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TABLE OF CONTENTS

TABLE OF CONTENTS

ENHANCEMENT OF THE BACHELOR OF SCIENCE IN HOTEL AND RESTAURANT MANAGEMENT PROGRAM: A FOCUS ON GRADUATE TRACER ANALYSIS

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ABSTRACT

Philippine education is strongly viewed as a pillar of national development and the primary avenue for social and economic mobility. The researcher conducted a tracer study of Bachelor of Science in Hospitality Management graduates of Cavite State University - CCAT Campus from 2016 to 2018 that would springboard the improvement processes of curriculum development, offerings, and service delivery. The study utilized descriptive-correlational research design in the conduct of the study. Findings showed that the respondents are in transitional age, mostly male, graduated year 2018, and majority under rank and file position. Moreover, the basic common competency of front office, food and beverage and housekeeping subjects in terms of skills, knowledge and attitude are highly competent and highly useful while in the core competency, food and beverage is highly competent and highly useful in terms of knowledge and skills. Considerably, housekeeping and front office resulted to competent level and highly useful. Furthermore age, gender and year graduated have significant relationship with competencies and curriculum offered. The study recommended the inclusion of the findings of this study for the improvement of the curriculum which was addressed to academic council, department of management studies, faculty members, and industry partners for crafting of highly competent and industry-based curriculum.

INTRODUCTION

University plays an important role in the development of human capital-through provision of learning skills that can respond to the needs of the industry (Acosta and Clemente, 2010). The university through various efforts provide mechanism to become effective instruments for learning. Curriculum is the instrument of changing the education. It is a step-by-step process used to create positive improvement in the courses offered by the university. The world changes every day and have new discoveries, the innovative teaching techniques and strategies are devised in order to improve the learning of the students. As a result, the institution has to have plans in place to acknowledge the changing and implementation of the curriculum.

Philippine education is strongly viewed as a pillar of national development and the primary avenue for social and economic mobility. It has undergone several stages of development from the pre-spanish time up to present. It is handled by three government organizations namely the Department of Education, The Commission on Higher Education and the Technical Education and Skills and Development Authority TESDA. These three government agencies work hand-in-hand to achieve the quality education of the Philippines. The Cavite State University envision the same perspective, aiming to become a premier university in the province. It strives to offer program that can contribute to the general welfare and productivity of its clienteles (www.cvsu.edu.ph retrieved February 2020).

The Cavite College of Arts and Trades

(CCAT) was established by Republic Act 5966 authored by Cong. Justiano S. Montano and was approved on June 21, 1969, as National College of Arts and Trades primarily to provide higher technological, professional, occupational and vocational education. Thirty years after the Cavite College of Arts and Trades (CCAT) was founded in 1970, it was integrated with the Cavite State University in 2001 through the CHED Memo No. 27, S 2000 that made it The Cavite State University-Rosario Campus now CCAT Campus. Originally CCAT was established by virtue of Republic Act NO. 5966 as Cavite College of Arts and Trades primarily to provide higher technological, professional, occupational, and vocational education. It was inaugurated on August 8, 1970; thereafter, classes started on August 1970 with 27 students of the two-year Trade Technical Education. CCAT which is known as the Cavite State University CCAT Campus had offered courses such as BSEE, BSME, BSIE, BSHM, BSBM, CCAT Campus increased its enrollment from 1, 612 in A.Y. 2000- 2001 to 3987 according to the Registrar Office in the academic year 2019- 2020. In relation to this, the Hospitality Management Program of Cavite State University- CCAT Campus started the two year certificate courses in food and beverage preparation and services through DECS Order No. 56, Series 0f 1987. This course prepared the students in the various works in the food industry. The training equipped with the rigid knowledge, skill and attitude of unskilled food service personnel. After finishing the two year Food and Beverage Preparation and Services courses, students who enrich themselves with more competence in the Food and Beverage Industry Operation and Management will have undergone another year of training. At this level of training, the students were given the actual training experience in supervisory and managerial work. Another certificate is given after completion of the course, certificate in Hotel and Restaurant Servicing and with a credit of 48 units.

In 1992, in accordance with the provision of Republic Act No. 7722, otherwise known as the Higher Education Act of 1994 and by the virtue of Resolution NO. R 214-97, CHED order No. 30 Series of 1997 of commission, the Cavite College of Arts and Trades, Rosario, Cavite was granted the authority to offer "Bachelor of Science in Hotel and Restaurant Management (BSHRM) now Hospitality Management (BSHM). The said program provide the hospitality industry with such courses Front Office Operation, Housekeeping Food and Beverage and Event Management. The

Cavite State University persevere and serious to deliver continues quality education toward nurturing of university's tenets and achievement of mission and vision.

Thus, the researcher aimed to conduct a tracer study of the Bachelor of Science in Hospitality Management Graduates from 2016-2018 to provide a platform to identify the competencies of curriculum in the relation to the industry needs. Moreover, the conduct of this study springboard the improvement processes of curriculum development, offering and delivery and finally, augment the university's vision of producing morally upright and globally competitive individuals.

OBJECTIVES

This study aimed to assess the competencies of the graduates the Hospitality Management of Cavite State University–CCAT Campus 2016-2018 and use it as the basis for curriculum enhancement.
 Specifically, the study aimed to:
1. determine the socio-demographic profile of Hotel and Restaurant Management Graduates of Cavite State University CCAT Campus 2016-2018 in terms of:
   1.1. age;
   1.2. sex;
   1.3. year graduated;
   1.4. current Job and position;
   1.5. length of service; and
   1.6. national competency.
2. determine the perceived competencies in front office, food and beverage and housekeeping from the existing curriculum offered by Cavite State University-CCAT Campus in terms of :
   2.1 knowledge;
   2.2. skill; and
   2.3 attitude.
3. determine the perceived significance of graduates in their learned competencies in the university towards their career.
4. identify overall assessment of graduates in curriculum.
5. propose possible rooms for enhancement of Hospitality Management subject in food and beverage, front office and housekeeping.

REVIEW OF RELATED LITERATURE

Curriculum refers to the academic content taught in the university in specific programs. Depending on how broadly educators employ the term curriculum, sometimes it refers to knowledge and skills that is expected to be learned by the student. It includes intended outcomes, topic, learning activities and most specially the assessment/evaluation or the outcome to evaluate the students learning. In many cases, specially in the university, the teachers develop their own curricula, for refining and improving them over the years. In some cases, university purchase comprehensive multigrade curriculum packages in particular subjects like mathematics. Generally speaking, curriculum takes many different forms. In this context it is important to note that curriculum is a deep and sophisticated understanding of an academic discipline and the most effective strategies for learning acquisition (Young, 2014). The curriculum development process can be informed through the help of stakeholders such as employers, academics and the graduates about the skills attributes required by various professions. Moreover Tran (2016) cited that identifying required skills is important in higher education to ensure that the curriculum remains in the current trends. Ina addition curriculum will help to become updated in the trends of hospitality and tourism industry. Based on the employment in the tourism industry (Sanchez, 2020) 5. 22 million are working in Tourism industry last 2016 and 5. 27 million last 2017 and 5.37 million last 2018, proving that the tourism industry continuously developing and growing.

These ideas pushed the researcher to conduct a tracer study of the Bachelor of Science in Hospitality Management Graduates from 2016 to 2018 to provide a platform to identify the competencies of curriculum in the relation to the industry needs. Moreover, the conduct of this study springboard the improvement processes of curriculum development, offering and delivery and finally, augment the university's vision of producing morally upright and globally competitive individuals.

METHODOLOGY

Research Design

This study utilized a descriptive research design. Descriptive research involves the gathering data and then organizes tabulates, depicts and describes the data collection. The descriptive function of research is heavily dependent on the instrumentation for measurement and observation. The methods of collecting data for descriptive research can be employed singly or in various combination, depending on the research question at hand. Some of the data collection methods applied to questions within the realm of descriptive research includes survey, interviews observations and portfolio within the nature of the present study descriptive research was employed.

Research Instrument

The researcher utilized survey questionnaires, social networking site, particularly Facebook, Messenger and personal interviews were conducted to include profile of the respondents, and other descriptive and inferential data for this study. The study used survey questionnaires to gather the data for the study. The questionnaire is divided into three parts. The first part consists of general information of the respondents, the second part were questions for rating of skills, knowledge and attitude based on significance and competencies learned from the university curriculum and the third one is recommendation for the curriculum.

Participants of the Study

The researcher employed total enumeration (54) of graduates of Bachelor of Science in Hotel and Restaurant Management A.Y. 2016- 2018 from the Registrar's Office.

Data Gathering Procedures

The researcher used the list of enrollees of Bachelor of Science in Hospitality Management students from the year 2016 to 2018 and the list of graduates of Bachelor of Science in Hotel and Restaurant, Management (BSHRM) at the Registrar's Office of Cavite State University-CCAT Campus. The researcher obtained authorization from the Research Adviser, Statistician, and the Dean of the Graduate school. Thereafter, permission to conduct a survey was obtained for online and personal interview due to pandemic. The total respondents were 54. The data were collected between February to August 2020. Each participant was assured of the confidentiality of their responses. Each set of questionnaire included cover letter explaining the purpose of the research. The researcher met and visited some of the graduates and asked the employer's permission to conduct an interview. Also, the researcher used the online platform such as Facebook and Messenger and Google form to conduct the survey.

Collection of Data

The researcher conducted survey, through online using google form and personal interviews through phone calls and google meet links in Cavite where in researcher had little conversation with the respondents. Lastly, the researcher tabulated and interpreted the gathered information.

Statistical Treatment of Data

After the retrieval of the research questionnaire gathered data were tabulated and interpreted by the researcher. The data gathered was interpreted using the frequency count and percentage.

Formula: $P = \dfrac{f}{N} \times 100\%$

Where:
P = Percentage
f = frequency
n = sample size

Spearman Rank correlation was utilized through the use of Statistical Package for Social Science (SPSS) in determining the relationship of competencies and curriculum offered as well as demographic profile of the respondents and competencies.

$$p = 1 - \frac{6\sum d_t^2}{n(n^2 - 1)}$$

Where:
p = Spearman rank correlation
d = the difference between the ranks

FINDINGS

Table 1. Profile of the Respondents According to Age

Age	Frequency	Percentage
20	2	3.7
21	8	14.8
22	11	20.4
23	12	22.2
24	5	9.3
25	4	7.4
27	3	5.6
28	4	2
29	2	3.7
30	2	3.7
31	1	1.9
Total	**54**	**100**

Table 1 shows the age of the respondents. Based on the table most of the respondents were age of 22 with the percentage of 22 %. The least

is 31 with the percentage of 1.90 %. Most of the respondents were twenty years old. Most of the respondents were from the Generation Y (Millennial). According to Kane (2019) millennial are described techy- savvy who grew up with technology and they rely on to perform their jobs better. They are armed with smartphones, laptops and other gadgets. In addition, they communicate with emails, text messaging and whatever new social media platform. They also have high exceptions of their employers and tend to seek new challenges at work and aren't afraid to question authority.

Table 2. Profile of the Respondents According to Sex

Sex	Frequency	Percentage
Male	34	68
Female	20	32
Total	**54**	**100**

Table 2 shows that the respondents were dominated by male with the total of 68 % and female with 32%. This implies that most of the male are choosing Hotel and Restaurant Management than female. Based on the Registrar Office report, every year most of the enrollee of Hospitality Management are dominated by male. Based on Philippine Statistics Authority (2019) more males are employed than females. Three in every five (61. 3%) of the estimated 41.4 million employed person in January 2019 were males and 38.7 percent are female. The largest number of employed persons were in the age bracket of 25-34 years with 27.5 percent of the total employed. 35-44 comprised the second largest group while the 45 to 54 age group made up third largest group at 18.7%. It indicates that it is the reason why most males choose to study and work in Hospitality Management since most of the industry choose to hire male than female or this implies that there is large population of male than female.

Table 3. Profile of the Respondents According to Year Graduated

Year Graduated	Frequency	Percentage
2016	17	31.5
2017	14	25
2018	23	42
Total	**54**	**100**

Table 3 shows the frequency distribution and percentage summary of graduates S.Y 2016-2018. 31.50% of them were graduates of year 2016, 25 % of them were graduates of year 2017, 42% were graduates of year 2018. Most of the respondents were graduates of year 2018.This also im-

plied that most of the respondents were able to be employed after they graduated. This also implied that every year the employment of Tourism and Hospitality continuously increasing. Based on the employment in the tourism Industry, (Sanchez, 2020), 5. 22 million are working in Tourism Industry last 2016, and 5.27million last 2017 and 5.37 million last 2018.

Table 4. Profile of the Respondents According to Current position

Current Position	Frequency	Percentage
Rank and File	42	77.8
Supervisory	12	22.2
Managerial	0	0
Total	**54**	**100**

Table 4 shows the current position of the graduates School Year 2016-2018. 77. 80% of them are regular members and 22. 20 % of them are supervisory. Most of the respondents were starting in new positions. It can be observed that most of the respondents were working as rank-and-file employees and very little percentage of graduates were working as part of the middle management and zero in top management. This also showed that most of the respondents were fresh graduates sought entry level position right after graduation. Healthfield (2016) cited that entry level positions enables newly graduate to acquire experience and receive remuneration out of it.

Table 5. Profile of the Respondents According to Length of Service.

Length of Service	Frequency	Percentage
Less than a year	28	51.9
One to two years	17	31.5
More than two – three years	9	31.5
Total	**54**	**100**

Table 5 shows the length of service of the respondents 51.90% of them are in the service in less than a year, 31.50% of them are one - two years in service and 16.70% more than two to three years. Most of the respondents were new in the industry. This also indicated that most of the respondents were able to be employed after they graduate. It also shows that there were increase of employees working in hospitality industry. Based on the employment in the Tourism Industry, (Sanchez, 2020),5. 22 million are working in Tourism Industry last 2016, and 5.27 million last 2017 and 5.37 million last 2018.

Table 6. Profile of the Respondents According to Type of National Competencies

National Competency	Frequency	Percentage
Front office	3	56
Food and beverage	9	16.7
Housekeeping	0	0
None	42	77.8
Total	**54**	**100**

Table 6 shows most of the graduates of S.Y 2016-2018 have no National Competencies with 77.80%. 5.60 % of them have national competency in Front Office and

16.70 % of them have National Competency in Food and Beverage and 0 percent for the housekeeping. This is because the school is not requiring the students to get certificate before they graduate. However, in the handbook of Asean in Mutual Recognition (2018) cited that they agreed to update tourism education by the use of standard competency and certification. This handbook encourages the members of ASEAN to promote certification to their students both academic and vocational yet in this study it shows that the school need to encourage more of the students to get certification on or before graduation.

Table 7. Summary basic and common competency of Front Office, Food and Beverage and Housekeeping based on competency

Category	Grand Mean	Descriptive Value
Skills	4.24	Highly Competent
Knowledge	4.34	Highly Competent
Attitude	4.41	Highly Competent

Table 7 shows the basic and common competency of Front office, Food and Beverage and Housekeeping are highly competent. This indicates the strong agreement of the participants for high level of competency given by the school curriculum for the students. In addition attitude resulted highest grand mean which means the participants agreed they perceived highest competencies in attitude.

Table 8. Summary basic and common competency of Front Office, Food and Beverage and Housekeeping based on usefulness

Category	Grand Mean	Descriptive Value
Skills	4.38	Highly useful
Knowledge	4.37	Highly useful
Attitude	4.51	Highly useful

Table 8 reveals the basic and common competency of Front office, Food and Beverage and Housekeeping are highly useful. It implies that they highly adopt the culture in school environment that promotes an atmosphere of good relationship in addition this competencies were very helpful in their career/ workplace. The over all variables of attitude is one of the requirements in hospitality industry since it helps to achieve the goal easily. Team environment is the setting in the workplace that's focuses on everyone working together (Wong, 2020). Good customer service starts with the team that is behind it. If the culture is healthy, everyone is working harmoniously, having a shared goal and understanding and accepting each preference, will help the team to achieve and have an effective customer service.

Table 9. Summary of core competency of Front Office, Food and Beverage and Housekeeping based on skills competency

Category	Grand Mean	Descriptive Value
Front Office	3.88	Competent
Food and Beverage	4.61	Highly Competent
Housekeeping	4.04	Competent

Table 9 shows the core competency of Front Office and Housekeeping and Housekeeping based on skills are competent while the Food and Beverage are highly competent. Based on the respondents assessment, the instructors needs to improve the core competency of both subjects namely Housekeeping and Front office while majority of the graduates are agreed that the Department of Hospitality management provide highly competencies in Food and Beverage subject.

Table 10. Summary of core competency of Front Office, Food and Beverage and Housekeeping based on knowledge competency.

Category	Grand Mean	Descriptive Value
Front Office	4.07	Competent
Food and Beverage	4.61	Highly Competent
Housekeeping	4.16	Competent

Table 10 shows the core competency of Front Office and Housekeeping and Housekeeping based on knowledge are competent while the Food and Beverage are highly competent. Based on the respondents assessment, they receive competent level of knowledge in both subjects namely Housekeeping and Front office while majority of the graduates are agreed that the Department of

Hospitality management provide highly competencies of knowledge in Food and Beverage subjects.

Table 11. Summary of core competency of Front Office, Food and Beverage and Housekeeping based on skills usefulness

Category	Grand Mean	Descriptive Value
Front Office	4.29	Highly Useful
Food and Beverage	4.68	Highly Useful
Housekeeping	4.25	Highly Useful

Table 11 reveals that the core competency of Front office, Food and Beverage and Housekeeping are highly useful in their workplace. With this result it shows that the core competencies of three subjects are need to improve since it is highly useful in the industry.

Table 12. Summary of core competency of Front Office, Food and Beverage and Housekeeping based on knowledge usefulness

Category	Grand Mean	Descriptive Value
Front Office	4.46	Highly Useful
Food and Beverage	4.62	Highly Useful
Housekeeping	4.20	Highly Useful

Table 12 shows that the core competency of Front office, Food and Beverage and Housekeeping based on knowledge are highly useful, This implies that knowledge are also helpful in the department of Front Office, Housekeeping and Food and Beverage.

Table 13. Summary of Correlation of knowledge competency and usefulness

Category	General Significance (p-value, crit < 0.05)	Null Hypothesis
participate in workplace communication.	significant	reject
work team environment.	significant	reject
practicing career professionalism	significant	reject
practice occupational health and safety	significant	reject
developing and updating industry knowledge	significant	reject
observing workplace and hygiene	significant	reject
performing computer operations	insignificant	accept
performing workplace and safety practices	significant	reject
effective customer service	insignificant	accept

Table 13 shows the correlation of skills usefulness to perceived competencies resulted that most of the categories are significant except performing computer and effective customer service.

This implies that most of the graduates agreed that these two factors has no significant relationship between perceived competency and usefulness in their workplace. This null hypotheses were rejected among these variables.

Table 14. Summary of Correlation in perceived skill competency and usefulness

Category	General Significance (p-value, crit < 0.05)	Null Hypothesis
competency participate in workplace communication.	significant	reject
competency in work team environment.	significant	reject
competencies in practicing career professionalism	significant	reject
practice occupational health and safety	significant	reject
developing and updating industry knowledge	significant	reject
observing workplace and hygiene	significant	reject
performing computer operations	significant	reject
performing workplace and safety practices	significant	reject
effective customer service	significant	reject

Table 14 shows the correlation of knowledge usefulness to perceived competencies resulted all categories are significant meaning there is significant relationship between the knowledge usefulness and competencies provided by the department. This null hypotheses were rejected.

Table 15. Summary of correlation in perceived attitude competency and usefulness

Category	General Significance (p-value, crit < 0.05)	Null Hypothesis
competency participate in workplace communication.	significant	reject
competency in work team environment.	significant	reject
competencies in practicing career professionalism	significant	reject
practice occupational health and safety	significant	reject
developing and updating industry knowledge	significant	reject
observing workplace and hygiene	significant	reject
performing computer operations	significant	reject
performing workplace and safety practices	significant	reject
effective customer service	significant	reject

Table 15 shows the summary of correlation in attitude usefulness to perceived competencies it means there is significant relationship between the usefulness and competency perceived in university. This null hypotheses were rejected.

