable to a “Great Extent”.

4. The Accounting Services of DOST Region 02 is timely to a “Very Great Extent”.

Test for Significant Difference in the Extent of Quality of the Accounting Services of DOST Region 02 when Grouped According to Profile Variables

1. There is no significant difference in the extent of implementation, degree of relevance, degree of reliability and degree of timeliness of the Accounting Services of DOST Region 02 when grouped according to the participants’ age range.
2. There is no significant difference in the extent of implementation, degree of relevance, reliability and timeliness of the Accounting Services of DOST Region 02 when grouped according to the participants’ highest educational attainment. However, there is a significant difference in the participants’ assessment with respect to the extent of implementation of the DOST Accounting Services when participants are grouped according to their highest educational attainment.
3. There is no significant difference in the extent of implementation, degree of relevance, degree of reliability and degree of timeliness of the Accounting Services of DOST Region 02 when grouped according to the participants’ position or designation.
4. There is no significant difference in the extent of implementation, degree of relevance, degree of reliability and degree of timeliness of the Accounting Services of DOST Region 02 when grouped according to the participants’ length of service.
5. There is no significant difference in the extent of implementation, degree of relevance, reliability and timeliness of the Accounting Services of DOST Region 02 when grouped according to the participants’ SETUP role.

Problems Encountered by the Internal and External Users in the Accounting Services of DOST Region 02 for SETUP

External Users:

1. Delay in the receipt of billing statements.
2. Inaccurate computation of penalty and default charges.

3. Inaccurate details in the billing statements.

Internal Users:

1. Inaccurate balances of paid and unpaid SETUP projects.
2. Non-submission of monitoring reports.
3. Delayed submission of financial reports.
4. Delayed submission of schedules.

Suggestions to Improve the Accounting Services for SETUP Implementation

1. Send accurate billing statements regularly.
2. Submit monitoring and financial reports on time.
3. Check mathematical computation on the billing statement.
4. Prepare updated schedules on balances for easy monitoring and guidance of internal users.

Innovative Tools/Strategies to Improve the Accounting Services of DOST Region 02 in the Implementation of SETUP

1. Computerization of data/financial information.
2. Train accounting personnel to be more efficient in the use of technology.

CONCLUSION

In the light of the findings obtained, the following conclusions are reached:

The Accounting Services of the Department of Science and Technology Region 02 provided in their SETUP generally possess the hallmarks of quality from the assessment of both its internal and external users and clients. This is particularly true with respect to the extent of its implementation, degree of relevance, reliability and timeliness. The assessment of the quality of the Accounting Services is consistently assessed across its various users and clients with high rating of evaluation.

RECOMMENDATIONS

Based on the findings and conclusions reached, DOST Region 02's accounting services in the implementation of SETUP may be further enhanced by the following recommendations:

1. DOST may address the identified problems and come up with a solution to improve its accounting services.
2. DOST may consider to innovate a tool to be used by the accounting section to improve further its services in the implementation of SETUP.
3. DOST may consider sending accounting personnel for systems training.
4. DOST may introduce training programs to improve users' understanding of available accounting services.
5. The researcher recommends that a similar study be conducted to include other regions in order to affirm or validate the findings of this study.

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METACOGNITIVE AWARENESS AND ACADEMIC PERFORMANCE IN ENGLISH OF GRADE 7 STUDENTS

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ABSTRACT

In learning, metacognition is considered important as it is a strong predictor of a learner's academic success. Generally, students with good metacognitive skills demonstrate good academic performance compared with students with poor metacognition. Students with poor metacognition may benefit from metacognitive trainings to improve their metacognition and academic performance. Individual differences exist in metacognition and people with poor metacognition are deemed "incompetent" as they perform less relative to their peers (Kruger and Dunning, 1999). Metacognition enables students to be strategic in their learning by learning new information rather than focusing on studying information already learned. This study sought to determine the metacognitive awareness and academic performance in English of Grade 7 students of Cagayan National High School. It made use of descriptive-correlational research design utilizing the Metacognitive Awareness in Reading Questionnaire as research instrument. The participants of the study are the Grade 7 students of Cagayan National High School for the School Year 2014-2015. The study found that participants who have good academic performance generally use the bottom-up strategy. They understand the text that they are reading by dealing with the letters and words used in their reading materials. These students are able to acquire reading comprehension through getting the meaning of words. Furthermore, the participants who possess low academic performance prefer to use the top-down strategy.