CONCLUSION

The study revealed that most of the graduates were dominated by male, and most of them started their position as rank and file. The study also revealed most of the graduate have no certificate in National Competency despite the recommendation of Mutual Recognition Association. However, based on the interview of the researcher, most of the graduates say that this is not a requirement of the hotel to hire an employee. They are more interested on the experience. The study showed that the curriculum in the basic and common competency is highly competent and highly useful; however, when it comes to the core competency, two areas are competent, the Front Office and Housekeeping while Food Beverage is highly competent and all of the areas are highly useful. The study also showed that one of the strengths of the university curriculum is the Food and Beverage subject for the reason most of the graduates are working in Food and Beverage Department. These are the benefits of gathering different events in university since the Hospitality Department is concerned when it comes to set up and food preparation. The students had rigid training in food and beverage. This study also revealed why most of the graduates are not working in Front Office Department since they are intimidated when it comes to communication and lack in computer literacy. In addition, the researcher found out that only 15 were working in the hotel as Front Office personnel since they were not computer literate and there is no system being used in this subject. There were things that needed to be improved improve in Front Office and Housekeeping subject such as skills and edge in performing in computer operations, develop and update knowledge in industry, effective in communication workplace, butler service and valet service.

The study revealed the relationship between the usefulness and perceived competencies in the university towards their career. The study results showed that most of the categories were significant which means the respondents agreed on the importance of learned competencies in the university toward their work; however, there were many areas that were insignificant which means the respondents cannot see the usefulness of some areas in their workplace. It implies that they do not see the importance of the topics in their career such as performing computer operations, practicing occupational health and safety procedures, observing workplace and hygiene proce-

dures, practicing career professionalism and providing effective customer service. Here the university, with the help of the instructors, need to revisit the syllabus and improve their strategies in order to see the importance of each area. In addition, this study revealed the weaknesses of the school based on the interview of the researcher with the graduates. They recommended for additional training and development in relation to their course and exposure of the students to to hospitality industry since the students were not allowed for the off-campus activities like educational tours.

The results of the study showed that the university should focus on upgrading the trends in the industry since, most of the graduates do not fully appreciate technology . Based on the survey most of the graduates were not acknowledge the usefulness of computer and the trends in hospitality industry, but on the other hand, there were possibilities that the industry as not the one who embrace the change specially in upgrading the system or the technologies.

RECOMMENDATIONS

Based on the findings of the study, the researcher recommends the following;

- For the Front office additional topics such as night audit, Microsoft software, a system used in Front Office Department that help the students to become knowledgeable and appreciate the importance of computer operations, the university should invest for the computer software used in the Front Office. For Food and Beverage invest for the tools and equipment used in the Department in order to become familiarize with the trends use in Food and Beverage Department. Finally for the House keeping refocus on the topics that they are not highly proficient such as performing computer operations, valet and butler service, occupational health safety and procedures and hygiene procedure. The researcher also recommend to invest for the tools and equipment that are use in the hotel for housekeeping purposes.
- For the Department of Management Studies. It is suggested that additional subject like, special topic in Hospitality Management that focus on seminars training and development to enhance the personal and professional growth of the instructor professors as well as the students become knowledgeable about the trends and development of the Hospitality Industry.
- For the Instructor or Professor. The instructors or professors owe to revisit the subjects handle and widen their topics, explain the importance and relationship of each subject from minor to major subjects, refocus on the topics that they are not highly proficient in such as performing computer operations, valet and butler service, occupational health safety and procedures and hygiene procedure. Requiring the students to get National Certificate NCII and NCIII in the subject like Front Office, Food and Beverage Bread and Pastry, Housekeeping to strengthen the competency of graduates and in order to provide more opportunity for university should support and approved educational tour yearly, if possible, to expose the hospitality students in the field of hotel and restaurant and other fields of hospitality industry. Intensify in-house training, competitions for skills development, join inter school and industry sponsored completion to improve teamwork and collaboration and strengthen the academic self-concept. Invest for the computer software use in the front office and other tools and equipment used in the kitchen, food and beverage and housekeeping subjects for the students, to introduce and become competitive and knowledgeable in the uses and functions of the tools and equipment use in the industry. Strengthen school and industry linkages and become strict in allowing the students in their On-the- Job Training in three-to-five-star hotels only. This can provide venue for the students for technology and transfer. Keep updated with the trends in Hospitality Industry;
- For the Employer. Have yearly meetings with the school officials regarding the curriculum gap in order to enhance the performance and curriculum of the university; and
- For the Future Researchers. Since the study is very limited only an average number of graduates of very recent years using descriptive quantitative method, the researcher encourage more research to be conducted in a wider scope which may also include graduates of previous years five years backward. Mixed method study should be used in future studies.

With this the department can develop and create an input for curriculum updating and revisions to be submitted for instruction in order to review

and recommend to the campus administration, then for presentation to the university Academic Council for the comments and suggestions then for submission of proposed curriculum to the Commission on Higher Education.

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COMPETENCIES OF TEACHERS IN INTEGRATED SCHOOLS IN THE MUNICIPALITY OF ANGADANAN, ISABELA

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ABSTRACT

This descriptive research aimed to find out the competencies of the 24 selected teachers in the seven (7) integrated schools in the Municipality of Angadanan, Isabela during the school year 2015-2016 in the parameters of personal skills and classroom management. A researcher-made instrument which was validated by experts and underwent reliability test was used. Frequency, percentage count, rank and means were used to interpret the gathered data. Based from the findings, the following were concluded: 1) the perceived competency of teachers in the various integrated schools in the municipality of Angadanan, Isabela in the parameters of personal skills and classroom management was affective; and 2) problems on teachers' competency and supervision extended by school heads are considered slightly serious and the problems of school heads, instruction, students and parents are considered moderately serious. Based from the findings, the study recommends the following: school heads should encourage teachers to attend higher level of seminars and trainings to upgrade themselves professionally and recognize the exemplary performance of teachers for proper motivation and encouragement; school heads and teachers should develop good study habit of the pupils to improve their performance, teachers should not be utilized in the preparation/accomplishment of report and concentrate in their teaching tasks in the classroom; learner's attendance should be daily monitored to refrain in going out of the school when classes are going on; and conducting similar studies in higher level is encouraged.

INTRODUCTION

Teachers always look for the strategies and techniques to help students in improving their performance. On the other hand, intervention has become an important way for teachers to ensure that all students in today's high stakes testing improvement. Without systematic approach, this can be a challenge to teacher who have many students in need of help.

To respond the needs of public schools, the government through the DepEd program created integrated school where elementary and secondary level merging in one school to cater the needs of the school children both elementary and secondary level.

Significant research efforts in past decades have added a great deal to the body of knowledge about teaching and teachers. However, although the growing interest in trying to uncover the nature of teaching and teachers' work over the years has brought attention to teaching about teaching, teachers of teachers—who they are, what they do, what they think—and their desired characteristics, have often been ignored in studies of teacher education.

Correspondingly, questions such as "What should teacher educators be competent in?" "What tasks and competencies are teacher educators expected to possess?" and ultimately "What does it mean to be a good teacher educator?" have rarely been investigated. Therefore, not surpris-

ingly, very little has been discovered about the quality of teacher education, and hence, that of teacher educators, over the years.

Teacher educators are defined as people "who provide instruction or who give guidance and support to student teachers, and who thus render a substantial contribution to the development of students into competent teachers". They are the ones who are responsible for the quality of teachers, and, therefore, that of education. Thus, it is of crucial importance that the questions above are addressed by exploring what contributes to the professional development of teacher educators and by explicitly setting the quality requirements and specific competencies for them. In this regard, the role of professional standards set or implied by academic publications, professional organizations, institutional guidelines for promotion and tenure, and other relevant sources should be highlighted, as standards are the main criteria by which performance and professional development of teacher educators can be assessed.

A competency is a pattern of thinking, feeling, acting or speaking that causes a person to be successful in a specific job or role. Research indicates that previous demonstration of competence to achieve success is one of the best predictors of future performance in a related role. Competencies may be developed, but they are most powerful when used to select people who are already a good fit for the job.

Competencies are most powerful when they are used to select people who are already a good fit for the job, but they can also be used for evaluation and development.

There are two divergent approaches to defining "competencies". In one of them, "competencies" denote a set of conscious, trainable skills and abilities which make a teacher effective. In the other, "competencies" are addressed in the context of changeability and uniqueness of each and every educational situation and mean a repertoire of knowledge, personal features and educational techniques. This approach conceptualizes "competencies" as developing in the space of reflective practice.

The researcher is interested much to look into the competencies of teachers in integrated schools in the Municipality of Angadanan, Isabela particularly their personal skills and classroom management.

STATEMENT OF THE PROBLEM

Generally, this study aimed to look into the competencies of teachers in integrated schools in the Municipality of Angadanan, Isabela.

Specifically, it aims to answer the following questions:
1. What is the competency of teachers in integrated schools in the Municipality of Angadanan in the following:
   a. personal skills; and
   b. classroom management?
2. What are the problems encountered by the teacher that affect their competency in terms of the following:
   a. competency;
   b. school heads;
   c. instruction;
   d. students;
   e. parents; and
   f. supervision extended by the school heads.

RELATED LITERATURE

Standards within a profession are often associated with the necessary functions of individuals within that profession such as 1) facilitators of the learning process for student teachers; 2) developers of new knowledge and curricula; 3) assessors and gatekeepers; 4) educators to act as gatekeepers and decide who has the necessary training and skills to become a teacher; and 5) collaborators and team members (Koster et al., n.d.).

All of the above-mentioned tasks are interconnected with the principles and values in teacher education, and thus, are consistent with the standards for teacher educators, as standards describe a requested level of professionalism, translated into actions and performances. Standards entertain several aspects that make up what some refer to as the expertise (professional knowledge and competence) of teacher educators.

Teaching being a multifaceted activity requires updated knowledge and broad vision. A student teacher might be gifted with some natural endowments to be a competent teacher. But knowledge and application of pedagogical principles develops professional acumen and profound understanding of learner's behavior. Initial teacher training program can address the issue of individual differences with respect to student teachers by designing curriculum in such a way that stress is on competency development. For this, improvement in microteaching techniques and practice

teaching sessions is necessary. Focusing attention on student teachers through continuous comprehensive evaluation throughout the training period is a prerequisite for an efficient teacher training program.

Medley (n. d.) observed that competent teacher is well versed in his subject as well as possesses positive attitude towards school. He pointed out that quality of teaching is influenced by sound knowledge of subject matter and application of psychological principles by teacher. He stressed that a competent teacher embodies knowledge of subject matter, has understanding of society's needs and factors bearing impact on education.

Performance using competency is one of Quality is one of the most important means to technological developments that have emerged lately in educational field as reaction to dissatisfaction with teacher preparation method which led to emergence of preparation by performance or competency.

Teacher preparation approach based on competency depends on conversion between functions and tasks required from teacher after graduating to set of competencies should be mastered by student/ teacher before graduation.

A person possessing competence within a field is someone able to master Competence as expertise the essential aspects of that field effectively, incisively, and with an overview and certainty of judgment. Among the many various meanings ascribed to the notion of competence, expertise rather than the more-wide spread authorization has been chosen for this context.

Implementation of competence-based initiatives cannot depend on teachers alone. Successful implementation needs to be system-wide, with practical plans to work out the time-frame, preparation/groundwork, scheduling different actors at the right time in a logical sequence of steps, roles and responsibilities and resourcing. As part of the initiative's communication strategy, orientation workshops are needed to make sure everybody understands the process that is taking place and why it is taking place (Liana & Gaston, 2011).

Following Barth et al. (2007), who work with the concept of "shaping competence", acquiring competencies is hardly comparable with learning as mere knowledge acquisition. Competencies must be regarded as learnable but not teachable.

Competencies can help the field as a whole to clarify its goals across all age groups (from infants through early elementary students), job categories (including program administration), and career stages (entry-level, mid-career and ad-vanced). Competencies can help individuals identify what they are trying to accomplish, articulating the body of knowledge and skill that can be developed through training and education. And for parents and the general public, a system of teacher competencies can help build wider awareness of and respect for early care and education as skilled, professional work (Dan, 2005).

METHODOLOGY

The descriptive method of research was utilized to find out the competencies of teachers in the seven (7) integrated schools in the Municipality of Angadanan, Isabela during the school year 2015-2016. The sources of data derived from the selected 24 teachers from the different integrated schools using the convenient non probability sampling.

Respondents of the Study

Most of the teachers are young at age, dominated by males, married, mostly holding a teacher 1 position, most of them finished the bachelor's degree in education as the primary requirement in entering public schools in the country, most of them are actively teaching in various integrated schools in the municipality for not more than 5 years, majority performed a very satisfactory performance in their profession, and all of them attended seminars in the division level.

The Instrument of the Study

In gathering the needed data, the researcher-made used the questionnaire as to primary tool in sourcing out the data from the respondents. The researcher used the questionnaire as the main instrument. The feature of which are the respondents' profile, parameters affecting the teachers' competency and the problems encountered by the respondents. Since the instrument is a researcher-made it was validated by experts which are made up of school heads in the district and underwent reliability test that made the questionnaire reliable.

Statistical Tools

Frequency, percentage count, rank and means were used to interpret the gathered data.

FINDINGS

COMPETENCIES OF TEACHERS

Tables 1 and 2 show the competencies of teachers based on personal skills and classroom management.

Table 1. Teachers' Competencies based on Personal Skills

Items	Mean	Description	Rank
Shows positive attitude towards work	4.16	A	2
Works as a main source of living	4.20	A	1
Cooperates in all kinds of tasks/assignments given	3.36	MA	12
Sees problems as challenges	4.15	A	3.5
Regards work as a stepping stone for higher goals	3.38	MA	11
Able to get along with others	4.12	A	5.5
Assisting others when needed	4.07	A	8
Optimistic outlook	3.40	MA	10
Attentive to one's personal needs and problems	3.30	MA	13
Develops cooperation	4.09	A	7
Practices transparency	4.12	A	5.5
Provides challenging opportunities for interaction and interpersonal communication process	4.15	A	3.5
Offers solution to problems	4.03	A	9
Average Weighted Mean	**3.89**	**Affective**	

4.21 – 5.00 Very Affective (VA)   3.41 – 4.20 Affective (A)
2.61 – 3.40 Moderately Affective (MA)   1.81 – 2.60 Slightly Affective (SA)   1.00 – 1.80 Least Affective (LA)

It is disclosed from the data that as to the teachers' competencies based on personal skills. Teachers rated the following statements as affective: consider their work as the main source of living, show positive attitude towards work, provide challenging opportunities for interaction and interpersonal communication process, see problems and challenges, get along with others, practice transparency, assist others when needed, develop cooperation and offer solution to problems. However, the following statements were moderately affective: teachers have optimistic outlook, they regard work as a stepping stone for higher goals, they cooperate in all kinds of tasks/assignments given, and they are attentive to one's personal needs and problems. In general, teachers are affective as to their personal competency which is obvious in the average weighted mean of 3.89.

Table 2. Teachers' Competencies based on Classroom Management

Items	Mean	Description	Rank
Presence of sound relations among teachers and students	4.13	A	2
Everyone has a role to play in school in quest for quality education	4.21	VA	1
Reduces monotony and making dull moments interesting	3.36	MA	5
Emphasizes positive consequences of success	4.02	A	4
Conducive learning environment	4.07	A	3
Average Weighted Mean	**3.96**	**Affective**	

4.21 – 5.00 Very Affective (VA)   3.41 – 4.20 Affective (A)
2.61 – 3.40 Moderately Affective (MA)   1.81 – 2.60 Slightly Affective (SA) 1.00 – 1.80 Least Affective (LA)

It could be seen from the data affecting the teacher's competency as to classroom management. It is revealed that to become a very affective teacher, they must consider that everyone has a role that play in school in quest for quality education. To become affective the following are considered: the presence of sound relation among teachers and students, providing conducive learning environment and emphasizing positive consequences of success. Finally, reduces monotony and making dull moment interesting was moderately affective.

PROBLEMS ENCOUNTERED BY TEACHERS IN DIFFERENT INTEGRATED SCHOOLS IN ANGADANAN, ISABELA THAT AFFECT THEIR COMPETENCY IN VARIOUS DIMENSIONS

Tables 3 to 8 show the problems encountered by teachers in different integrated schools in Angadanan, Isabela that affect their competency in various dimensions such as competency, school heads, instruction, students, parents and supervision extended by the school heads.

Table 3. Problems Encountered by the Teachers as to Competency

Items	Mean	Description	Rank
Limited training/seminars in the higher level	3.38	MS	1
No plan to go back to school due to financial constraints	2.60	SS	2
Non subscription to professional magazine	1.72	NP	5
Rare opportunity in demonstration teaching not accepted	2.54	SS	3
Classroom observation is not friendly	1.76	NP	4
Average Weighted Mean	**2.4**	**Slightly Serious**	

4.21 – 5.00 Very Serious (VS)   3.41 – 4.20 Serious (S)
2.61 – 3.40 Moderately Serious (MS)   1.81 – 2.60 Slightly Serious (SS)   1.00 – 1.80 Least Serious (LS)

On the problems encountered by the teachers as to teachers' competency, it is gleaned from the data that limited training/seminars in the higher level was perceived moderately serious. No plan to go back to school due to financial constraints and rare opportunity in the demonstration teaching not accepted were experienced slightly serious problem. On the other hand, unfriendly classroom observation and non-subscription to professional magazine are not considered problems.

Table 4. Problems Encountered by the Teachers as to School Heads

Items	Mean	Description	Rank
Mentoring and coaching is not encouraged	2.54	SS	3
Strict but firm in decision making	2.60	SS	2
Strictly implement policies and guidelines	2.48	SS	5
Irregular classroom supervision due to voluminous work to accomplish	2.51	SS	4
Non recognition of teachers with exemplary performance	3.40	MS	1
Average Weighted Mean	**2.71**	**Moderately Serious**	

4.21 – 5.00 Very Serious (VS)   3.41 – 4.20 Serious (S)
2.61 – 3.40 Moderately Serious (MS)   1.81 – 2.60 Slightly Serious (SS)   1.00 – 1.80 Least Serious (LS)

On the problems encountered by the teachers as to school heads, it is gleaned from the data that non-recognition of teachers with exemplary performance reveals moderately serious problem. Strict but firm in making decision, being mentored and coached, irregular classroom supervision due to voluminous work to accomplish and strict implementation of policies and guidelines were experienced slightly serious.

School heads are task to look into the activities and problems in their respective schools. In like manner, school heads are accorded with the authority, responsibility and accountability as they made decisions with regard to school activity.

Table 5. Problems Encountered by the Teachers as to Instruction

Items	Mean	Description	Rank
Poor cooperation among teachers due to professional jealousy	2.56	SS	3
Too many reports to accomplish	3.36	MS	2
Remedial instruction not properly implemented	3.40	MS	1
Average Weighted Mean	**3.11**	**Moderately Serious**	

4.21 – 5.00 Very Serious (VS)   3.41 – 4.20 Serious (S)   2.61 – 3.40 Moderately Serious (MS)   1.81 – 2.60 Slightly Serious (SS)   1.00 – 1.80 Least Serious (LS)

It is disclosed in the table the problems encountered by the teachers as to instruction. It is revealed that problems on improper implementation of remedial instruction and accomplishing too many reports were considered moderately serious problems while problem on poor cooperation among teachers due to professional jealousy was slightly serious.

The overall interpretation of moderately serious problem. Teachers are well rounded individuals, whatever task are given to them, they are able to accomplish it and they are always flexible in performing their job especially in the most important aspect of teaching which is the instruction.

Table 6. Problems Encountered by the Teachers' as to Students

Items	Mean	Description	Rank
Undeveloped values/discipline	2.60	SS	4
Develop negative attitude due to low achievement	2.53	SS	5
Unwise use of leisure time	3.36	MS	3
Lacks self confidence	3.40	MS	2
Irregularity of attendance in school	4.20	S	1
Average Weighted Mean	**3.22**	**Moderately Serious**	

4.21 – 5.00 Very Serious (VS)   3.41 – 4.20 Serious (S)   2.61 – 3.40 Moderately Serious (MS)   1.81 – 2.60 Slightly Serious (SS)   1.00 – 1.80 Least Serious (LS)

On the problems encountered by the teachers as to students, it is revealed that irregularity of attendance in school is considered a serious problem; students' lack of confidence and unwise use of leisure time were considered moderately serious problem. However, undeveloped values/discipline and negative attitude due to low achievement were slightly serious problems.

Table 7. Problems Encountered by the Teachers as to Parents

Items	Mean	Description	Rank
Limited time to guide children when at home	3.40	MS	1
Non- support to classroom/school projects	2.53	SS	4
Rare participation in school activities and programs	2.56	SS	3
Intervene during scheduled meetings/conferences	2.51	SS	5
Financial constraints to finance school needs of their children	3.35	MS	2
Average Weighted Mean	**2.87**	**Moderately Serious**	

It is revealed in the table that limited time to guide children when at home and financial constraints to financial constraints to finance school needs of their children were considered moderately serious by the teachers. On the other hand, rare participation in school activities and programs, non-support to classroom/school projects, and not attending on scheduled meetings and conferences were considered as slightly serious problems. Parents play an important role in the education of their children. In like manner, parents are responsible in guiding their children at home to improve their school performance.

Table 8. Problems Encountered by the Teachers as to Supervision Extended

Items	Mean	Description	Rank
Rare opportunity to observe teachers especially in the far-flung barangay	3.40	MS	1
Inability to check lesson log due to distance	2.56	SS	3
Non participation to school plans and projects	1.65	NP	5
Lack of motivation to teachers to upgrade themselves professionally	2.53	SS	4
Limited time to monitor teachers at work	2.51	SS	2
Average Weighted Mean	**2.53**	**Slightly Serious**	

4.21 – 5.00 Very Serious (VS)   3.41 – 4.20 Serious (S)   2.61 – 3.40 Moderately Serious (MS)   1.81 – 2.60 Slightly Serious (SS)   1.00 – 1.80 Least Serious (LS)

Finally, as regards to the problems encountered by the teachers on supervision extended to teachers, it could be seen from the data that rare opportunity to observe teachers especially in the far-flung barangay had rated moderately serious problem. Limited time to monitor teachers at work, inability to check lesson log due to distance, and lack of motivation to teachers to upgrade themselves professionally were encountered slightly serious problems, and not participating to school plans and projects was not a problem a problem at all.

It is the task of school heads to monitor and visit classrooms and observe teachers at work for the purpose of motivating them in performing their duties as the molders of the youth who are considered as the backbone of the country who may transform it as a great nation.

CONCLUSIONS

On the basis of the above mention findings, the conclusions were drawn:

1. The perceived competency of teachers in the various integrated schools in the municipality of Angadanan, Isabela based on personal skills and classroom management is affective.
2. Problems on teachers' competency and supervision extended by school heads are considered slightly serious and the problems of school heads, instruction, students and parents are considered moderately serious.

RECOMMENDATIONS

Based on the foregoing conclusion and findings, the following recommendations are hereby proposed:

1. School heads should encourage teachers to attend higher level of seminars and trainings to upgrade themselves professionally.
2. School heads should recognize the exemplary performance of teachers for proper motivation and encouragement teachers to work with.
3. Teachers should not be utilized in the preparation/accomplishment of report and concentrate in their teaching tasks in the classroom.
4. Learner's attendance should be daily monitored to refrain in going out of the school when classes are going on.
5. School Heads and teachers should develop good study habit of the pupils to improve their performance.
6. School heads and teachers should regularly monitor/visits classrooms and observe teachers at work for proper guidance.
7. It is further recommended that similar studies be conducted in the higher level.

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STATUS ON RECORDS MANAGEMENT PRACTICES OF SELECTED OFFICES OF BOHOL ISLAND STATE UNIVERSITY CANDIJAY CAMPUS

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ABSTRACT

The main purpose of this study was to assess the status of records management practices of the selected offices of the Bohol Island State University Candijay campus. Specifically, it sought to assess the status of records management of each office. Further it sought to determine the difference in the status of records management among the selected offices of Bohol Island State University, Candijay campus. Descriptive survey method was employed in the study with the aid of an adapted questionnaire as the research instrument. The respondents of the study were the selected offices of Bohol Island State University particularly the following offices: Administrative Office, Guidance Office, Planning Office Registrar's Office, Supply Officer, and Student Affairs and Services Office with a total number of 30 respondents. The data gathered were treated statistically using weighted mean and Kruskal Wallis Test. The overall result showed that the selected offices of BISU-Candijay campus give importance and high regard on the use of records with an average weighted mean of 3.71 described as "Always Applied" However, disposal of records ranks the lowest with the weighted mean of 3.19 described as "Often Applied" .Further, results showed that there is no significant difference on the status of records management among the selected offices.The researchers highly recommended that the Records office may design a retention program in its records' life cycle to set forth the extent of its disposal period. The administration may assign a permanent employee in each office who will be tasked for the records management to easily determine the location and disposal of the records since most of its personnel are Job Orders. The administration may conduct training and workshop for its office staff relating to records management especially on records disposal.

Keywords: records management, status, offices, assessment, employment

INTRODUCTION

Different businesses and government organization nowadays and even from the yesteryears encountered an increasingly difficult challenge when it comes to the creation, maintenance, retrieval, use, and disposition of information of all types and in all media. Beyond the advancement and use of information technologies, the escalating rise of "paperwork" requirements continue. Records Management is simply not optional most especially in today's unpredictable corporate environment. As a matter of fact, it works all day every day for every unit in those organizations that adopt a comprehensive records management program.

In the study conducted at the University of Philippines. The self-audit tool measured that UP's compliance with ISO 15489 and RA 9470 is only at a low rate. The very high rate of noncompliance should be a wake-up call to every stakeholder of the University that the conduct of a comprehensive study and formulation of immediate and long-term solutions about the current status of records management in the University are ardently needed.

The assessment highlights that UP's status of records management has a long way for improv-

ing its records management due to the inefficiency of its record system prior to the compliance to the provision of ISO 15489 and RA 9470. Moreover, the university failed to address the problems cited in earlier studies and neglected the recommendations stated therein; and has started to manage electronic records despite the current problematic management of paper records.

As a relation, Bohol Island State University-Candijay campus, one of the six satellite campuses of the BISU System, has various offices such as, Administrative, Registrar, Supply, Planning, Guidance, Students Affairs, and Services, are among the offices of the campus which have the high regards to records keeping. These offices inevitably encountered various problems in the records system from its creation, use, maintenance, retrieval, and disposal of records.

In connection to this, the researchers were urged to conduct the study with the main purpose of assessing the records management practices of the selected offices of Bohol Island State University – Candijay campus. As experienced by the researchers of this study, the problem of records management in BISU Candijay is in need to be addressed in order to increase and maintain its quality and satisfactory services as a realization stated in its mission and vision. There were instances that retrieving files were considered as mere challenges to these offices. Loss of files and records, dislocation, and disorganized records filing were some of the reasons that lead to difficulties in retrieving the records needed. Redundancy of asking for another copy to each office most especially the Purchase Request (PR) and other documents related to the procurement of office facilities and equipment were also experienced by the researchers and the end users as well.

STATEMENT OF PROBLEMS

This study aimed to assess the status of records management of the selected offices of Bohol Island State University – Candijay campus in the year 2018-2019.

Specifically, the study sought to answer the following questions:

1. What is the status of records management practices of the selected offices?
2. Is there a difference in the status of records management among the selected offices of BISU – Candijay Campus?

METHODOLOGY

The researchers employed the descriptive survey method. In this method, participants were asked some questions which are the primary way in gathering further information on the descriptions and explanations about the object of the study. Questionnaire was the only research instrument used in the study and was adapted from the study of Lurot (2016) with the title "Record Management Practices of Seven Offices in Municipality of Sevilla, Bohol".

This study was conducted at Bohol Island State University Candijay campus, one of the six satellite campuses of the BISU System. This university campus is situated in Barangay Cogtong, Candijay, Bohol. It is more or less ninety-seven (97) kilometers away from the main campus located in Tagbilaran City and five (5) kilometers away from Poblacion, Candijay.

The researchers had chosen the following offices for the research; Administrative Office, Registrar Office, Supply Office, Planning Office, Guidance Office, Students Affairs and Services Office. In this study, random sampling was used. There are a total of 30 respondents in this study.

There were only two statistical tools utilized in the study, namely; weighted mean which was used to ascertain the status of records management practices of the selected offices and Kruskal Wallis Test was adopted to compare the difference in the Records Management among the selected offices.

FINDINGS

Table 2.6 Summary of Result on Status of Records Management of Selected Offices
N=30

Items	Admin Office		Supply Office		Planning Office	
	WM	DV	WM	DV	WM	DV
Creation	3.35	AA	3.43	AA	3.60	AA
Use	3.50	AA	3.67	AA	4.00	AA
Maintenance	3.30	AA	3.42	AA	3.88	AA
Retrieval	3.35	AA	3.33	AA	4.00	AA
Disposal	2.99	OA	2.85	OA	3.89	AA
AWM	**3.30**	**AA**	**3.34**	**AA**	**3.90**	**AA**

Items	Guidance Office		Registrar's Office		SAS Office	
	WM	DV	WM	DV	WM	DV
Creation	3.55	AA	3.70	AA	3.38	AA
Use	3.58	AA	3.90	AA	3.60	AA
Maintenance	3.42	AA	3.90	AA	3.46	AA
Retrieval	3.31	AA	3.75	AA	3.34	AA
Disposal	3.11	OA	3.31	AA	2.99	AO
AWM	**3.39**	**AA**	**3.70**	**AA**	**3.35**	**AA**

Items	Overall		
	AWM	DV	Rank
Creation	3.50	AA	3.5
Use	3.71	AA	1
Maintenance	3.55	AA	2
Retrieval	3.50	AA	3.5
Disposal	3.19	AO	5
AWM	3.49	AA	

Legend:

Range	Descriptive Value
3.26-4.00	Always Applied (AA)
1.76-2.50	Sometimes Applied (SA)
2.51-3.25	Often Applied (OA)
1.00-1.75	Never Applied (NA)

Table 2.6 presents the summary of results of the status of Record Management of each selected office of Bohol Island State University-Candijay Campus. As seen in the table, the overall result shows that the selected office of BISU-Candijay Campus gives importance to the use of records with the average weighted mean of 3.71 or described as Always Applied. However, Disposal of Records ranks the lowest with the weighted mean of 3.19 or Often Applied.

This means that BISU-Candijay Campus selected office did not give their 100% implementation on the standard procedures of disposing of records. Among the offices, the Planning office ranks the highest average weighted mean 3.90 for its overall records management. In contrast, the records management of the Administrative office garnered the lowest weighted mean of 3.30. In general, the selected offices of BISU-Candijay Campus clearly define the importance of having proper records management since its ratings are equivalent to "Always Applied".

The result proves that each of the offices of the University is giving the most concern and importance to every record of its office. The result of the study aligns with the study of Aliyu (2013) in who states that the education sector is one of those that needs to be involved in effective record management. For one thing, academic institutions especially at the tertiary level within departments generate records about students, about courses taken, and credits earned. The registry, which is the hub of the administration, in the school generates records on personnel, from their recruitment, promotions, and disciplinary actions to their eventual retirements.

The Difference in the Status of the Records Management among the Selected Offices of Bohol Island State University Candijay Campus

H-computed Value	C-Value	Decision	Interpretation
14.70	15.09	Accept Ho	There is no significant difference

The tabular presentation reveals that there is no significant difference in the status of records management practices among the selected office of Bohol Island State University Candijay Campus since the H-computed value of 14.70 is lesser than the critical value of 15.09 which leads to the acceptance of the null hypothesis. Hence, the result implied that the selected offices had the same records management practices and that there is no difference in the way they secure, manage, preserve, archive, and dispose their records.

CONCLUSION

Records management from creation, use, maintenance, retrieval were given the highest regard of each office. The status of records management of the selected office of BISU Candijay Campus was the same.

RECOMMENDATIONS

1. The Records office may design a retention program in its records' life cycle to set forth the extent of its disposal period.
2. The administration may assign a permanent employee in each office who will be tasked for the records management to easily determine the location and disposal of the records since most of its personnel are Job Orders.
3. The administration may conduct training and workshop for its office about records management especially on records disposal.

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TEXT STRUCTURE INSTRUCTION OF EXPOSITORY TEXTS

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ABSTRACT

This study was conducted to develop the Text Structure Instruction (TSI) of Expository Texts which was anchored on explicit instruction and metacognitive reading strategies. Using the Analysis, Design, Development, Implementation and Evaluation (ADDIE) model of instructional design, the nine lessons on text structures were crafted with the following components: Learning Objectives, Understanding, Metacognitive Strategy, Introduction, Let's Learn, Teaching/Modeling, Guided Practice, Independent Practice, Comprehension Questions and Let's Reflect. The lessons covered in the TSI are as follows: narration, description, definition, exemplification, classification, comparison and contrast, cause and effect, problem and solution, and persuasion. This study underwent two main processes. The development process of the TSI was conducted in a high school in Nueva Ecija while the assessment process was administered in the different schools where the selected respondents were designated. The design, content and instructional use of the TSI were assessed by the English language experts. Overall, they indicated a very good rating on the developed TSI which manifested the acceptable quality of the instruction. The TSI provides discussions, strategies and activities that may facilitate teachers in improving the reading comprehension of senior high school learners on expository texts.

INTRODUCTION

Basic and higher levels of education in all fields, either academic or technical, entails extensive and comprehensive readings for learners to acquire the knowledge expected of them in the fields they are pursuing. The higher the level of education they are into, the wider and deeper the expository materials they have to explore for them to do well in the academe. By and large, well-read learners have a wide range of understanding and knowledge not only of their chosen fields but also of the world. To comprehend these expository texts, learners must be knowledgeable about text structures (Duke and Pearson, 2008/2009).

Text structure is the organizational pattern used in the reading texts that enables readers to identify the text's critical elements. Alvermann and Phelps (1994) explained that the knowledge both on context and structure is needed in comprehension process. These two aspects are "naturally intertwined" as found in the research conducted by Gallapher and Pearson (1989) as cited in Duke and Pearson (2008/2009, p. 112);

hence, it is necessary for readers to learn the various forms of expository texts. To attain this, reader's awareness of text structure is very significant.

Metacognition serves as a key to reading comprehension since this strategy develops the reader's linguistic, cognitive and social skills (Iwai, 2011). According to Baird (1990), as cited in Cubucku (2008), metacognition pertains to regulation of one's own understanding and knowledge acquisition. Metacognitive reading strategies refer to the exercises which may be done in the beginning, in the middle or at the end of the reading process. These exercises may lead the readers to the awareness and control of their thoughts as they accomplish them. In doing a reading practice using metacognition, students perform "active monitoring and consequent regulation and orchestration" (Flavell, 1976, p. 232 as cited in Cubucku, 2009) of the reading tasks.

As the learners monitor their own learning, they can maximize their reading comprehension progress with the support of their teacher and classmates. One effective method accessible to teachers is the explicit instruction which was de-

fined by Archer and Hughes (2011, p.1) as a "structured, systematic and effective methodology for teaching academic skills". They characterized this instructional delivery as a teacher's detailed and direct display of what is intended to be learned and performed by the learners. The teacher's demonstration is followed by a guided practice that is done collaboratively by the learners.

As observed by the researcher in her teaching of the text patterns, the grade 11 learners, especially those average and low-performing ones, had a hard time identifying the structures of expository texts. Generally, they lacked knowledge of how the texts they were exposed to were organized to establish coherence and organization of thoughts. In addition, they could not clearly determine the main ideas that were explicitly or implicitly stated in the texts. There was a need for improvement of their knowledge about structure and content, and their skills in identifying and distinguishing between text structures. These experiences were also the scenarios in the classes of the other English language teachers handling the subject Reading and Writing Skills. According to the researcher's firsthand interaction with the learners and interview with her colleagues, most of their learners particularly in the sections of General Academic Strand and Technical-Vocational Strand could not exactly state the main ideas and text structures of the selections that they were reading. Even just outlining the major and minor details of the text was a very challenging task for the learners. Aside from low comprehension, the teachers further explained that there were still slow readers who needed guidance and remediation.

In this research endeavor, the researcher's explicit method of teaching was combined with the metacognitive reading strategies to come up with the Text Structure Instruction that may facilitate the comprehension of the readers.

STATEMENT OF THE PROBLEM

This study aimed at developing and assessing text structure instruction of expository texts using the ADDIE model. Specifically, it sought to:
1. Develop text structure instruction which is anchored on explicit method of teaching and metacognitive strategies using:
   1.1 Analysis,
   1.2 Design,
   1.3 Development, and
   1.4 Evaluation; and

2. Assess the text structure instruction by language experts based on the:
   2.1. content,
   2.2. design, and
   2.3. instructional use.

METHODOLOGY

This study used the developmental research design. Developmental research is the systematic study of designing, developing and evaluating instructional programs, processes and products that meet the criteria of internal consistency and effectiveness (Richey, Klein, & Nelson, 2014). ADDIE Model of instructional development was employed in this study. The four phases such as the assessment, design, development and evaluation were adapted. The implementation phase, however, was not carried out since the Text Structure Instruction (TSI) was not yet used in the classroom to facilitate the learners in their subject Reading and Writing Skills.

The development process of this study which included the assessment, design and development phases were conducted in a public high school in Nueva Ecija. Meanwhile, the assessment process of this study, which included the evaluations made by the researcher and evaluators, was conducted in the different schools where the selected respondents were designated.

The respondents of this study were three English language experts who were purposively selected to assess the design, content and use of the Text Structure Instruction. These experts have been teaching for at least five (5) to ten (10) years and they had experiences in teaching senior high school learners.

This study utilized an evaluation sheet which covered the attributes of the instructional material. The draft form of the evaluation sheet was checked by the adviser of the researcher to see if it covered all of the phases of the instructional design. The modified form was administered to a group of English language experts for the evaluation of design, content and use of the Text Structure Instruction. After the English language experts evaluated the TSI, ratings were gathered, and the weighted mean for each attribute of the TSI was computed and interpreted.

The development process of the TSI was described qualitatively. After the development process, the design, content and use of the TSI were evaluated by the English language experts using the following scale which was created by the re-

searcher with the approval of the statistician and adviser.

Table 1. Scale Used in the Evaluation

Numerical Rating	Qualitative Rating	Description
2.34-3.00	Very Good	The TSI fully meets the criterion standard. No modification/revision is recommended.
1.67-2.33	Good	The TSI partially meets the criterion standard. Minor modification/revision is recommended.
1.00-1.66	Poor	The TSI does not meet the criterion standard. Major modification/revision is recommended.

For the evaluation of the content, design and instructional use, an evaluation form was utilized. The features of the content included the accuracy of the information, the readability of the material in terms of language styles and visual features, and the presentation of the instructional components. The design focused on the how the parts of the TSI were organized to establish an easy access to content and an appealing layout of the textual and non-textual features of the material. The instructional use covered the ease of facility an end-user may experience with the material, and the integration of the metacognitive strategy and explicit teaching methodology.

FINDINGS

1. Development of the Text Structure Instruction (TSI) of Expository Texts

The development of the TSI adapted the ADDIE instructional design model of development. It underwent stages namely: analysis, design development and evaluation.

1.1 **Analysis**. In this phase, the learning competencies in Grade 11 Reading and Writing Skills Curriculum as prescribed by the Department of Education (DepEd) were examined.