Keywords: *Metacognitive awareness, academic performance in English, grade 7 students*

INTRODUCTION

People are placed in a society where demands and needs are complex. They have to possess intelligence, skills and talents in order to thrive in the competitive race of humanity. This is where education comes in. Through education, one can acquire learning and trainings which can help him hone his skills and enrich his knowledge which are necessary in order for him to give what the society demands. In relation to what one can gain from education, a learner must recognize his prime responsibility in his own learning. This implies his big role in the education process.

A learner must acquire learning skills and strategies in order for him to maximize his education. The use of appropriate and effective strategies is his weapon to experience academic success. In addition, a learner must be aware of his own learning skills for him to assess himself in terms of the impact of his learning skills and strategies in his studies and adjust them if they are not useful in his learning. These draw the line between successful learners and those who are not. Metacognition then plays an important role in the academic success of a learner.

Metacognition is generally defined as the activity of monitoring and controlling one's cognition. It can further be defined as what one knows about his/her cognitive processes and how one uses these processes in order to learn and remember (Ormrod, 2004). Another definition of metacognition is that, it is "one's knowledge concerning one's cognitive processes and products or anything related to them" (Flavell, 1976).

Metacognition is important in learning and is a strong predictor of academic success (Dunning, et al, 2003; Kruger and Dunning, 1999). Students with good metacognition demonstrate good academic performance compared to students with poor metacognition. Students with poor metacognition may benefit from metacognitive training to improve their metacognition and academic performance. Individual differences exist in metacognition and people with poor metacognition are deemed "incompetent" as they perform inadequately relative to their peers (Kruger and Dunning, 1999). Metacognition enables

students to be strategic in their learning by, for instance, learning new information rather than focusing on studying information already learned (Everson & Tobias, 1998).

One of the skills that a learner must possess is good reading. In addition, metacognition is a foundation for other reading comprehension strategies. It can then be drawn that metacognition is vital in the acquisition of good reading skills of a learner. People need to learn how to read well because it is very impossible to have a day without having to read something. When people look at their surroundings, there are several printed materials present which need to be read in order for them to grasp what they mean. The ability to comprehend these materials will allow them to gain knowledge, information and skills that are vital for them to become as competent individuals.

It is important to remember that the other learning areas, just like Mathematics and Science, are carefully planned to develop, mold, and produce learners who are knowledgeable and skillful. It is through reading where learners can augment their knowledge on these learning areas that are essential for their growth and development. These are the ways on how reading as a skill sets as an important factor in the success of the learners in school.

Gray (1960) said that reading is an interaction between the reader and the written language through which the reader attempts to reconstruct a message from the writer. Reading is also a sampling, selecting, predicting, comparing, and confirming activity in which the reader selects a sample of useful graphic cues based on what he sees and what he expects to see.

The goal of all reading instruction is to help students become expert readers so that they can achieve independence and can use literacy for lifelong learning and enjoyment. Learning to use strategies effectively is essential in constructing meaning. Readers who are not strategic often encounter difficulties in their reading (Pari, et al, 1991). Moreover, these early difficulties in reading may influence the way readers learn throughout the rest of their lives (Anderson, et al, 1985). The importance of having a good reading skill and effective reading

strategy should be emphasized in order to become an efficient learner. One must continue to practice the habit of reading for him to have a good reading ability.

The above-cited significance of employing reading strategies implies that one should be aware of his own reading strategies which are acquired through metacognition. With these concepts, the researcher conducted a study on the metacognitive awareness and the academic performance of Grade 7 students of Cagayan National High School.

Cagayan National High School, known as one of the best schools in the region, is comprised of learners with varied learning strategies. One of these learning strategies is how they comprehend texts that they read. In doing so, students use reading strategies in order to equip themselves with the knowledge they can derive from reading.

Moreover, Grade 7 students of Cagayan National High School are exposed in the different learning areas that enable them to achieve their maximum potential. One can possibly appreciate and understand these different learning areas when he is equipped with good reading skills. Thus, reading is vital in order not to be deprived with the gift of learning. Along with this skill, appropriate and effective strategies must be employed by the students to acquire learning which is necessary for their growth and development.

Statement of the Problem

This study aimed to determine the metacognitive awareness of Grade 7 students and their academic performance in English.