The lessons on patterns of development that formed the structures of expository texts were identified. These lessons in which the TSI was integrated included narration, description, definition, exemplification, classification, comparison and contrast, cause and effect, problem and solution, and persuasion.

Informal interview was conducted among the students and teachers in a senior high school about their reading performances, and the availability of resources in Reading and

Writing Skills. Based on the researcher's observation, learners found it hard to identify the patterns of development of the passages that were assigned for them to read. They could even barely answer the guide questions especially those that belonged to the higher order thinking skills. The findings of the informal interview and observation provided the researcher with the inputs in developing the TSI. These findings in the analysis phase were used as a benchmark in the succeeding phases of the development. The matrix showing the activities for the development and assessment process of the TSI, as shown in Table 2, was also formulated in this phase. The various stages in the development and assessment started in November 2018 and completed in April 2019.

Table 2. Matrix of the Stages for the Development and Assessment of TSI

STAGES	Nov 2018	Dec 2018	Jan 2019	Feb 2019	Mar 2019	Apr 2019
Development Process						
Analysis	■	■				
Design		■	■	■	■	
Development		■	■	■	■	
Evaluation				■	■	
Assessment Process						■

1.2 **Design**. During this phase, the content and layout of the lessons were conceptualized. Each lesson consisted of the following components: Learning Objectives, Explanation of Topic for Understanding, Metacognitive Strategy, Introduction, Teaching/Modeling, Guided Practice, Independent Practice, and Comprehension Questions.

The **Learning Objectives**, which was the first component observable in the TSI, stated the skills that were expected to be practiced and acquired by the learners. The objectives were aligned with the two macro skills (reading and writing) which were assumed to be developed in the subject Reading and Writing Skills.

The explanations of the topic for **Understanding**, which was the second component of the TSI, entailed brief discussions of the patterns of development. This component contained the basic ideas that a teacher must deliver to the learners.

The **Metacognitive Strategies**, the third component of the TSI, expounded the skills to

practice in carrying out the activities to achieve the learning objectives.

The **Introductions** explained the overview of Text Structure Instruction of Expository Texts in Reading and Writing Skills. These served as the springboard of the learners to activate their background knowledge related to the lessons since the examples used were relevant and familiar to them. These would enable them as well to grasp the gist of the lessons and activities being presented later in the instruction. The pictures and cartoons were affixed to make this component interesting to the learners.

The next component, **Let's Learn**, would provide the teacher and learners with thorough discussions of the text patterns. This readily accessible reference could help the teachers save time in searching about the topic. The discussions for text patterns were lifted from other references and compiled in this instructional material.

The **Teaching/Modeling** part would provide the learners with the discussion of the lesson and application of the ideas demonstrated by a teacher. There were sample answers in the activity that would serve as a guide for the learners to help accomplish the task. The directions for the activity which was grounded on metacognition were provided for the guidance of the learners regarding what they had to do or look for in the reading selection. After the activity, the comprehension questions followed to assess the learners' understanding of the expository text.

The **Guided Practices** would allow the learners to perform collaboratively the activities which were similar to the metacognitive activities modeled by a teacher in the Teaching/Modeling. In this component, the class needed to form groups so that the members who lagged behind may assimilate information through the help of a teacher and those more knowledgeable members of their respective group.

The **Independent Practices** would require the learners to perform the activities on their own. The skills that the learners would demonstrate in the Teaching/Modeling and Guided Practice would be honed while performing the tasks without the help of their classmates. The teacher was expected to monitor the learners in this part of the instruction to gauge feedback about their development and learning.

The **Comprehension Questions** were included at the end of every task to assess the comprehension of the learners. The sets of five questions were designed to be multiple-choice so that learners would answer without the apprehension that the task was so laborious on their part. Instead of writing sentences in response to the questions, encircling the letters of the correct answers could save time.

The component **Let's Reflect** would enable the learners to reflect on the learnings that they would gain after taking up the lessons. There were two questions that learners had to ponder; the first was about their understanding of the content and the second would enable the learners to ponder about their acquired skills.

The last part of TSI included the **Chapter Test** to assess whether the learners could identify the main idea of the expository texts and could distinguish between patterns of development.

1.3 **Development**. In this phase, the content of each lesson was written. The layout and components of the lessons were carefully conceptualized in the design phase. The nine lessons were listed below.

Table 3. Content of TSI

LESSON	TITLE
1	Narration
2	Description
3	Definition
4	Exemplification
5	Classification
6	Comparison and Contrast
7	Cause and Effect
8	Problem and Solution
9	Persuasion

In crafting the components of the lessons, the researcher made consultations with her thesis adviser and statistician. The initial draft of TSI was presented to them. They provided comments and suggestions which were incorporated in the second draft of the TSI. Suggestions about the inclusion of five multiple-choice comprehension questions were painstakingly done for the 27 expository texts of the TSI. The physical appearance of the instructional material was improved to make it appealing. The researcher relied on the evaluators' assessment. The layout was made con-

sistent for all the lessons. The second draft of the TSI was assessed by the three language experts to rate the content, design and instruction of the TSI using the attributes indicated in the evaluation form. The results gathered from the assessment were thoroughly considered in the third draft.

1.4 **Evaluation**. Each phase was evaluated according to the compliance to the steps and criteria set forth in the beginning of the development process. The matrix of the stages for the development process was made in the analysis phase, the major components and layout of the TSI were determined in the design phase, and the actual content of each lesson was developed in the development phase based on the design.

2. **Assessment of the Developed TSI by the English Language Experts**

   The TSI was subjected to the final evaluation made by the three English language experts teaching in Nueva Ecija. The results of their evaluation on the content, design and instructional use were taken into account in the final draft. The evaluation form was designed by the researcher. Table 4 summarizes the evaluation of the TSI of the English experts.

Table 4. Summary of English Language Experts' Evaluation of the TSI

TSI Attributes	Evaluators			WM	Quali-tative Rating
	1	2	3		
CONTENT					
ACCURACY					
Accuracy refers to the accurate representation of domain knowledge and events that avoids factual errors.					
The content of the TSI is accurate.	3.00	3.00	3.00	3.00	VG
The content of the TSI is factual and objective.	3.00	3.00	3.00	3.00	VG
The content is free of mistakes and errors, inconsistencies, contraction within itself, biases of interpretation, and biased selection of information.	3.00	3.00	3.00	3.00	VG
Presentation of content is free of typographical and visual errors.	3.00	3.00	3.00	3.00	VG
READABILITY					
Language styles refer to the written or narrative styles of the content of the material.					
The language used allows easy understanding.	3.00	2.00	3.00	2.67	VG
The language used is accurate, brief and clear.	3.00	3.00	3.00	3.00	VG
The phrases/sentences used create logical connections.	3.00	3.00	3.00	3.00	VG

TSI Attributes	1	2	3	WM	Rating
Visual features refer to the types and use of visual representations that can support or substitute verbal information, and that appear near corresponding text.					
Graphs and other visual representations are integrated at their point of use.	3.00	3.00	3.00	3.00	VG
The font type and size is appropriate for reading.	3.00	3.00	3.00	3.00	VG
Visuals are relevant, clear and simple enough to understand.	3.00	3.00	3.00	3.00	VG
PRESENTATION					
Comprehensiveness of TSI refers to the completeness and alignment of instructional components without requiring the teacher to prepare additional teaching materials.					
Backgrounds or introductions for lessons are presented in the TSI.	3.00	3.00	2.00	2.67	VG
The TSI suggests activities such as small group presentations and individualized tasks.	3.00	3.00	3.00	3.00	VG
The TSI has enough information about the topics.	3.00	2.00	1.00	2.00	G
DESIGN					
ORGANIZATION					
Visual structure and format refers to the placement of information.					
Unit titles including headings and subheadings are desirable.	3.00	3.00	3.00	3.00	VG
The format is visually appealing and interesting.	3.00	3.00	3.00	3.00	VG
The layout is consistent	3.00	3.00	3.00	3.00	VG
Non-text content such as graphic organizers and pictures are properly labeled.	3.00	3.00	3.00	3.00	VG
INSTRUCTIONAL USE					
EASE OF USE					
Usability refers to the quality attribute that bears on the ease of facility an end-user will experience with the instructional material.					
The TSI is easy to use.	3.00	3.00	3.00	3.00	VG
The TSI is organized and designed for practical use in the classroom.	3.00	3.00	3.00	3.00	VG
PEDAGOGICAL STRATEGIES					
Metacognitive Strategies refer to the integration of tasks that allow learners to have knowledge, awareness and control of their learning.					
The tasks are appropriate to the teaching-learning process.	3.00	3.00	3.00	3.00	VG
The tasks are aligned with the learning objectives.	3.00	3.00	3.00	3.00	VG
The tasks incorporate metacognitive strategies that are explained in the TSI.	3.00	3.00	3.00	3.00	VG
Explicit Instruction refers to the teaching methodology that monitors learners' needs and provides scaffolding during the learning process.					
The teaching/modeling is evident in the beginning of the lesson.	3.00	3.00	2.00	2.67	VG
The activities for small group presentation and discussions are provided for guided practice.	3.00	3.00	3.00	3.00	VG
Individualized activities are given for independent practice.	3.00	3.00	3.00	3.00	VG
Comprehension questions are posed to students at the end of activities to determine learning.	3.00	3.00	3.00	3.00	VG
Grand Mean Rating	**3.00**	**2.92**	**2.85**	**2.92**	
Qualitative Rating	**VG**	**VG**	**VG**	**VG**	

Three English language experts assessed the content, design and instructional use of the lessons on structures of expository texts, namely: narration, description, definition, exemplification, classification, comparison and contrast, cause and effect, problem and solution, and persuasion.

As regards the features of the TSI's content, the evaluators gave a grand mean rating of 2.87 (very good) for the accuracy, readability and presentation of the instructional components.

Each feature of the content's accuracy was given a mean rating of 3.00 (very good) by the evaluators. They found the content of the lessons as accurate, factual, objective, and free of mistakes, inconsistencies, biases, typographical and visual errors.

The content's readability was rated with a grand mean of 2.95 (very good). One evaluator marked one of the features of the language styles with 2.00 (good). He identified the language used as good in terms of its easiness for the understanding of the learners; however, he did not provide any suggestions on this feature. On the contrary, another evaluator who rated the same feature with 3.00 (very good) commented that the lessons are simple, clear and easy to understand. Amid their responses, the examples in the introductions were made relevant to the learners and the discussions were lifted from the resources appropriate for the current level of learners. About the other features relating to language styles, the evaluators gave the mean rating of 3.00 (very good). They determined the language used as accurate and brief, and the phrases/sentences as logically connected. Each of the content's visual features was given a mean rating of 3.00 (very good). The evaluators found that the graphs and other visual representations were clear, simple enough to understand and practicable for use while the font type and size were appropriate for reading. Nonetheless, one evaluator who had experiences in writing reference books in English noted that the recommended font sizes are 11-12 points for texts, 11-13 for sub heads and 15-24 for heads while the standard background color for cover of English learning materials is cyan/light blue. These suggestions were considered in the modification of the TSI.

The content's presentation got a grand mean of 2.56 (very good). About the presentation of the introductions, one evaluator gave a rating of 2.00 (good). He commented that the introductions should be relevant and contextualized for the learners. Thus, the introductions were modified to include localized examples and explanations to which the learners could relate. The feature relating to the sufficiency of information about the topics was given a mean rating of 2.00 (good). One evaluator suggested for the provision of information intended for the discussion of the topics so that the teachers would no longer look for other resources. She further noted that it would be a great help for the teachers. This suggestion was considered; hence, the Let's Learn component which was about the discussion of the text structures was included in the TSI. As for the small group presentations and individualized tasks, all the three evaluators gave a mean rating of 3.00 (very good). They found the activities complete and aligned to other instructional components. In fact, one of them commented that the presentation of the lessons and its flow were well-structured and easy to follow.

In assessing the design of the TSI, the evaluators accounted for the organization of the visual features. They gave a grand mean rating of 3.00 (very good) for all the features of the design. They found the unit titles, heading and subheadings desirable while the non-text content such as graphic organizers and pictures are properly labeled. Meanwhile, the evaluators identified the format as visually appealing and the layout as consistent. One evaluator suggested that there must be two spaces between the items for the readability of comprehension questions; this was incorporated in the final draft of the material.

Aside from the comments related to the design's features, one evaluator noted that the inclusion of foreword and references might be considered. This was immediately provided in the TSI.

In terms of the instructional use, the assessment which focused on the TSI's ease of use and pedagogical strategies was quantitated to a grand mean of 2.96 (very good).

Each feature relating to the ease of use was given a mean of 3.00 (very good) by the evaluators. They determined the TSI as easy and practical to use in the classroom. One evaluator anticipated that the lessons were easy to follow; the learners would have a clear picture about what they would study since examples were provided for each topic.

The pedagogical strategies encompassing the metacognitive strategies and explicit instruction was marked with the grand mean of 2.95 (very good). Each of the features of metacognitive strategies was given a mean of 3.00 (very good). The evaluators found the tasks appropriate to the teaching-learning process, aligned with the learn-

ing objectives and well explained in the TSI. Meanwhile, one of them underscored that the TSI must be aligned to the Reading and Writing Skills Curriculum Guide; hence, he suggested that the lessons and activities had something to do with the prescribed standards and competency. He further suggested the addition of an activity in which the learners would read different expository texts and then identify the writer's purpose and the pattern of development or text structure. This suggestion reflected in the last part of the material, the Chapter Test, to highlight the learning competency which stated that "the learner distinguishes between and among patterns of development in writing across disciplines" (K to 12 Senior High School Core Curriculum – Reading and Writing Skills, 2013).

As regards the features of explicit instruction which was another pedagogy used in the TSI, each was rated a mean of 3.00 (very good) except for the teaching/modeling which weighed a mean of 2.67 (very good). The evaluators identified as evident the small group presentations and discussion for the guided practice, and the individualized activities for the independent practice. They even found the comprehension questions being posed to the learners at the end of each activity to determine learning. On the other hand, one evaluator rated the teaching/modeling part of the lesson with 2.00 (good), but she did not provide any suggestion for improvement. As for this feature, the sample answers were indicated in all the activities of the teaching/modeling component for the facility of the teachers and learners.

Overall, the ratings given by the three evaluators on the nine lessons of text structures were indicative of a very good quality. The design, content, and instructional use of the TSI satisfied the criteria of assessment. Explicit instruction assured positive impact on the learner's achievement because it could increase the effective teaching elements such as clear explanations, modeling, practice, feedback, and frequent responding (Archer and Hughes, 2011). The characteristics of instructional delivery such as clear skill description and demonstration, supported practice, timely feedback, and independent performance were manifested in the developed TSI. The metacognitive reading strategies which could develop vocabulary and reading comprehension skills (Cubucku, 2008) and enhance learner's motivation to read (Meniado, 2016) were even provided in the TSI.

CONCLUSION

This study developed the Text Structure Instruction of Expository Texts and had it evaluated by English language experts. Using the developmental method of research and the ADDIE's model of instructional development, the researcher came up with the instructional material aimed at enhancing the learners' reading comprehension with the facility of the TSI's components. The content, design and instructional use of the TSI were assessed by three English language experts who were in the teaching service for at least five years and who had experiences in teaching senior high school learners. Before its completion, the TSI underwent two main processes — the development and assessment.

During the development process, the TSI went through the following stages. First is the analysis of the learning competencies of the subject Reading and Writing Skills, and the informal survey with the Grade 11 learners and teachers of a public high school about the learners' reading performances and availability of English books and other learning materials in the school. This analysis resulted in the identification of the lessons related to the structures of expository texts. These text structures or patterns of development included in the TSI were narration, description, definition, exemplification, classification, comparison and contrast, cause and effect, problem and solution, and persuasion. The content and layout of the lessons were conceptualized and improved into these components: Learning Objectives, Understanding, Metacognitive Strategy, Introduction, Teaching/Modeling, Guided Practice, Independent Practice, and Comprehension Questions. The nine lessons utilized the explicit instruction anchored on the metacognitive reading strategies. Series of consultation and modification were made to come up with the second draft of the TSI.

Throughout the assessment process, the evaluation, comments and suggestions made by the English experts interplayed in the modification for the final draft of the TSI. The evaluators indicated very good ratings on the developed TSI which manifested the acceptable quality of the instruction. Three English language experts assessed the content, design and instructional use of the TSI. The content of the TSI was found accurate, readable and well-presented. The evaluator said that the material was very comprehensive and the lessons were simple, clear and easy to understand. Additional parts of the lessons such as Let's Learn for

the discussion and Let's Reflect for the reflective thinking were made to comply to the suggestion of the evaluator about the sufficiency of the information on the topics. As suggested by the evaluator, the introductions of the lessons were modified to make them relevant and contextualized for the learners. The design of the TSI was desirable, visually appealing, consistent and properly labeled. The spacing, recommended color and font sizes for the heading, sub heading and text, as noted by the evaluators, were followed. The instructional use of the TSI was evaluated based on the material's ease of use and pedagogical strategies. The evaluators found the TSI practicable and easy to use. The evaluator commented that the flow of the lessons was easy to follow. On the pedagogies, the metacognitive reading strategies were appropriate, discussed and aligned to the learning objectives. One evaluator suggested an additional activity aligned to the learning competency prescribed in the Reading and Writing Skills Curriculum Guide; thus, the chapter test was included at the last part of the TSI to evaluate the learners' ability in displaying the learning competency related to text patterns. As for the explicit instruction, the elements of explicit method of teaching were evident. The sample answers in the activities of teaching/modeling were provided in the final draft for the guidance of the teachers and learners.

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

1. The Text Structure Instruction of Expository Texts which was anchored on explicit method of teaching and metacognitive strategies was developed following the ADDIE instructional design model, and was ready for classroom use.
2. The content, design and instructional use of the Text Structure Instruction were acceptable.

RECOMMENDATIONS

The compliance on the learning competencies of the subject, the challenges and demands in the development of TSI, the assessment on the material, and the selection types among others prompted the following matters for recommendation:

1. Involvement of the learners in the assessment of the instruction is recommended. Their performance during the implementation of the instruction in the classroom is indicative of the instruction's effectiveness.

2. Expository texts may include mixed patterns or the combinations of two or more text structures. It is recommended to include discussions and activities for the selections with mixed patterns.
3. Learners nowadays manifest great dislike toward reading long selections. It is suggested to the second language teachers to let their students explore further if this kind of attitude on long texts is being displayed.
4. Collaborative efforts among learners and teachers may be mutually exerted during the implementation of the instruction. Learners may be motivated and be aware that their cooperation on the instructional procedure is very much significant to achieve the instructional intents. Low performances come when learners are only compelled to do the activities.
5. Having the mastery of the reading skills from the metacognitive reading strategies cannot be achieved in just few sessions. It requires ample time to make it a habit. It is recommended that metacognitive reading strategies must be used in the lessons from other English subjects if applicable.

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INTERACTIVE AGRI-KNOWLEDGE: AN AGRICULTURAL MARKETING INFORMATION SUPPORT SYSTEM IN THE PROVINCE OF ISABELA

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ABSTRACT

The profound impact by the rise of the Internet on a highly diverse range of fields as distinct as say aerospace technology, agriculture, information technology and manufacturing was once unimaginable in the past. Information systems, particularly of decision support systems are becoming increasingly important in the agriculture sector. Access to vital, timely information can help stakeholders involved in agriculture and agribusiness such as farmers, traders, government personnel make better decisions about crop production and trade. This study aimed to develop an information system integrated within a mobile application and assessed if it addresses the challenges and problems using the existing information systems using the Software Quality Assurance Standard (SQuaRE). Results revealed that the challenges using the existing system are the following: ensuring actual happening in the farmers, traders or agriculture sector when it comes to the availability of high value crops; improving competitiveness by becoming an important link in the agricultural sector; minimizing transaction costs to enable smallholder farmers to participate successfully in the agricultural sector; supplying products to the formal market given by the department of agriculture by disseminating. The Interactive Agri-Knowledge with different interfaces was developed to provide solutions and address the identified challenges using the existing system. The developed system is highly compliant with the prescribed standard using the System and Software Quality Requirements and Evaluation products model and accepted unconditionally by the users and experts in the field of information technology. It is recommended that the developed system must be deployed to realize its full benefits and provide a solution to the problems of the existing system, the provincial agricultural office should provide the permanent secure hosting service of the developed system, and a permanent IT expert be designated by the provincial agricultural office to maintain the system and provide technical support.

Keywords: Assessment, Challenges, Interactive Agri-Knowledge, Software Quality Assurance Standard, Information System

INTRODUCTION

The Philippines is dubbed as one of the richest countries in the globe for it has a vast resources that provide and sustain the needs of its citizens. All these resources come from its rich soil which made the country an agricultural nation. Most of the Filipinos rely on farming in supporting their family needs. In the previous decades, the Philippines is one of the countries that export its yields in various nations particularly in the Southeast Asian Region. Through the ages, the production of crops produced by the nation deteriorated and slowly decreased which brought the nation to import agricultural products to provide the staple foods of the Filipinos.

The province of Isabela plays an important role in making the country's economy alive since a percent of its total agricultural products especially the most two stable foods which include rice and corn are produced in the province. Isabela is also noted for its production of high value crops (HVC) such as tobacco, bananas, mangoes, coffee and munggo beans. The province's agricultural output supplies the needs of many areas of the country and is considered to be a bulwark against scarcity. In addition, commercial food

animal production and is also an important and fast growing industry.

As reported, farmers in the province experienced decreased in the production of its agricultural products due to some recorded factors such as the occurrences of various natural and human calamities. Aside from this, farmers are being cheated by the rich capitalists and traders who controlled the prices of these products which made them become incompetent tillers of land. Also, farmers do not have the knowledge on how to increase their production, do not know how to market their products in a reasonable price, and do not have the access using technological and information system that may help them improve and grow.

The profound impact by the rise of the Internet on a highly diverse range of fields as distinct as say aerospace technology, agriculture, information technology and manufacturing was once unimaginable in the past. Information systems, particularly of decision support systems are becoming increasingly important in the agriculture sector. Access to vital, timely information can help stakeholders involved in agriculture and agribusiness such as farmers, traders, government personnel make better decisions about crop production and trade.

Agriculture is a vital means of food production as well as a means of supplying materials for clothing and industrial uses. Technological evolution has historically had a large impact on agriculture. The information age has heralded significant changes on how agriculture is conducted. According to Tomas, et al (2014), the internet can enhance agricultural production in areas of inefficiency and at the same time can be also be threat to pre Internet-era conventional agricultural enterprises.

The adoption of information and communication technologies in the agricultural sector can drive the empowerment of the farmers and viable agriculture. There are however, obstacles that hamper the full integration of ICT into agricultural practice and business which include lack of knowledge about the potential uses of ICT in agricultural production by the farmers and high cost of ICT in rural areas due to the instability of electrical services and lack of technical expertise (Firdhous, et al, 2013).

Based from this observation and explanation, this undertaking was conceptualized to develop an information system integrated within a mobile application on digital marketing as an enabler to enhance better access of information for buyers and farmers. Specifically, it identifies the challenges encountered using the existing system with regard to access to relevant information on high value crops; develops an information system to address the identified challenges; and assesses the developed system using the Software Quality Assurance Standards in terms of functional suitability; performance efficiency; compatibility; usability; reliability; security; maintainability; and portability.

RELATED LITERATURE AND STUDIES

The rapid adoption of smartphones, particularly in the Philippines unfortunately does not automatically translate into information integration with the agriculture sector. This means that the farmers do not fully realize the benefits of mobile and information technologies in regard to the trade of crops and other agricultural products. According to Paper (2013), frameworks do not yet exist that would create a platform that integrates and seamlessly connects farmers with their customer base. The wide availability and increased affordability of smartphones provides an opportunity for farmers to leverage the power of ICT in general and mobile technologies in particular to reach a wider customer base. The same technologies can also help farmers gain timely access to vital information and technical know-how from experts such as the government's agricultural officers. This undeterred access information can ultimately reduce the costs of doing business and improve efficiency and drive better decision-making processes among farmers. The lack of access to information and value-added services has been identified as a major obstacle for farmers in improving their livelihoods.

The preceding literatures provided insights on the value of information and mobile technologies to the agriculture sector. Agriculture is one area that could reap immense benefits by taking advantage of the capabilities of information technology to manage the acquisition and distribution of knowledge. The implementation of custom-developed information systems particularly that of Decision Support Systems can provide the impetus for boosting agricultural productivity and marketability of crops. This would ultimately lead to the lifting of the economic standards of farmers. Cases have been made about the improvements in the sustainability of agricultural business, not just in the profitability and efficiency, but also in the livelihood of individual farmers. Finally, this

study benefited greatly from distilled information and knowledge contributed by the literature. Armed with these, the researcher developed her own ideas on what original study to pursue and how to go about it.

The selection of agribusiness-related websites presented shows the viability and utility of implementing such information-based systems to aid farming businesses and farmers in particular. Information and knowledge are made more accessible to those who need them most, which results in greater efficiency, profitability, reduced environmental impact, and sustainability. Governments can step up their support for farmers by providing much-needed expertise, technical support, and ICT resources that would enable the stakeholders help themselves and boost their livelihoods. Farmers can be educated on the importance and profitability of high value crops as opposed to traditional crops to provide them with an alternative and better source of income. These agribusiness websites provided the seeds of new ideas that this researcher could use in her study, particularly with the development of a web-based information decision support system.

The role of farmers in the practice of sustainable agriculture is not just of being the producer, but also as the decision-maker. Farmers have to make decisions on the crops they produce that strongly influences agricultural sustainability. Such decisions do not occur in a vacuum; they are done in a domain of multiple multifaceted, sometimes conflicting interests. The ability to make good decisions depends heavily on the availability and timeliness of information. A form of decision support system, the Agricultural Decision Support System (AgriDSS) that focuses on agriculture can provide this information that will form the basis of good decisions by farmers. Such systems, in concert with the decision makers, are projected to be a key player in the attainment of a sustainable agriculture sector with a reduce environmental footprint. Contemporary DSSs that are available for use to the agriculture industry stakeholders are not yet maximized; thus the benefits of using such systems are not fully realized. This is because in many cases, these systems do not truly meet the needs of farmers in a relevant way; thus resulting in low acceptance. Many of these DSSs are designed without input from farmers, making them unsuitable and unfriendly to the intended audience. Modern user-centered software development practice requires the full participation of the intended users during the entire process of software production. Adoption of the User Centered Design software development philosophy is expected to help remedy the identified issues with conventional DSSs and at the same time make the software more accessible. The scientific personnel and developers who respectively commission and develop the systems must avoid falling into the trap where they think they know better than what the farmers actually require of a DSS. A fully developed AgriDSS that meets the needs of all the stakeholders in agribusiness can result in improvements in the decision-making processes, communication, and accessibility of information.

System and Software Quality Requirements and Evaluation (SquaRE) products model was used in this study as the standard by which the proposes system assessed. The SQuaRE model defines eight characteristics that can be used to evaluate the quality of a software product based on the outcomes of being used in a specific context. This model is highly suited to assessing human-computer systems, which includes the computer systems and the software products that run on it. The model provides a consistent set of terminology, characteristics and sub characteristics for quantifying and measuring, and comparing software product quality and product completeness. While this product quality model is intended for software and computer systems, many of the defined characteristics can be applied to many other types of systems and even services.

OBJECTIVES

Generally, this study aimed to develop an information system integrated within a mobile application on digital marketing as an enabler to enhance better access of information for buyers and farmers.

Specifically, it attempted to:
1. Identify the challenges encountered by the participants using the existing system with regard to access to relevant information on high value crops.
2. Develop an information system to address the identified challenges.
3. Assess the developed system using the Software Quality Assurance Standards in terms of functional suitability; performance efficiency; compatibility; usability; reliability; security; maintainability; and portability.

METHODOLOGY

The Research and Development (R&D) method was used as the appropriate methodology for this study. Research and Development uses existing knowledge, research, methods and practices to solve practical problems and generate new knowledge (George, 2005). Broadly speaking, research and development is essentially a systematically conducted creative activity based on scientific principles whose ultimate purpose is to utilize the existing stock of collective knowledge to develop useful new techniques, processes, systems, machines, and solutions to real-world problems as well as to grow the collective knowledge of mankind. Data were gathered from participants to help find answers to the research questions of the study using qualitative and quantitative method were.

This research utilized the V-Model of software development as the development methodology which is suitable for this study because it involves the end users in all aspects of the system design and is also highly recommended for moderate to complex software development requirements.

The V-shape of the V-Model method represents the various stages that will be passed through during the software development life cycle. Beginning at the top-left stage and working, over time, toward the top-right tip, the stages represent a linear progression of development similar to the waterfall model.

Much like the traditional waterfall model, the V-Model specifies a series of linear stages that should occur across the life cycle, one at a time, until the project is complete. For this reason, V-Model is not considered an agile development method, and due to the sheer volume of stages and their integration, understanding the model in detail can be challenging for everyone on the team, let alone clients or users. The end result is that the developed system tends to be better tested and accepted by its intended users.

PARTICIPANTS OF THE STUDY

The main participants of this study selected through convenience sampling which composed of the agriculture officers, the business sectors (farmers, traders, farmer/trader) who were primarily involved in the system process and the IT experts who assessed the developed system

There were fifty-four (54) who were assigned as the agriculture officers who were given individual access level for the thirty-seven (37) municipalities in the Province of Isabela and ten (10) Traders and eleven (11) farmers for whom both can have their own access level. There were ten (10) IT experts who also validated the developed system.

The data gathering instruments employed in this study the self-made and validated questionnaires, observation checklist, interview guides, and document analysis/records review.

STATISTICAL TOOLS

The weighted arithmetic mean was used to determine the average responses of each item of the five (5) options in each item in the questionnaire namely, 5 (Very Great Extent /Accepted Unconditionally), 4 (Great Extent /Accepted with minor condition), 3 (Moderately Extent), 2 (Low Extent/Accepted with major condition) and 1 (Very Low Extent/Reject).

RESULTS AND DISCUSSION

Table 1. Challenges encountered by the participants in the existing system with regard to the access to a relevant information on high value crops.

Criteria	Mean	Description
Farmers access to high-value market after harvesting products that could give them profit.	4.35	Very Great Extent
Consistent in terms of supplying products to the formal market given by the department of agriculture by disseminating information	4.58	Very Great Extent
Could be done to ensure actual happening in the farmers, traders or agriculture sector when it comes to the availability of high value crops in Isabela province	4.83	Very Great Extent
Supported farmers, traders efforts to benefit from their linkages to different markets	4.25	Very Great Extent
Improve competitiveness by becoming an important link in the agricultural sector	4.71	Very Great Extent
Transaction costs be minimized to enable smallholder farmers to participate successfully in the agricultural sector.	4.69	Very Great Extent
Average Weighted Mean	**4.56**	**Very Great Extent**

The participants encountered six (6) significant challenges in using the existing system, particularly with issues regarding timely access to high value crop information. With an overall mean of 4.56, this equates to an overall descriptive evaluation of "Very Great Extent".

It is revealed in table 1 that the following were challenges encountered by the participants: ensuring actual happening in the farmers, traders or agriculture sector when it comes to the availability of high value crops; improving competitiveness by becoming an important link in the agricultural sector; minimizing transaction costs to enable smallholder farmers to participate successfully in the agricultural sector; supplying products to the formal market given by the department of agriculture by disseminating information; accessing to high-value market after harvesting products that could give them profit; and supporting farmers, traders efforts to benefit from their linkages to different markets.

Interactive Agri-Knowledge System in Isabela Province

Figure 1. Interactive Agri-Knowledge System in Isabela Province

The researcher developed an information system and called as the Interactive Agri-Knowledge System in Isabela Province with different interfaces which can be easily accessed by the participants particularly in the fields of agriculture and trading that may provide solutions to the identified challenges. An Analysis using the A Posteriori Algorithm will facilitate the decision-making and provide an intuitive multi-platform graphic user interface in which consolidated information about the intended users (farmers, traders & agriculture sector). This developed system is of great help/advantage on the agricultural sector especially in marketing their agricultural product through digital marketing; interact with different farmers, traders and disseminate information of their agricultural products; To provide decision-making by using the A Prosteriori algorithm on the law of large numbers in different crops provided by the farmers of the Isabela Province; intuitive user-friendly interface that can be easily learned by the

farmer, traders and agriculture sector who are its intended users; real time updates on the high value products value and prices; search functionality makes it easy to locate specific records of any crops produce in Isabela province. Users can initiate searches by typing in keywords in a search box; multiuser capability ensures that the system can be used by many users at the same time without impacting performance; web-based client-server architecture allows users to access the system's features via the Internet anywhere, anytime; user-level security ensures that the system can be accessed only by authorized users. Password protected user accounts with levels of access appropriate for the user needs are provided; online data entry. Intended users can input the data needed for agricultural products directly using the web application's client-side interfaces; to facilitate convenient way of managing required form in digital formats and standardize data set of all digital forms; and to provide a mechanism of digital filing techniques for storing, monitoring, and generating reports; and statistical report.

ASSESSMENT ON THE DEVELOPED INFORMATION SYSTEM USING THE SOFTWARE QUALITY ASSURANCE STANDARDS

Table 2. Overall performance rating of the developed system as assessed by the participants

Attributes	Sub-Attributes	Mean	Category Value	Description
Functional Suitability	Functional Completeness	4.20	4.31	Very Great Extent
	Functional Correctness	4.32		
	Functional Appropriateness	4.40		
Performance Efficiency	Time Behavior	4.36	4.59	Very Great Extent
	Resource Utilization	4.60		
	Capacity	4.81		
Compatibility	Co-Existence	4.54	4.41	Very Great Extent
	Interoperability	4.27		
Usability	Appropriateness Recognizability	4.50	4.54	Very Great Extent
	Learnability	4.51		
	Operability	4.51		
	User Error Protection	4.66		
	User Interface Aesthetics	4.42		
	Accessibility	4.64		
Reliability	Maturity	4.33	4.43	Very Great Extent
	Availability	4.51		
	Fault Tolerance	4.49		
	Recoverability	4.38		
Security	Confidentiality	4.73	4.69	Very Great Extent
	Integrity	4.68		
	Non-repudiation	4.69		
	Authenticity	4.55		
	Accountability	4.80		

	Modularity	4.69		
Maintaina-bility	Reusability	4.39		
	Analyzability	4.41	4.48	Very Great Extent
	Modifiability	4.58		
	Testability	4.34		
Portability	Adaptability	4.49		
	Installability	4.36	4.45	Very Great Extent
	Replaceability	4.51		
Category Mean			**4.49**	**Very Great Extent**

Table 2 shows the overall results of the participants' evaluation of the developed system in compliance with the System and Software Quality Requirements and Evaluation (SquaRE) products model in terms of functional suitability, performance efficiency, compatibility, usability, reliability, security, maintainability and portability.

It is revealed that the overall weighted category mean of 4.49 which made the developed system "Very Great Extent", the participants as a whole agreed that the developed information system is compliant to a very great extent with the software quality characteristics of System and Software Quality Requirements and Evaluation (SquaRE) products model.

This shows that the developed system is an effective tool in helping the agricultural sectors especially the farmers to produced high value crops and market their crops in a more reasonable price that may help them augment the difficulties they usually encounter starting from the planting season until they market their harvested crops.

ASSESSMENT ON THE DEVELOPED INFORMATION SYSTEM BY THE USERS AND IT EXPERTS

Table 3. Assessment on the developed information system by the users and IT experts

Criteria	Mean Users	Mean IT Experts	Mean	Description
1. The interface design is simple, tasteful and not flooded with distracting images and text.	4.80	4.90	4.85	Accepted unconditionally
2. The system uses standard equipment that is reliable, widely available, and applicable to a variety of uses	4.90	4.60	4.75	Accepted unconditionally
3. The program is visually attractive and interesting. It motivates users to continue using the program by the farmers, traders and agricultural sector.	4.50	4.40	4.45	Accepted unconditionally
4. The organization of the software is clear, logical, and effective, making it easy for the intended audience to understand.	4.40	4.50	4.45	Accepted unconditionally
5. The buttons, icons and dropdown menu are responsive.	4.70	4.70	4.70	Accepted unconditionally
6. The visual aspect of the application (user interface) is consistent across different platforms or computer systems.	4.60	4.50	4.55	Accepted unconditionally
7. Text, images and the colors of the user interface is appropriate and relevant.	4.90	4.60	4.75	Accepted unconditionally
8. Complete functionality is provided which enables the quick and accurate access to information.	4.50	4.70	4.60	Accepted unconditionally
9. The language in the program and in the user's guide is clear and easily understood to the intended audience.	4.40	4.40	4.40	Accepted unconditionally
10. Printouts are clear, well- organized and dated.	4.70	4.60	4.65	Accepted unconditionally
Average Weighted Mean			**4.62**	**Accepted unconditionally**

Table 3 illustrates the weighted mean rating of the users and IT expert's evaluation of the developed system. The results showed that there were two very significant performance criteria on the success of the developed system which are indicated in item 2 – "The system uses standard equipment that is reliable, widely available, and applicable to a variety of uses" and item 7 – "Text, images and the colors of the user interface is appropriate and relevant" on the Users Expert which made the system "accepted unconditionally" by the most of the respondents. Both the criteria have a weighted mean rating of 4.90. Moreover, in the area of IT experts, the results also showed that there was only one very significant performance criterion on the success of the developed system which is indicated in item 1 – "The interface design is simple, tasteful and not flooded with distracting images and text" which made the system also "accepted unconditionally" by the most of the respondents with a weighted mean rating of 4.90.

It can also be gleaned that the performance criteria evaluated both on the users and IT experts have weighted means ranging from 4.40 – 4.90 which all fell under the descriptive interpretation of "accepted unconditionally".

With a total weighted mean of 4.62 as shown in table 3, the validity of the developed system as assessed by the users and IT experts is interpreted as "accepted unconditionally".

CONCLUSION AND RECOMMENDATION

Data revealed that the challenges in using the existing system, particularly with issues regarding timely access to high value crop information are the following: ensuring actual happening in the farmers, traders or agriculture sector when it comes to the availability of high value crops; improving competitiveness by becoming an important link in the agricultural sector; minimizing transaction costs to enable smallholder farmers to participate successfully in the agricultural sector; supplying products to the formal market given by the department of agriculture by disseminating. With this, the Interactive Agri-Knowledge with different interfaces which can be easily accessed by the participants was developed to provide solutions and address the identified challenges using the existing system. The developed system is highly compliant with the prescribed standard using the System and Software Quality Requirements and Evaluation (SquaRE) products model according to the participants and accepted unconditionally as to the assessment of the users and experts in the field of information technology.

It is therefore recommended that the developed system must be deployed in order to realize its full benefits and provide a solution to the problems of the existing system, the provincial agricultural office should provide the permanent secure hosting service of the developed system, and a permanent IT expert be designated by the provincial agricultural office to maintain the system and provide technical support.

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ENHANCING CLASS ENGAGEMENT OF BSBM LEARNERS THROUGH INTERACTIVE-MOTIVATIONAL STRATEGIES IN LESSON DELIVERY USING LEARNING MANAGEMENT SYSTEM

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ABSTRACT

The Bachelor of Science in Business Management (BSBM) program, under the Department of Management Studies envisioned the continuous development in teaching-learning delivery and strategies of faculty specifically in utilization of Learning Management System. The researchers wanted to explore the adaption of interactive-learning strategies in motivational process through Google Workspace. The study utilized mixed research designs in the conduct of the study. The implementation of interactive learning strategies in motivational process promotes the: atmosphere of motivation, excitement among students, promotion of fun environment, increase in class involvement and participation, understanding of concepts, and stimulation of class curiosity and thinking. This action research recommends the following: design and explore motivational interactive strategies that are data friendly, student and faculty friendly and time efficient, and encourage the learners to find an environment that will be conducive for their online session learning.