Specifically, the study aimed to answer the following questions:

1. What is the profile of the participants when grouped according to their academic classification?
2. What is the participants' level of academic performance in English?
3. Is there a significant difference in the academic performance of the participants in English when grouped according to academic classification?

4. What is the metacognitive awareness of the participants?
5. Is there a significant difference in the metacognitive awareness of the participants when grouped according to academic classification?
6. Is there a significant relationship between participants' metacognitive awareness and their academic performance in English?

METHODOLOGY

Research Design

The descriptive-correlational research design was utilized in the conduct of the study. It is appropriate in investigating the correlational analysis of the metacognitive awareness of the students and their academic performance.

Participants of the Study

The participants of the study are the Grade 7 students of Cagayan National High School for the School Year 2014-2015. Representation of participants is presented in Table 1.

Table 1

The Academic Classification, Number of Sections, Total Number of Students, Sample Size and Population per Section of the Participants

Academic Classification	Total Number of Students		Sample Size	
	f	%	f	%
Science Sections	229	16.58	65	15.15
Academic Sections 1-10	465	33.67	130	30.30
Academic Sections 11-25	633	45.84	180	41.96
Special Program in Sports	24	1.74	24	5.59
Special Program in the Arts	30	2.17	30	6.99
TOTAL	1,381	100	429	100

Instrumentation

A Metacognitive Awareness in Reading Questionnaire was used to determine the participants' metacognitive awareness. The questionnaire includes the use of bottom-up and top-down strategies. It contains twenty-nine items which consists of eight items from bottom-up strategy and twenty-one from top-down strategy.

Bottom-up strategy is where readers decode the linguistic features to comprehend the text while top-down strategy deals on how readers make use of their previous knowledge and their operational knowledge about how to approach texts to construct their meaning (Oranpattanachi, 2004).

All the items were adopted from the study Perceived Reading Strategies Used by Thai Pre-Engineering Students conducted by Pornpun Oranpattanachi except for the last two reading strategies which were from Carrell (1989).

The participants answered the questionnaire by rating their degree of frequency in using the strategies while reading an English text. The scales very often, often, sometimes, seldom and never were employed.

The validity of the questionnaire was checked through the two English teachers in the area of TEFL who affirmed that the items did measure the construct sensibly and acceptably. Its reliability coefficient is 0.81. In addition, the participants' mean grade from first to fourth grading in English was computed to identify their academic performance.

Data Gathering Procedure

The researcher asked permission from the principal of Cagayan National High School through a letter. After permission was granted, the researcher sought consent from the participants to ensure their voluntary participation to the study. After which, she personally administered the questionnaire on metacognitive awareness to the target participants.

In addition, the researcher also asked permission from the English Department Head and the English teachers of the participants to obtain the latter's grades from first to fourth quarter. When consent was given, the researcher collected the class records of the English teachers to determine the grades of the participants.

Data Analysis

Frequency, percentage, mean, Analysis of Variance (ANOVA) and Chi-Square test were utilized to treat and analyze the data gathered.

Frequency and Percentage. Participants' degree of frequency in using a reading strategy was measured through frequency count. This degree of frequency was further expressed in terms of percentage.

Mean. This was used to determine the academic performance of the participants in the four grading periods in English.

To interpret the academic performance of the participants, the given scale was used:

Table 2

Scale for Mean Grade for the Academic Performance of the Participants and their Descriptive Interpretation

Mean Grade	Descriptive Interpretation
90 and above	Advanced (A)
85-89	Proficient (P)
80-84	Approaching Proficiency (AP)
75-79	Developing (D)
74 and below	Beginning (B)

Analysis of Variance (ANOVA). This was used to identify whether a significant difference exists in the participants' academic performance in English when they are grouped in terms of their academic classifications. Tests of hypotheses were set at 0.05 level of significance.

RESULTS AND DISCUSSION

Profile of the Participants when Grouped According to Their Academic Classification

A total of 429 students served as the participants of the study. There are 180 or 41.96% of the participants are from the Academic Sections 11-25, 130 or 30.30% from the Academic Sections 1-10, 65 or 15.15% from the Science Sections, 30 or 6.99% from the Special Program in the Arts and 24 or 5.59% from the Special Program in Sports.

From the data, it is shown that majority of the participants belong to the Academic Sections 11-25 while the least number of participants came from the Special Program in Sports.