INTRODUCTION

The adaption of learning management system (LMS) as an avenue of teaching-learning delivery for flexible learning is vital to the success of higher education institutions. This substantiates the movement of Cavite State University – Cavite College of Arts and Trades towards outcome-based education (OBE) as a forefront strategy in addressing various programs it offers. However existence of making the teaching process more interactive and vibrant for learning to the students becomes challenging in utilization of LMS.

Under the Department of Management Studies, the Bachelor of Science in Business Management (BSBM) program envisioned faculty continuous development in teaching-learning delivery and strategies, specifically in the use of LMS.This manner pushes the desire of the researchers to explore the different tools available in LMS in order to increase the students' motivation and engagement as well as their retention of concepts and ideas with the existing intervention and facilitation of the teacher (Abug. et. al., 2021).

Thus, the researchers wanted to explore the adaption of interactive-learning strategies in the motivational process through Google Workspace LMS in order to improve the transfer of knowledge and skills to the students. This action research also serves as a catalyst for the development of the strategies of every faculty member in a higher education institution.

ACTION RESEARCH OBJECTIVES

Generally, this action research aimed to determine the effect of interactive-learning strategies in motivational learning process among BSBM students of Cavite State University – CCAT Campus.

Specifically, the researchers aimed to:

1. design and implement interactive learning strategies in motivational process using LMS;
2. evaluate the implemented interactive learning strategies in motivational process using LMS in terms of;
   a. class atmosphere of motivation;
   b. excitement among students /fun environment towards learning;
   c. class involvement and participation;
   d. clear understanding of the students toward concepts;
   e. class comfortability of interaction;
   f. attention of students; and
   g. stimulation of class curiosity and thinking;
3. identify challenges in the implementation of interactive-based motivational strategies using LMS; and
4. craft possible action plan to address the challenges encountered in the conduct of learning intervention.

LITERATURE REVIEW

An increasing number of educational institutions across the world have integrated learning management systems into their educational systems. According to Araújo Júnior and Marquesi (2009), a learning management system, or commonly referred to as an LMS, may be defined, from the user perspective, as a virtual environment that aims to replicate face-to-face learning environments with the use of information technology. In a LMS, the interaction happens through devices that modify communication either synchronously or asynchronously, allowing the crea-

tion of various methods to encourage dialogue and the active participation of students (Oliveira, 2016). However, El Bahsha and Daoudb, (2016) noticed that, although some learning management systems provide several functionalities that are crucial to supporting interactive and effective learning, they are not effectively utilized and are mainly used as an online repository to access course materials. In addition, Li and Tsai (2017) claim that accessing learning materials, that is, lecture slides, video lectures, shared assignments, and forum messages, is the most frequently performed online learning activity. Students with completely different functions, motivations, and preferences could exhibit different behaviors once accessing these materials. The researchers suggest utilizing the benefits of digital learning to develop practicable teaching strategies for effectiveness in teaching. Teachers matched with the utilization of their smart teaching strategies play an important role in extending online interactive learning among students (Lin, Chen, and Liu, 2017).

Interactive-learning enabled environments can massively promote learning behavior data and its support of learning behavior. Learning behaviors were divided into different training sets and testing sets. After the interventions of two semesters of interactive-learning behavior, they found that the students' feature recognition and relationship analysis, learners' interest, assessment pass rate, or excellence rate had improved significantly (Xia, 2020). This is also true in the study conducted by Conte and Serratosa (2020), who presented an online and interactive design in lieu of understanding and learning cost functions in their respective classes. Graphs and figures were introduced to the observed bi-algorithm following a sequential order from which a coefficient is calculated, and a strategy is therefore proposed which requires a node-to-node mapping, which in turn contributes to the learning process. The learners were allowed to freely critique and identify errors and were subjected to deliberation on what the appropriate cost functions were that would be used as a business model (interactive). This is the first active and interactive learning method applied to graph matching in cost functions and calculations. These properties made the authors' method very useful as far as the learners were concerned. Thus, allowing human interactions into the teaching method would tend to increase the learning potential of the learners. Considerably, Farashahi and Tajeddin (2018) used a sample of 194 undergraduate and graduate students to assess the perceived effectiveness of simulation,

case study, and lecture for developing students' problem-solving skills, interpersonal skills, and self-awareness. Findings indicated that students perceived simulation first, followed by case study and lecture, respectively, as the most effective teaching pedagogy for developing their interpersonal skills and self-awareness. Simulation and case studies, on the other hand, are perceived to be more effective than lectures with regard to problem-solving skills.

At the University of Alicante (Spain), Mora et al. (2020) conducted a collaborative working model. The model was implemented through a learning web-platform with the purpose of enhancing the learning processes of students. Selected students from computer science engineering were encouraged to peer review their classmates' works, make comments, suggest improvements, and assess final assignments while the whole process was being managed and supervised by the teaching staff. Results concealed deeper content assimilation and increased learning in students' several scientific skills. Researchers regard that collaborating in peer assessment enhances the students' motivation and promotes active learning. In addition, researchers claimed that the method could be very helpful and time-saving for instructors, especially in the management of large groups of students. The result of the previous study is also aligned with the study conducted by Abu-Bajeh and Abbas (2021), explained that with the current online education methods depicting asynchronous online education and mixed education, there is a need for an online interactive educational model with good educational performance that activates participation, interaction, and feedback achievement. The researchers also construed that with the current asynchronous online learning methods, this would not be accurate without the role of the teacher or any interaction. In line with this, Cao (2020) explained that time and space are no longer the barriers to learning, which gives the reason and mechanism for why and how LMS has become the key factor in achieving success in higher education. Student interactions in e-learning platforms are text-based, communication and feedback are delayed, resulting in more passive interaction among students, with the majority of them simply completing the tasks assigned by the teacher.

Given that education and learning experiences are dynamic and should address the needs of both industry and academic competence, students' learning experiences should be addressed and developed on a continuous basis. Hence, the study

and research conducted by the mentioned authors provide a pathway to craft and observe interactive-based activities to further enhance the learning experiences of BSBM students at CvSU-CCAT to provide avenues of improvement and a platform of meaningful strategies in the instruction delivery.

METHODOLOGY

Research Design

The study utilized mixed research designs in the conduct of the study. Specifically, this action research used descriptive design to describe the participants' mean scores. Considerably, quasi-experimental approaches were used in the scaffolding of intervention and analyses among the participants. Moreover, inferential and observation designs were utilized to augment and support the findings of the latter design. This action research has a prior null hypothesis that there are no significant differences between the variables under study among classes with motivational- interactive learning strategies and classes without intervention.

Additionally, the authors used likert-scale questionnaires, checklists, and field and observation notes as research instruments as a basis for data analysis. In support of calibrated and standard measures of variables, the researchers have used the motivation-matrix of the University of California Davis, Center for Educational Effectiveness as a key research instrument in this action research. Two classes, each with an average of 35 students, were used by the researchers.

Participants of the Study

The teachers used the two heterogeneous class of BSBM for each three lecture-subjects of BSBM program offered in the campus namely E-Commerce, International Marketing, and Advertising. The first class utilized the interactive-learning strategies whilst the other class did not. In addition, three faculty members were sourced for the teachers responses in this action research.

Adoption and Implementation Process

The authors, through their collective and collaborative ideas to understand and explore the facets of the new normal of learning, attempted to explore strategies to enhance the learning experiences of students using the Google Workspace-Learning Management System as a key delivery tool in instruction delivery. This action research

explored the utilization of motivational interactive-learning strategies prior to class discussion to determine its possible implications for students' motivation, engagement, and performance. Hence, providing a suggestive strategy to improve class delivery as far as business education is concerned.
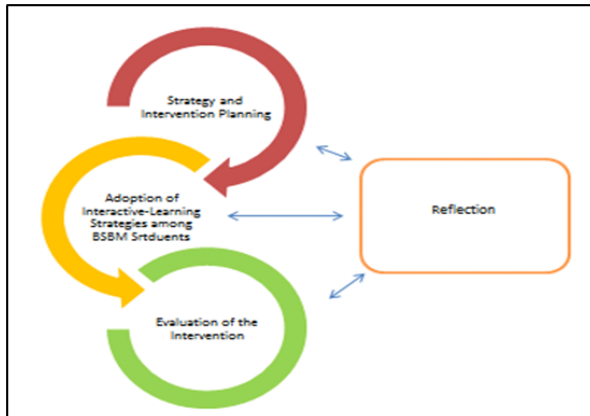

Figure 1. Ideation to Evaluation Framework

The authors initially brainstormed various motivational learning strategies that would be utilized in this action research. Moreover, the proponents strategize the delivery of intervention through the determination of appropriate tools that will be used in the study, namely: types of motivational strategy, leveling of topics, class flow, classes to be considered, types of assessment, variables to be considered, research instruments, and timeline of intervention. Considerably, the authors have the following assumptions:

- all classes under study were both heterogenous;
- internet accessibility are almost the same;
- applied in online session; and
- Google Workspace packages were utilized as LMS.

The faculty members have used interactive picture analysis activity, word association game, and picture without caption activity as interventions in this action research. Considerably, the proponents have used the e-commerce, international marketing, and advertising classes of the Bachelor of Science in Business Management Major in Marketing Management program of Cavite State University-CCAT Campus.

Classes were recorded to aid qualitative observation approaches of teacher observers. Online evaluation sheets and students' assessments were provided and evaluated to augment the quantitative data requirement. Descriptive and inferential statistics were utilized to provide adequate analysis and empirical observation of the intervention.

FINDINGS AND ACTION RESEARCH NARRATIVE

Intervention Assessment

Table 1. Teachers' Observation

Areas of Observation	With Intervention	Without Intervention
Class atmosphere of motivation	There was a presence of high motivational atmosphere upon the implementation of interactive motivational activity prior to discussion. This was attributed to the active participation of students through the provision of their insights actively. Motivational atmosphere was present as students volunteered enthusiastically. Students were ready and are observed to be in high spirit to listen and interact.	Motivation was present but was limited to the question-answer response of some of the students towards the class queries. Limited number of students responded to the class discussion.
Excitement among students / Fun environment towards learning / Class involvement and participation.	Many students answered with strong intention to learn the main discussion after the interactive motivational strategy was utilized. Students were observed to be volunteering in expressing their ideas, questions and insights toward the subject matter discussed.	Few students plainly responded their readiness towards the opening of topic in class discussion.
Clear understanding of the students toward concepts	The students clearly answered the questions. Students can clearly explain the concepts, ideas, and relevant terminologies during class.	There were dominant presence of teachers reiteration of questions and ideas to the students. It was also observed that teachers tend to use alternative form of questions to address particular concepts or ideas.
Class comfortability of interaction	Students were observed to be comfortable in interacting with the class through the presence of fluidly relaying information, asking questions, provision of insights and relating to their own understanding throughout class discussion.	There was dead air observed during class interaction. The teacher tend to call students multiple times and students answered through uncertain response.
Attention of students / Stimulation of class curiosity and thinking	Majority of the students were attentive all throughout the class discussion.	There was dead air observed during class interaction. The teacher tend to call students multiple times.

Table 1 shows the teachers' observation across BSBM students with induced intervention and placebo classes. It generally shows that there were positive results of observed responses from the students such as the willingness of the students in class participation and engagement, confidence in sharing their ideas, and observed attentiveness to queries.

Table 2. Students' Response

Variables	With Intervention		Without Intervention	
	Mean Value	Descriptive Value	Mean Value	Descriptive Value
I felt I am motivated in class	4.28	Highly Agree	3.90	Agree
I felt excited in learning more about the subject matter	4.35	Highly Agree	4.00	Agree
It felt fun and the mood was set for learning	4.14	Agree	3.75	Agree
It is very understandable and concepts were clear	4.31	Highly Agree	4.00	Agree
I participated well in the activity prior to our class discussion	4.05	Agree	3.91	Agree
I am comfortable in interacting in our class	4.05	Agree	3.79	Agree
I paid attention to what is going on in our class	4.20	Highly Agree	3.85	Agree
I found this activity intellectually stimulating	4.23	Highly Agree	3.84	Agree

Table 2 reveals the students' response towards theirs experiences in their respective classes both from classes that have intervention and without intervention of interactive motivational strategy. Generally, the students were motivated and participated more in classes with intervention as revealed by higher mean values compared to classes without intervention.

Table 3. Significant Difference of Students' Response (With Intervention and Without Intervention)

Variables	Coefficient	p-value	Significance
I felt I am motivated in class	3.3258	0.001	Significant
I felt excited in learning more about the subject matter	3.0930	0.002	Significant
It felt fun and the mood was set for learning	3.4341	0.001	Significant
It is very understandable and concepts were clear	2.5412	0.012	Significant
I participated well in the activity prior to our class discussion	1.1496	0.252	Insignificant
I am comfortable in interacting in our class	1.8797	0.062	Insignificant
I paid attention to what is going on in our class	2.9905	0.003	Significant
I found this activity intellectually stimulating	3.1611	0.002	Significant

Table 3 presents the significant difference of students' response from classes with and without intervention. Most of the variables under study are significant, thus the intervention conducted by the proponents have a conclusive basis that the mean values are higher compared to classes without intervention. Thereby, rejecting the null hypotheses of all variables that has significant interpretation. However, students participation prior to class discussion and being comfortable in class interaction are insignificant. This can be attributed to internet connectivity issues, learning environment factors, and prior moods of students in their classes. Thereby, accepting the null hypotheses of these two variables.
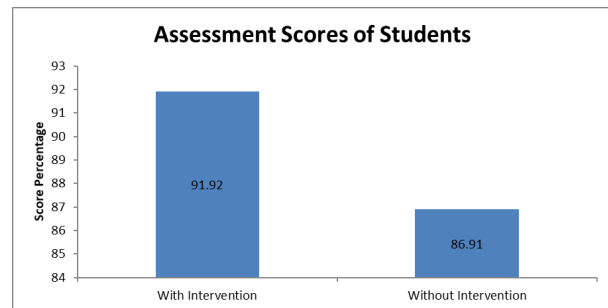
Figure 2. Assessment Scores of Students

Figure 2 shows the assessment scores of students at the end of the class session. Generally, students from classes with intervention performed well in formative assessment scores compared to students from classes without intervention.

Table 4. Teachers' Observation: Challenges

There is a standing challenge of a reliable internet connection.
There is an identified constraint towards gadget compatibility among students.
Some of the students have unconducive space for online learning using the learning management system.
The one hour prescribed online session is not enough to maximize the potential of providing interactive motivational activity.
Collaboration among students were limited due to the absence of physical interaction.

Table 4 shows the challenges that were observe by the teachers. The finding shows that the a priori challenge was the reliability of the internet connection as also revealed by the study conducted by Abug et. al. (2021). Followed by the familiarity towards platform, gadgets and devices.

CONCLUSION

The authors have adopted and utilized the interactive learning strategies in motivation process among BSBM students of Cavite State University - CCAT Campus, the authors conclude that:

1. The selected faculty members of the Department of Management Studies crafted, strategized and implemented an intervention to adopt interactive learning strategies in motivation process of BSBM students using G-suite LMS.
2. The implementation of interactive learning strategies in motivational process promotes the: atmosphere of motivation, excitement among students, promotion of fun environment, increase in class involvement and participation, understanding of concepts, and stimulation of class curiosity and thinking.
3. The faculty researchers have identified the following key challenges:
   - There is a standing challenge of a reliable internet connection.
   - There is an identified constraint towards gadget compatibility among students.
   - Some of the students have unconducive space for online learning using the learning management system.
   - The one hour prescribed online session is not enough to maximize the potential of providing interactive motivational activity.
   - Collaboration among students were limited due to the absence of physical interaction.

RECOMMENDATION

The researchers recommend the following:

1. design and explore motivational interactive strategies that are data friendly, student and faculty friendly and time efficient;
2. encourage the learners to find an environment that will be conducive for their online session learning;
3. faculty members are encourage to have a prior knowledge towards the compatibility of electronic devices that the students used in online learning; and
4. undertake future action researches concerning the efficiency and efficacy of this type of intervention and other variables that might influence the learning experiences of business students for further understanding and improvement of strategies.

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WORK-RELATED MUSCULOSKELETAL SYMPTOMS AMONG MEDICAL TECHNOLOGISTS AMIDST THE COVID-19 PANDEMIC

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ABSTRACT

Medical technologists have a higher risk of developing work-related musculoskeletal disorders (WMSDs) as they routinely perform activities that involve repetitive movements and static postures for extended periods of time. This risk has increased due to the overwhelming number of COVID-19 tests generated in this pandemic. The study aims to assess the prevalence of WMSD-associated symptoms among medical technologists and to determine how their demographic profiles affect the development of these symptoms. In this quantitative descriptive study, 40 medical technologists from independent molecular diagnostic laboratories in the National Capital Region (NCR) were selected. The Standardized Nordic Musculoskeletal Questionnaire (SNMQ) and a Complementary Information Questionnaire (CIQ) was utilized to evaluate WMSD-associated symptoms and to collect the respondents' demographic and work-related information respectively. The frequency and percentage method was used to determine the prevalence of WMSD-associated symptoms among the respondents. The Chi-Square Test of Independence was employed to test the significant relationship between the respondents' demographic profiles and WMSD-associated symptoms experienced. Results revealed that 87.5% of the respondents experienced at least one WMSD-associated symptom in the last 12 months. The most affected region is the lower back (77.5%), followed by the neck (75.0%), and then the right shoulder (67.5%). No significant relationship was found between the respondents' demographic and work-related profiles and the symptoms encountered. In conclusion, medical technologists are at risk of developing WMSDs due to the high prevalence (80%) of WMSD-associated symptoms. Future intervention programs are recommended to reduce the risk of WMSD development in medical technologists.

Keywords: COVID-19, work-related musculoskeletal disorders, medical technologists, independent molecular diagnostic laboratories, Standardized Nordic Musculoskeletal Questionnaire

INTRODUCTION

Background of the Study

Since March 2020, the world has been in the midst of a public health crisis - the SARS-CoV-2 (COVID-19) pandemic. As of February 2021, there are over a hundred million cases worldwide, with 528,853 cases in the Philippines (World Health Organization, 2021). One of the principal units responsible for testing and identifying infected patients are medical technologists, who are among those at the forefront of the fight against the virus. However, due to the sudden rise in the demand for healthcare workers, there has been a shortage of manpower in hospitals that accommodate COVID-19 patients (Montemayor, 2020). Thus, the remaining healthcare workers including medical technologists, have to bear taking up a higher patient population and a heavier workload resulting in unhealthy working conditions for medical technologists, such as less breaks, more work shifts, and longer working hours, causing fatigue, exhaustion, and possible musculoskeletal injuries/disorders (WHO, 2020).

Work-related musculoskeletal disorders (WMSDs) are injuries or disorders of the musculoskeletal system wherein the development of the said conditions are caused mainly by ergonomic hazards, such as the work environment or the nature of work (Centers for Disease Control and Prevention, 2020). The risk of WMSDs occurring is especially increased in high pressure situations, or situations wherein a worker needs to produce more results due to a rise in demand. Other ergonomic risk factors for WMSDs include work posture, different movement patterns, repetitiveness, and pace of work (Canadian Centre for Occupational Health and Safety, 2019). In the field of medical technology, poor ergonomic workstations have been strongly associated with the development of WMSDs (Haile et al., 2012). Postural strain and prolonged immobilization, as well as repetitive strains are also common ergonomic hazards that have been linked to the development of WMSDs (DePalma, 2018).

Work-related musculoskeletal disorders (WMSDs) impose detrimental effects to the general well-being of individuals and can potentially cause irreversible damage to motor function if the symptoms are not resolved promptly and respective adjustments in the work routine are not made. Additionally, as WMSDs cause discomfort and may restrict the movement of employees, these conditions are directly associated with an employee's performance. It burdens not just the affected individual but also other entities that the individual interacts with (accuracy of results, patient prognosis, healthcare system, etc.). Their work efficiency, and productivity are negatively affected. Financial costs and expenses are also associated with these conditions as it can greatly affect the allocation of resources due to the manpower present. Amidst the pandemic, medical technologists are more susceptible to developing WMSDs due to the scarce number of the country's medical technology staff and the increasing demand of their services.

Due to the lack of studies on the musculoskeletal symptoms arising among medical technologists, the researchers have decided to pursue the research study. The researchers seek to evaluate the physical health of the medical technologists amidst the pandemic through the evaluation of the presence of musculoskeletal pain and raise awareness accordingly. As stated earlier, the development of musculoskeletal pain and its progression to WMSDs can contribute to decreased work efficiency and productivity, and overall performance of a worker. In the healthcare sector, especially in the midst of a pandemic wherein time is crucial, these musculoskeletal complications may result in detrimental outcomes. Hence, the researchers also aim to improve the efficiency of the healthcare sector, specifically that of medical technologists, by encouraging more studies on the subject matter, and to substantiate the importance of proper musculoskeletal care.

Problem Statement

While there are quite a few studies that focus on the relationship between WMSD-associated symptoms and increased work, there are none that focus on medical technologists working in a modern age global pandemic. With this, the study aims to evaluate the prevalence of WMSD-associated symptoms encountered by medical technologists working in independent molecular diagnostic laboratories in the National Capital Region (NCR), due to the increased workload and working hours brought about by the COVID-19 pandemic.

Hypothesis

The hypothesis will be tested at α .05. Ho: There is no significant relationship between each of the respondents' demographic and work-related profiles and the WMSDs symptoms they encountered and reported.

Scope and Limitations

The study focused on the assessment of the prevalence of WMSD-associated symptoms among medical technologists working in independent molecular diagnostic laboratories that are licensed to process COVID-19 specimens in the National Capital Region (NCR).

The relationship between the respondents' demographic and work-related profiles influenced by the COVID-19 pandemic was associated with the likelihood of acquiring WMSD-associated symptoms. The study was limited to assess WMSD-associated symptoms such as aches, pain, discomfort, and numbness perceived during work shifts as indicated in the Standardized Nordic Musculoskeletal Questionnaire (SNMQ). The areas in which these symptoms must have occurred were limited to the neck, shoulders, upper and lower back, elbows, wrists, hands, hips, thighs, knees, ankles, and feet. Additionally, since the responses on the SNMQ were self-reported, subjective bias may be present. A Complementary Information Questionnaire (CIQ) was also used to obtain the demographic and work-related information of the respondents. Due to the safety pro-

tocols and the limited mobility of the pandemic, the researchers relied on online and mobile messages or calls to disseminate the survey questionnaires among the medical technologists in independent molecular diagnostic laboratories in Metro Manila.

METHODOLOGY

Research Design

A quantitative descriptive method was utilized in this study. For this study, the researchers aimed to determine the WMSD-associated symptoms arising from performing COVID-19 tests encountered by Medical Technologists. The study then revealed important information on "what are the usual musculoskeletal symptoms encountered by Medical Technologists who are performing COVID-19 tests and the overall implication of such findings.

Participants and Study Site

Using the random sampling method, data for the study were gathered from licensed medical technologists of independent molecular diagnostic laboratories in the NCR. These laboratories were contacted by the researchers through email, phone call and Facebook Messenger. In totality, 40 medical technologists were identified as respondents as they are the ones handling the COVID-19 specimens, which subjects them to experience heavier workload and work hours. The respondents must be 21-59 years old, with the ability to read both English and Filipino. The respondents must willingly and voluntarily participate in the study. The exclusion criteria of the respondents are unlicensed medical technologists, licensed medical technologists who are working at laboratories aside from independent molecular diagnostic laboratories, and individuals who did not approve of the consent form.

Data Measure/Instrumentation

The Standardized Nordic Musculoskeletal Questionnaire or SNMQ was used to identify the work-related musculoskeletal problems encountered by the medical technologists. This standardized tool was created by Kuorinka and his colleagues with the support of the Nordic Council of Ministers to analyze and identify WMSD-associated symptoms among various individuals on a worldwide scale. It was also mentioned that it would be useful to pair the SNMQ with a Complementary Information Sheet (CIS) as this would aid in assessing the impact of factors such as the respondents' demographic profiles (age, sex, and work experience) and other working conditions (increased workload and working hours) on the prevalence of musculoskeletal conditions.

Data Gathering Procedure

The data was gathered from March 2021-May 2021. Prior to the collection of data, an ethical approval was obtained from the research ethics committee. After the approval of the ethics committee, the researchers immediately contacted medical technologists working in freestanding molecular diagnostic laboratories through email, phone call and Facebook Messenger. They were asked to answer the survey provided, together with the consent form through Google forms. The anonymity and confidentiality of each respondent's responses and contact information were totally ensured by the researchers. The contact information of the researchers are found in the front page of the google forms link in case there are any questions regarding the survey questions.

Ethical Considerations

First and foremost, the approval of the Ethics Review Committee was obtained (FOP-REC-2021-02-196). Before distributing the survey, the participants were first debriefed regarding important details of the study (e.g. purpose of the study). Moreover, it was ensured that an informed consent will be approved and understood by all the respondents. The participation of each respondent was also ensured to be totally voluntary, with the option to withdraw from the study at any point. In addition, the researchers were obliged to maintain the confidentiality and anonymity of all information to be gathered from each respondent and to only utilize relevant details in the research paper. A professional and ethical relationship was also created between the researchers and respondents throughout the collection of data.

Data Analysis

To answer the profile of the respondents along age, sex, length of service as a licensed medical technologist, number of work hours per day before COVID-19, amount of increased work hours per day due to COVID-19, number of specimens processed per day before COVID-19, and number of specimens processed per day during COVID-19, frequency and percentage was utilized. This method expresses the relative frequency and percentage of the responses from surveys and other data (Lavrakas, 2008). Frequency and

percentage were also used in determining what WMSD-associated symptoms arising from conducting COVID-19 tests are felt by the respondents. Finally, to test the significant relationship between the respondents' profile variables and the felt musculoskeletal symptoms arising from conducting COVID-19 tests, Chi-square test of independence was employed. In this method, it allows the researchers to determine whether different variables are dependent on each other (Frost, 2020).

RESULTS & DISCUSSION

Demographic and Work-Related Profile

For the demographic profile, 70% are females while 30% are males. Among the participants, the majority are females (70%), and 52.50% of the participants are 26-35 years old. With regards to the participants' work-related profiles, 40% had worked for less than a year as registered medical technologists. Before the COVID-19 pandemic, the highest percentage in relation to the hours spent in the molecular diagnostic laboratory was 55% of those who answered "Not Applicable" while the next highest percentage was 27.5% who answered the usual 6-8 hours. With regards to the increased work hours spent in the molecular diagnostic laboratory due to the COVID-19 pandemic, a majority of 27.5% indicated that they experienced a 1-2 hour increase. When dealing with the specimens processed per day before the pandemic, the majority of the respondents (60%) answered "Not Applicable" while the highest percentage (10%) of those who were able to process specimens answered "less than 10 specimens". And with regards to the specimens processed during the pandemic, the majority of the participants (60%) indicated that they analyzed more than 200 specimens per day.

From the collected data, the obtained number of female respondents (70%) corresponds to the global statistic which states that 70% of the health and social care sector are in fact women (Boniol et al., 2019). Furthermore, the University of the Philippines Population Institute (UPPI) and Demographic Research and Development Foundation Inc. (DRDF) (2020) revealed that the healthcare sector in the Philippines is dominated by women (75%). Moving on, results have also shown that 52.5% of the participants are under the age of 26-35 years old. This data is justified by the findings conducted by the UPPI and DRDF (2020) which concluded that most of the

healthcare workers in the Philippines are under the age of 35 years old. Moreover, the Philippines Statistics Authority (2020) also confirms that most of the employees in the Philippines are under the age group of 26-34 years old. With regards to the respondents' years of work experience, the majority have indicated that they have less than one year of work experience as a medical technologist. This may be attributed to the increase in demand of medical technologists due to the pandemic, and subsequently the mass hiring of new medical technologists.

Both the working hours and amount of specimens processed have seemingly increased upon comparison of the responses from before and during the COVID-19 pandemic. As to the working hours, it can be said that an increase was ascertained as 77.5% (n=31/40) of the respondents reported the hours by which their work times have increased due to the pandemic situation as implied in the question, "Due to COVID-19 pandemic, were there times in which the working hours per shift increased in the molecular diagnostic laboratory? If so, by how much?" Because of the way the question was structured, any option chosen by the respondent aside from "None" will automatically indicate that there truly was an increase in the respondent's working hours per shift. Furthermore, it was found that 45.2% (n=14/31) out of the said 77.5% who reported an increase in working hours have answered "Not Applicable" to the question, "Before the COVID-19 pandemic, approximately how many hours per shift did you usually spend in the molecular diagnostic laboratory?" A likely reason for their response to the question is that they might not have worked in the molecular diagnostic laboratory before the COVID-19 pandemic or they were unemployed. This transition of medical technologists now working in molecular diagnostic laboratories has resulted from the country's need to expand its testing capacity as more hospitals and laboratories are added alongside the Research Institute for Tropical Medicine (DOH, 2020). Despite the same 45.2% answering "Not Applicable" to the question regarding the hours they spent in the molecular diagnostic laboratory before the pandemic, the researchers have still considered their working hours to have increased due to the pandemic as the respondents themselves consider their current working hours to have increased as reflected on their responses. Going back, it was established that 77.5% of the respondents have increased working hours due to the COVID-19 pandemic. This result is supported by a study conducted by

Dollanganger (2020) where medical frontliners are subjected to more work than ever, resulting in extended work shifts to compensate for the great number of COVID-19 specimens needed to be processed.

As to the number of specimens processed, the study found that 37 (92.5%) out of the 40 respondents that answered the CIQ reported an increase in the amount of specimens they processed in the molecular diagnostic laboratory due to the COVID-19 pandemic. However, out of the 37 respondents, 24 (64.9%) answered "Not Applicable" to the question regarding the number of specimens processed per day before the COVID-19 pandemic. Similar to how these answers were handled in the question regarding the working hours of the respondents before the COVID-19 pandemic, the "Not Applicable" answers to the number of specimens processed before the COVID-19 pandemic question were counted as 0 or a negligible amount of specimens processed due to the presumption that the reason they answered "Not Applicable" was because they did not work in a molecular diagnostic laboratory before. Thus, the number of specimens processed of the respondents who answered "Not Applicable" in the question regarding the number of specimens they processed before the pandemic were all considered to have increased due to the pandemic. This finding is consistent with a study conducted on healthcare providers in Iran by Ardebili et al. (2020) that showed 87% of their respondents described their workload a few days into the pandemic as overwhelming. Multiple news reports from different outlets and organizations like that of Allscripts, which narrated the increase in workload faced by medical technologists due to COVID-19 testing (Eben, 2020), and that of the United Nations e-News, which described healthcare workers, specifically doctors, nurses, paramedics, and carers as "facing an unprecedented workload" (Chatterjee, 2020).

Prevalence of work-related musculoskeletal symptoms

Table 1 shows the frequency in which trouble (aches/pain/discomfort/numbness) is felt by the medical technology respondents on the neck, shoulders, elbows, wrists/hands, upper back, lower back, hips/thighs, knees, and ankles/feet during the last 12 months and 7 days. It also shows the frequency of body parts affected by any trouble that has resulted in a hindrance from doing normal work during the last 12 months. Overall, it was found that 87.5% (n=35/40) of the respondents

experienced WMSD-associated symptoms in the last 12 months, while 35% (n=14/40) of the respondents have reported a hindrance from doing normal work in the last 12 months due to the said musculoskeletal problems. And finally, only 62.5% (n=25/40) of the respondents experienced WMSD-associated symptoms during the last 7 days. The most common sites in which musculoskeletal problems were reported in the last 12 months were the lower back (77.5%), neck (75.0%), and right shoulder (67.5%). Similarly, it was found that the lower back (55.0%), both shoulders (42.5%) and upper back (37.5%) were also the most common sites where WMSD-associated symptoms were felt in the last 7 days. While the most common sites that have caused hindrances in performing normal tasks due to WMSD-associated symptoms were the lower back (25.0%), neck & upper back (15%), and wrists/hands (10.0%).

Table 1. Results from the Standardized Nordic Musculoskeletal Questionnaire

	Have you at any time during the last 12 months had any trouble (ache, pain, discomfort, numbness) in the following parts of the body n = 35/40 (87.5%)	Have you at any time during the last 12 months been prevented from doing your normal work (at home or away from home) because of the trouble in the following parts of the body n = 14/40 (35%)	Have you at any time during the last 7 days, had any trouble in the following parts of the body n = 25/40 (62.5%)
Neck	30 (*75.0)	6 (*15.0)	14 (*35.0)
Right Shoulder	27 (*67.5)		
Left Shoulder	23 (57.5)		
Both Shoulders		3 (7.5)	17 (42.5)
Right Elbow	8 (20.0)		
Left Elbow	4 (10.0)		
Both Elbows		0 (0.0)	1 (2.5)
Right Wrist	14 (35.0)		
Left Wrist	14 (35.0)		
Wrist/Hands		4 (*10.0)	8 (20.0)
Upper Back	26 (65.0)	6 (*15.0)	15 (*37.5)
Lower Back (small of the back)	31 (*77.5)	10 (*25.0)	22 (*55.0)
One or Both Hips/Thighs	13 (32.5)	2 (5.0)	10 (25.0)
One or Both Knees	12 (30.0)	2 (5.0)	4 (10.0)
One or Both Ankles/Feet	17 (42.5)	1 (2.5)	6 (15.0)

Based on the same table, it shows that most of the respondents experienced WMSD symptoms in the last 12 months. This high prevalence indicates that medical technologists are highly at risk of developing WMSDs (Alkhamees et al., 2018). To discuss further, according to the collected data from the SNMQ, most of the participants experi-

enced pain in the lower back (77.50%), neck (75.0%), and right shoulder (67.50%) regions. A high prevalence among these body regions corresponds to other studies. These studies further described that these musculoskeletal symptoms can be caused by awkward working postures, prolonged standing, and constant moving during work due to a scattered workplace which are often experienced by laboratory workers (Chia et al., 2020 & Maulik and Iqbal, 2015). A similar study conducted by Mukhtad et al. (2018) stated that prolonged flexion of the back and neck, raised shoulders, elbow abduction, and awkward wrist and hand postures are all factors that inflict stress on the lumbar spine and the entire body which may cause the WMSD symptoms being experienced in these specific body parts. Furthermore, the researchers also believe that running the procedures in an RT-PCR test repetitively and excessively may be a detrimental factor to the prevalence of WMSD symptoms. This is due to the fact that during this COVID-19 pandemic situation, the RT-PCR is now utilized more than ever as it has become the gold standard in terms of detecting the virus in one's body (Montemayor, 2021). Based on an instruction manual for a COVID-19 RT-PCR testing kit (FDA, 2021), performing the RT-PCR test requires several pipetting procedures during reagent and assay preparation. With repetitive pipetting, medical technologists are more likely to develop WMSDs since according to Jones et al. (1998), repetitive contractions of muscles often leads to upper limb and neck injuries. Moreover, prolonged pipetting causes the neck and shoulders to be hunched forward which results in bad posture. Because of this, strains and poor blood flow may occur and thus lead to WMSDs (INTEGRA, 2020). Another study conducted by Penkala et al. (2018), that assessed WMSDs in university medical science students also found that activities that are repetitive were identified to be factors that contributed to the prevalence of WMSDs. Their study also mentioned that pipetting was a particular activity that caused WMSDs in students. The respondents mentioned that they performed pipetting activities for most of their time in their laboratory which may have been the cause for the problems experienced in their hands, neck, and shoulders. Prolonged pipetting along with awkward posture and poor ergonomic workstations were said to be the major cause of the WMSDs they experienced.

Laminar hoods and biosafety cabinets are also routinely used in the molecular diagnostic laboratory. These are used to protect both the specimen and the user (Sapkota, 2020). According to a journal by Andersen (2004), these hoods are also factors that may cause musculoskeletal problems in laboratory workers. The nature of the hoods being built-in and lacking adjustable height, as well as having to be in a static position where one is required to reach for long periods of time may cause WMSDs in the users. In Andersen's journal, it was also mentioned that activities in the laboratory that require the fine manipulation of tubes, forceps, lids and other equipment may cause stress on the user's hands and other body parts especially when accompanied with a lack of arm support when doing the said activities.

Additionally, results depict that the prevalence of these symptoms has also prevented a number of medical technologists from performing their normal work (35%), as 25% of the respondents were prevented from performing normal work due to lower back discomfort, while 15% for neck & upper back, and 10% for wrists/hands. This is attributed to the fact that individuals who experience WMSDs in the neck/back or hands/arms are inclined to have a decrease in productivity as well as an increase in absenteeism (Daneshmandi et al., 2017).

Relationship between demographic profile and the prevalence of WMSD-associated musculoskeletal symptoms

Table 2 presents the WMSD-associated symptoms with regards to the respondents' demographic profile. The findings indicate that 60% of the respondents have experienced WMSD-associated symptoms and are considered female. Moving on, 47.5% of the participants under the range of 26-35 years old indicated that they experienced WMSD-associated symptoms.

Table 2. Frequency of medical technologists with WMSD-associated symptoms with regards to their demographic profile

Demographic Variables			Symptoms		Total
			w/	w/o	
Sex	Male	Count	11	1	12
		% of Total	27.5%	2.5%	30.0%
	Female	Count	24	4	28
		% of Total	*60.0%	10.0%	70.0%
	Total	Count	35	5	40
		% of Total	87.5%	12.5%	100.0%
Age	21-25	Count	15	3	18
		% of Total	37.5%	7.5%	45.0%
	26-35	Count	19	2	21
		% of Total	*47.5%	5.0%	52.5%
	36-45	Count	1	0	1
		% of Total	2.5%	0.0%	2.5%
	Total	Count	35	5	40
		% of Total	87.5%	12.5%	100.0%

From these results, it was observed that females are more likely to experience WMSD-associated symptoms than men. This finding is similar to that of other studies that suggest female vulnerability to WMSDs can be attributed to differences between genders, such as body size, muscular capacity, hormonal situations, and work-life balance (Collins et al., 2015). A reason for such vulnerability would be that women possess more type 1 muscle fibers which provides them higher endurance, but also increased risks of muscle overload, and thus musculoskeletal pain (IWH, 2016). Furthermore, work environments are usually more suitable for men's anthropometric dimensions and strength capacities, and this can lead to relatively additional tension on women's bodies (Ahuja et al., 2016).

In the context of age, workers older than 30 years old are generally not able to carry out tasks as well as they did in their younger years (Okunribido et al., 2010). This may be due to multiple factors like genetics and lifestyle, but more commonly due to natural consequences of ageing like sarcopenia. Because of this inability, younger workers are usually tasked with more demanding work. In line with this, there have been studies that indicate a higher prevalence of WMSDs in younger age groups which would be similar to the findings of this study. Such an example may be discerned in the study conducted by AlAqeel et al. (2020) where it was found that clinical laboratory workers aged less than 30 had a higher prevalence of WMSDs as they are responsible for doing more technical work than their superiors. This finding is consistent with the study conducted by Maulik & Iqbal (2015) stating that junior laboratory technicians are charged with performing more routine laboratory tasks. Because of this inadequate experience that comes with younger age along with heavier workload, laboratory workers may fall victim to WMSDs due to faulty ergonomics and/or poor technique.