Participants' Level of Academic Performance in English

From the total of 429 or 100.00% participants, 20 or 4.66% participants are in the Advanced level, 122 or 28.44% participants are in the Proficient level, 232 or 54.08% participants are in the Approaching Proficiency level, and 55 or 12.82% participants are in the Developing level. The computed mean based on the grades of all the participants is 83.21 which is in the Approaching Proficiency level.

In addition, it can be gleaned on the data that the bulk of the participants are in the Approaching Proficiency level while the Advanced level got the lowest chunk.

Test for Significant Difference in the Academic Performance of the Participants in English when Grouped According to Academic Classification

The academic performance of the participants when grouped according to academic classification is significantly different from one another as to the computed probability value of less than 0.01.

Metacognitive Awareness of the Participants

In Science Sections, 36 or 55.38% of the participants employed the bottom-up, 28 or 43.08% preferred top-down and one or 1.54% applied the neutral strategy.

In Academic Sections 1-10, 65 or 50.00% of the participants used the bottom-up, 63 or 48.46% applied top-down and two or 1.54% employed the neutral strategy.

In Academic Sections 11-25, 68 or 37.78% participants utilized the bottom-up and 112 or 62.22% employed the top-down strategy.

In Special Program in Sports, 13 or 54.17% utilized the bottom-up, 10 or 41.67% preferred top-down and one or 4.16% used the neutral strategy.

In Special Program in the Arts, seven or 23.33% of the participants practiced the use of the bottom-up and 23 or 76.67% used the top-down.

Out of 429 participants, 189 or 44.06% employed the bottom-up, 236 or 55.01% used the top-down and four or 0.93% utilized both the bottom-up and top-down strategies.

Test for Significant difference in the Metacognitive Awareness of the Participants when Grouped According to Academic Classification

There is a significant difference in the metacognitive awareness used by the participants when grouped according to academic classification. The computed probability value of 0.005 is lesser than 0.05; hence, the null hypothesis was rejected.

Relationship between the Participants' Metacognitive Awareness and their Academic Performance in English

There is a significant relationship between the participants' metacognitive awareness and their academic performance in English. The computed probability value was 0.02 which is less than the 0.05

level of significance; hence, the null hypothesis was rejected.

CONCLUSION

Based on the summary of findings, the following conclusions were derived:

The participants use reading strategies in order to help them comprehend the texts that they are reading. The metacognitive awareness of the participants was measured by their use of the bottom-up strategy, top-down strategy or the combination of both strategies as their reading strategy.

The participants who have good academic performance generally use the bottom-up strategy. They understand the texts that they are reading by dealing with the letters and words used in their reading materials. These students are able to acquire reading comprehension through getting the meaning of words. The participants who have low academic performance prefer to use the top-down strategy. They try to comprehend the reading materials based on their prior knowledge and expectations.

The result revealed that the participants who have good academic performance are aware of how they comprehend reading texts by employing the bottom-up strategy such as recognizing words and their meaning. On the other hand, participants who have low academic performance are aware that they employ skills that fall under the top-down strategy.

RECOMMENDATIONS

Based on the summary of findings and conclusions, the following recommendations were drawn:

1. Teachers should serve as guides in allowing students to reflect on their metacognition.
2. Teachers should give interesting and appropriate reading exercises to the students for the latter to practice, develop and refine their reading strategies.

3. Future researchers can conduct further studies using the same questionnaire but must allow their participants to read the text first to have actual determination of their reading strategies.
4. Future researchers can use a questionnaire that consists not only of bottom-up and top-down strategies.

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GUIDELINES FOR STUDENT JOURNAL PUBLICATION

PREREQUISITES

- Journal Article must be checked thoroughly by the author's Thesis/Dissertation Adviser and duly endorsed by the Graduate School Dean prior to submission to RPO.
- A final hard copy and a MS Word soft copy (CD-R) are submitted to RPO.
- RPO will check the submitted copy using the **GRAMMARLY SOFTWARE**.
- Number of pages: 8 to 20 pages (from Title Page to References)
- Font Type: Calibri
- Font Size: 11

PAPER STRUCTURE AND CONTENT

TITLE

- Clearly stated and to the point.
- Catchy, interesting and relevant.
- Able to stand alone to convey the importance of data; communicates contents.
- Not more than 20 words.
- ALL CAPS
- Written in "inverted" pyramid style.

ABSTRACT

- Contains Summary of INTRODUCTION, METHOD, RESULTS and DISCUSSION (IMRaD)
- Summary of information of what the paper contains.
- Mini-version of the Thesis/Dissertation.
- Also called Executive Summary.
- One-paragraph of 100 to 250 words (300 words - for qualitative research, allowable).
- Indented, 1 tab - First line.
- Single-spaced (Body of **ABSTRACT**).

Format of ABSTRACT

- Title of Research (ALL CAPS), bold, in "inverted pyramid", single-spaced (20 words or less)
- 2 spaces below Title: Name of Researcher/s, bold, UPPER CASE.
- Below researcher's name: Degree/s obtained, lower case, italicized.
- Between name of author and degree obtained, no space.
- 2 spaces below degree obtained, then the name of Adviser (UPPER CASE) with Title: Dr., Engr., Mr., Ms., etc, before Adviser's name.
- 2 spaces below Adviser's name: **ABSTRACT** (UPPER CASE, italicized, centered).

- 2 spaces below **ABSTRACT**: one-paragraph body, with first line indented.
- Below Abstract body, 1 space, then type bold line across the page.
- 2 spaces below the line, then write **Five (5) Keywords**, with no indentation.
- After the **5 Keywords**, no other writings should appear on the **ABSTRACT** page.

INTRODUCTION

- Gives the setting/scene/background.
- Describes the problem.
- Relates to other works done for the past 5 years.
- Summarizes the structure of the paper.

Figures and Tables (Only minimal number of tables will be included, only the important ones)

Tables

- Summarized data.
- Main points described in text.

Figures

- Snapshots.
- Conceptual diagrams.
- Instructive and adequately labelled/titled.

METHODOLOGY

- Research Design
- Participants
- Instruments/Tools
- Data Analysis
- Ethics Approval

RESULTS AND DISCUSSION

- Reports the findings objectively.
- Salient findings must follow discussions that would contain interpretations or implications, especially with respect to the original hypothesis.
- The researcher is free to examine, interpret and qualify the results, and draw inferences from them.

References

- Follow the American Psychological Association (APA) Format.
- Make just one general listing for all references cited; no need to classify them.
- Alphabetically arrange all entries regardless of classifications.

PUBLISHABLE JOURNAL FORMAT

For publishable research, the researcher should follow the prescribed format shown below.

TITLE

ABSTRACT

INTRODUCTION

Conceptual Framework
Statement of the Problem

METHODOLOGY

Research Design
Participants of the Study
Instrumentation
Data Gathering Procedure
Data Analysis

RESULTS AND DISCUSSION

CONCLUSION

RECOMMENDATIONS

References

HOW TO STATE THE RECOMMENDATIONS

Introductory statement of the Recommendations:

Based on the findings and conclusion of the study, the following recommendations are derived:/are offered:/are drawn: (Use any one of the 3 endings).

Samples (with Target-Implementers). (Just made-up SAMPLES; no particular schools are alluded to).

- The school may consider conducting benchmarking activities with other institutions/agencies for its administrators, Faculty, and personnel to enhance their administrative, teaching, and technical skills.
- The administration may institute measures to solve the problem of faculty in-breeding.
- The faculty are strongly encouraged to speak in English in the campus, inside and outside the classroom to serve as models for Speak-English Policy of the school.
- The Registrar's Office may conduct a study on the causes of drop-outs, incomplete grades/projects, failures (for the past three/five years) as basis for instituting appropriate intervention program to address such academic concerns.
- The HR Office may look into the periodic updating of the different School Manual/Handbooks to attune to the needs of the time.
- The Community Extension Services Program may undertake an impact study on the effects of the extension services done for each adopted Barangay for better services towards uplifting the life of the poor.
- The Alumni Office may consider the profiling of Alumni.
- The Offices of the Registrar, Finance, Library and Book Store may adopt a "No-Noon-Break" Policy for availability and convenience.
- The Student Services unit may consider revisiting the Student Handbook, with focus on restorative justice, to better address the disciplinary concerns of the students.
- The Research Center may undertake a study focusing on the actual implementation aspect of the recommendations made by the different researches (for the past three or five years), as basis for instituting practical measures towards enforcing the utilization dimension of research.
- This study may be replicated or adopted by other schools on areas applicable to them.

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