Relationship between the work-related profile and the prevalence of WMSD-associated musculoskeletal symptoms

Table 3 shows the work-related profiles of the respondents associated with the prevalence of WMSD-associated symptoms. With regards to the work experience, 37.5% (n=15/40) of the respondents who experienced most symptoms had less than 1 year of work experience. And among the respondents, 70% (n=28/40) experienced symptoms due to increased work hours. Lastly, 80% (n=32/40) of the respondents experienced symptoms due to increased specimens processed per day.

Table 3. Frequency of medical technologists with WMSD-associated symptoms with regards to their work-related profile

Work-related Variables			Symptoms		Total
			w/	w/o	
Work Experience	<1 year	Count	15	1	16
		% of Total	*37.5%	2.5%	40.0%
	1-3 years	Count	4	3	7
		% of Total	10.0%	7.5%	17.5%
	3-5 years	Count	11	1	12
		% of Total	27.5%	2.5%	30.0%
	5-7 years	Count	2	0	2
		% of Total	5.0%	0.0%	5.0%
	>7 years	Count	3	0	3
		% of Total	7.5%	0.0%	7.5%
	Total	Count	35	5	40
		% of Total	87.5%	12.5%	100.0%
Increase in work hours	Yes	Count	28	3	31
		% of Total	*70.0%	7.5%	77.5%
	No	Count	7	2	9
		% of Total	17.5%	5.0%	22.5%
	Total	Count	35	5	40
		% of Total	87.5%	12.5%	100.0%
Increase in specimens processed	Yes	Count	32	4	36
		% of Total	*80.0%	10.0%	90.0%
	No	Count	3	1	4
		% of Total	7.5%	2.5%	10.0%
	Total	Count	35	5	40
		% of Total	87.5%	12.5%	100.0%

With regards to the work experience, it was found that the majority of the respondents (37.5%) with less than 1 year of experience have encountered WMSD-associated symptoms. This result can be attributed to the fact that newly hired or junior medical technologists are subjected to perform the leg work in the laboratory concerning laborious tasks that involve many moving parts compared to the duties of senior/chief medical technologists whose duties consist more of overseeing day-to-day tasks. A similar finding was mentioned in a study conducted by Maulik & Iqbal (2015) which states that laboratory technicians whose duties are more supervisory and administrative in nature, allot the majority of their work schedule in transferring between workplaces, thus alleviating postural strain as compared to less experienced laboratory technicians who focus more on routine laboratory tasks. This inadequate clinical experience may also be the cause of musculoskeletal problems experienced by not just medical technologists, but healthcare professionals in gen-

eral. This would be so as healthcare workers relatively new to routine tasks may struggle with finding the proper and most efficient techniques of performing the said tasks. At the same time, inadequate muscle conditioning due to insubstantial experience may contribute to the development of musculoskeletal problems as well. This occurrence has been shown in previous studies. An example of such a study found that 45% of healthcare professionals experienced musculoskeletal injuries early in their careers (Bowles et al., 2017). Also, since newly hired laboratory workers come with less clinical experience, poor ergonomic practices and inefficient techniques are thus expected, consequently resulting in the development of WMSDs (AlAqeel et al., 2020).

In the case of work hours and specimens processed, it was found that most of the participants that have indicated an increase in working hours and specimens processed have also experienced WMSD-associated symptoms. With an increased overall workload among medical technologists, the likelihood of developing WMSD-associated symptoms may also increase. This is guided by the cumulative load theory which states that performing repetitive work over a prolonged period of time may deal cumulative damage to muscle tissue and ultimately lead to WMSDs (Kumar, 2001). Moreover, ample work tasks are known to be repetitive in nature and with the additional workload instigated, muscular work increases in response to such requirements. The muscles and tendons then become exhausted, which increases the occurrence of WMSDs in the long run. (Middlesworth, n.d.)

Correlation between the independent variables and the prevalence of WMSD- associated WMSD-associated symptoms

Table 4 explicates the relationship between the independent variables (the respondents' demographic and work-related profiles) and the prevalence of WMSD-associated symptom/s is presented. Through the use of the chi square test, it was found that there was not enough evidence to reject the null hypothesis in all of the variables tested. The age, sex, work experience, increase in work hours, and increase in workload of the respondents who reported at least 1 WMSD-associated symptom in the past 12 months were determined to have shown no significant relationship with the development of at least 1 WMSD-associated symptom in the respondents (P>0.05).

Table 4. Relationship of the different demographic and work profiles and the corresponding WMSD-associated WMSD-associated symptoms

Variables tested		Chi Square p-value	Decision Rule	Decision	Interpretation
Sex	Symptoms	0.741	Reject Ho if p-value is less than alpha (0.05)	Failed to Reject Ho	No significant relationship
Age		0.602		Failed to Reject Ho	No significant relationship
Work Experience		0.117		Failed to Reject Ho	No significant relationship
Increase in work hours		0.316		Failed to Reject Ho	No significant relationship
Increase in specimens		0.427		Failed to Reject Ho	No significant relationship

With regards to the variables tested in the study, the data showed no significant relationship between all the variables and WMSD-associated symptoms. The decision rule set for the Chi-square test was to reject Ho if p-value is less than alpha (0.05) in which none of the variables had a p-value less than 0.05, therefore, yielding a result where all the variables failed to reject Ho.

Similar papers that also tackled musculoskeletal disorders gave similar results wherein variables such as age, sex, work experience, increase in work hours, and increase in specimens processed had no significant relationship to the prevalence of WMSDs in the participants (Alkhamees, 2018, Chia et. al, 2020, Akodu & Ashalejo, 2019). Still, some other studies were able to find some of these variables as significantly associated with the development of WMSDs (Madadizadeh et. al, 2017, Ibrahim & Mohanadas, 2012). Further studies may be needed to reconcile these contrasting findings. However, it should be noted that in our study, the small sample size may have caused an error in the findings as the chi-square test is highly sensitive to sample size. The small sample size may have produced a false-negative result, or a type-II error. (Hayes, 2021). Finally, the analysis of the ergonomic aspect must also be considered as important factors in the development of WMSDs such as body posture, movements, workstations and other risk factors. This can be further backed up by the study of Aghilinejad et al. (2016), stating that specific ergonomic risk factors have a major impact on the prevalence of musculoskeletal symptoms among surgeons. In another study conducted by Ahmad et al. (2007), it was also concluded that musculoskeletal disorders were discovered to be prevailing among garment workers, and that the ergonomic factors were conceived to be inadequate in terms of working space, hand postures and sitting positions, thereby

causing disruptions in the daily course of work. However, it should also be noted that in our study, the ergonomic aspect was not incorporated as one of the variables to be examined, which is why the results of the study revealed that all the variables scrutinized were found to have no significant relationship on the WMSD-associated symptoms encountered by the participants.

SUMMARY, CONCLUSION AND RECOMMENDATIONS

Conclusions

Based on the findings of the study, the high prevalence of WMSD-associated musculoskeletal symptoms among medical technologists puts them at a high risk of developing musculoskeletal disorders. Furthermore, the researchers failed to reject the initial hypothesis that states that there is no significant relationship between the variables and prevalence of WMSD-associated musculoskeletal symptoms. Despite this, pre-existing studies still support the data that was gathered by the researchers indicating that there is indeed a high prevalence of WMSD-associated musculoskeletal symptoms among medical technologists. From the study, it was also seen that there was an increase in both the workload and work hours of the medical technologists after the onset of the COVID-19 pandemic. The most common sites affected were the lower back, neck, and right shoulder. Given that the sites of concern have been identified, WMSD-associated complications may then be addressed properly through future intervention programs that focus on raising awareness and educating medical technologists on proper positioning and maneuvering strategies to alleviate stress and to prevent the said complications on the affected areas mentioned.

Recommendations

Due to the safety restrictions posed by the COVID-19 pandemic, data gathering was more difficult as the researchers were not permitted to personally deliver the questionnaires to the target population. This hindered the adequate dissemination of the data gathering tools as numerous laboratories and/or medical technologists might have overlooked the emails/electronic messages containing the request to conduct the study sent by the researchers. The recipients may have also regarded the messages of request as "spam" or "junk mail". Therefore, if the study was conducted in a time when physical restrictions are not imposed or at least minimized, data gathering would be more effective. Another improvement that could have been made to the study was the scope of respondents. The sample size of 40 may not have been enough to adequately represent the whole population of medical technologists working in independent molecular diagnostic laboratories within the NCR. Finally, since the researchers were not able to find any relationship between the variables and the prevalence of WMSD-associated symptoms, the researchers recommend including the ergonomic aspect as part of the variables to further enhance the study.

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TECHNICAL MANAGEMENT SKILLS AND COMPLIANCE OF ACADEMIC COMMUNITIES AMONG PUBLIC SECONDARY SCHOOLS: AN ASSESSMENT

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ABSTRACT

The purpose of this study is to assess the technical management skills and compliance of academic communities among secondary schools. The research specifically looked into the level of technical management skills of school heads as to curriculum development, instruction, communication, assessment of teachers, physical plant development, learning resources, discipline and rewards; also, the level of compliance manifested along profession, adherence to policies, participation, project implementation and submission of requirements. Likewise, significant relationship and difference between and among technical management skills and compliance of teachers were also determined. Respondents of the study involved school heads and teachers among secondary schools in the three (3) divisions of Surigao Del Norte through random sampling. A research made questionnaire was used to gather data employing the weighted mean, ordinal rank, Pearson Product-moment Correlation and One- Way Analysis of Variance (ANOVA). Result revealed that all identified variables on technical management skills were described "Very Satisfactory" likewise, with the compliance of teachers similarly observed. Thus, the study recommends that the school heads must possess technical management skills since it influence or affect the performance of teachers along compliance on adherence to policies, participation, communication and project implementation.

Keywords: Technical management, Extent of compliance, Management skills, Assessment

INTRODUCTION

Public education is the cornerstone of development and democracy. Every effort is geared toward adapting to the school system in today's changing economic and social realities. The clamor to quality education is linked to the status of administrators or school heads as superiors and teachers as subordinates and to the level of responsibility, society is willing to delegate to the teaching profession.

The school head holds a pivotal role in the school and is seen as having the greatest impact on the performance of the teachers as member of the academic community, which includes the learning of pupils/students. He holds the most strategic position shaping the direction of the local educational efforts and outcomes. As an educational and instructional leader, he has great re-

sponsibility to render the best educational service, commitment to the learners in the pursuit of quality education and development. The degree of success to the school attains is attributed to him.

If schools are to move forward, the school heads have to possess personal, professional qualifications, wide exposure in the field of discipline and technical managerial skills to compliment the needed instruments for future advancement. He has to demonstrate his skillful execution of managerial functions to which the strong leadership management is established involving himself and his staff.

Furthermore, the concerns of the school heads do not include only his issuing of commands and exacting obedience from subordinates or academic communities but also with creating the conditions most conducive for them to comply. His management system should be such that will

make his personnel to function effectively well not because they are required to, but because they want to. As the saying goes, "a good administrator is the one who never forgets what it's like to be a teacher. As administrator, immediate dissemination of updates on memoranda to teachers to inform them promptly on how to comply with said directives. This is really necessary for teachers to do their task on completion of requirements and reports as performance outputs when teachers are not properly informed they become less productive.

A chanced encounter with less productive teachers under the stewardship of the researcher prompted him to evaluate the situation and check on the possible cause of delay and passive performance. However, some faculty members performed their task and given credit, commended them for meritorious efforts whenever they accomplished their work ahead of time. The school head always make sure that he gives fair and just evaluation to his teachers based on their performance.

Moreover, some teachers comply religiously on assigned task because they think it is their responsibility. There are also who failed to comply for some reasons. Other complied but required reports were submitted late affected their performance. The aforementioned views considered important of school heads to possess technical managerial skills which are believed to greatly influence the highest probability of success in the attainment of personnel satisfaction and organizational goals, hence the conduct of the study

REVIEW OF LITERATURE

Curriculum Development

The curriculum policies and legislation stated these are set forth by DepEd through various orders, circulars, memoranda and bulletins. They are aligned with national priorities and contribute to the achievement of developmental goals. Several laws passed by the national legislative specifically relate to the school curriculum; the Constitution mandates the study if Philippine constitution, the Bilingual policy, sports activities, music teaching, lengthening of the school calendar from 185 to not less than 200 school days per school year, integration of the concepts on human rights, the environment, dangerous drugs and computer education. (Soliven (2012)

Employability and reducing the gap between and among professional teachers while fostering synergy between education and research are among the prior concerns being faced by universities and institutions around the world. Another issue is developing a curriculum that responds to the challenges and satisfaction of the rapidly changing needs of industries that require a dynamic system of curriculum development processes. It is considered necessary to develop a knowledge management framework for curriculum development which is both industry relevant as well as supportive of growth of new knowledge and technologies. Komkijsil (2011)

The afore stated views of authorities on curriculum development bear semblance with the present study delineating how curriculum is framed or designed in accordance with national goals of quality education strengthened by strong commitment and compliance to the profession.

Instruction

Research finding on understanding the effectiveness of teacher attributes. The executive summary declared that teacher's instructive quality matters. In fact, it is the most important school-related factor influencing student achievement. Moreover, teacher compensation represents a significant public investment: in 2005 alone, the United States invested a huge amount of expenditures in teacher pay and benefits. Given the big size of investment, research output on quality instruction by effective teacher guided to frame critical on the empirical evidence informs the wisdom of current practice and direct state efforts on future teacher policy decisions. Rice (2006)

Present literature on educational managerial system gives much focus on empowerment program specifically in classroom instruction conducted by teachers whose efforts are being recognized through salary standardization which is implemented by the school principal in their local area as one of their reformed movements (Casareno, 2006).

Research output on teacher effectiveness and how this, policies on teacher Education are formulated. The analysis reviewed a wide range of empirical studies that examined the impact of teacher characteristics on their effectiveness in order to draw conclusion about the extent to which these characteristics are in fact, linked with teacher performance. The findings revealed that many personal characteristics especially on classroom instruction and management were measured in the studies reviewed. The focus was on aspects of teacher background, certification, instructional coursework that can be translated into policy rec-

ommendation and incorporated into teaching practice (Coladarci,(2009)

Communication

School heads as school managers should possess skill in communication; display a masterful command of the language known as key ingredients of management. They need to know how to communicate, promote, sell, demonstrate or explain their plans or programs in writing and speaking to eliminate doubts and confusion. They are expected to give and recognized feedbacks on teaching subordinates that could be used as bases to future performances. The continuous inflow, outflow of ideas, concepts are vital to the survival of the organizational system of the school. (Saymo, (2008)

Open communication is the bridge to understanding one's feelings and thoughts, managers, be it in school in business should employ the two-way process of communication. Ideas of subordinates or employees have to heard, accepted and respected no matter how irrelevant those ideas are. They are the active listeners' disseminators of ideas. They themselves may realize if they responses are right or wrong. It is noteworthy that they advance in learning and become productive because good instruction paves the way for this to happen. (Fabricas, (2010)

Assessment of Teachers

During teaching-learning, the teacher ought to continuously assess for learning in order to ensure that pupils are making progress in relation to set standards. It is at this stage when immediate intervention for bridging gaps must be in place as a matter of urgency, otherwise if gaps in understanding are allowed to accumulate, then pupils will great difficulty catching up. (Andrada, (2011)

The teacher quality assessment commonly includes reviews of qualifications, test of teacher knowledge, observation of practice, and measurement of student learning gains; assessment of teacher quality are currently used for policymaking, and employment and tenure decision, teacher evaluation, merit pay awards and as data to inform the professional growth of teachers. (Strong, (2011)

On the framework of performance assessment for teacher based from EFA (Education for All) forum conducted at Dakar, Senegal. The Country's education 'supermen' implemented an adapted version – the National Competency-based Teacher Standards (NCBTS) which presently earned praise from teacher are education experts as well for its efforts to establish a performance-based teacher standards process and has provided useful model for the potential and problems of processing authentic assessment system. (Lucido, (2010)

Physical Plant Development

Inter school visitation is recommended among school principals or school heads including teachers for them to have ocular experiences of the physical, structured and instructional buildings by way of comparing some aspects of the schools being visited and their classrooms, through their own individual effects made school buildings and classrooms should be perfectly structured in a manner that there is relevance and real need of whatever charges on physical and instructional phase that is suited to the grade level. (Tausa, (2008)

In the construction of the different buildings are designed appropriate to the purpose like an academic classroom, a technical – vocational shop room, a science, speech or computer laboratories that need a specific design as targeted for use of clienteles. (Maglipon, (2008)

Learning Resources

The availability of learning materials, instructional aids, facilities and equipment are suggested tips for school administrators to become effective in school management in relation to the structuring, design and maintenance of physical facilities, tools and equipment. He mentioned that school offices should be structured depicting the recent programs of the DepEd, mission, vision, directory of teachers and personnel, logbook, computers and other facilities, conduct fund raising activities, and solicitations for refurbishment , renovation from civic – spiritual community people and government officials when necessary, if school is short of these facilities Bona, (2012)

Discipline and Rewards

A more promising approach to answer the question which are focused more on what educators know and how this leads to the decisions they make in class. Educator are capacitated and come to acquire the necessary knowledge, skills and disposition to execute. They performed their roles effectively as well as make informed decisions as they are likely to face classroom characterized by disrespect, dis-order and unproductivity. (Arellano, (2010)

Proposed in the climate components of discipline, organization, and effectiveness include

three major orientations: (a) the orientation of the faculty toward to school as a source of the discipline problem, (b) the orientation of the staff and others toward the school's responsibility for improving discipline, and (c) the orientation of those involved in discipline problem solving. The authors stated that these three elements reflect attitudes concerning discipline. The school needs to minimize its on contribution to discipline problems by keeping the numbers of students in classrooms small, thus avoiding overcrowding, addressing student's needs, and effectively communicating to students and parents. (Furtwengler (1982)as cited by Cruz (2010)

Effective management of a classroom facilitating the shift of management responsibilities from educator to learners. Gordon views (1989) as cited by Arellano (2012) on discipline and emphasis that the only effective discipline is self-control that occurs internally in the learners and he therefore urges educators to renounce external control by rewards and punishment.

Compliance of the Academic Communities

In an educational institution, an administrator acts as head and the teachers act as subordinates whose support the administrator. The success of a leader also depends on his followers. Both the administrator and the teachers must possess professional qualities which include ability and attitude. These two factors are inseparable to succeed in achieving the vision and goals set in the institution that provides great impact of its compliances. These are several compliances to be considered to achieve productive performance.

Profession

DepEd has a long list of policies for recruiting teachers, principals and other education officials including the views on trends in educating, professionalizing and developing teachers. Some of the requirements include passing a division-level test, teaching demonstrations an interview and satisfactory performance in a supervised internship. The country's educational system requires a four year degree course and passing a licensure examination in order to teach. (Valenzuela, (2012)

Inputed that good teachers admit for their own professional growth, they need intellectual sustenance. They take graduate studies, attend conferences and improve their teaching. They feel that personal challenges are essential to education so not to stagnate. They try to keep informed of new diagnostic techniques, current research students and teaching styles that work. They are confident of their abilities to purpose pupils / students of life. Arellano, (2007)

Adherence to policies

All education officials are compelled to adhere to all institutional directives and issuances by implementing the task on purpose into their locality. These directives come in a form of circular and memoranda to which everyone is expected to abide on follow. (Lucido, (2011)

There is no successful school without the successful leadership of a school manager who adheres to the letter whatever his rules and responsibilities are. It is his strong adherence to management style that sets the tone and climate for learning the level of professional and morale of teachers and his degree of concern for what students may or may not become. Hidalgo, (2011)

Participation in Programs and Activities

Commented on a recent concluded curriculum summit, participation of school administrators throughout the country was highly impressive. It was convened to generate ideas on issues, problems concern and challenges administrators encountered from this own locality regarding the implementation of K - 12 agenda to improving the basic education programs. Lengthy discussion was the order of the day since the start of the summit. Issues discussed were urgent and important as those tackled the current thinking of school heads as they supervised and managed their respective schools. Cruz, (2014)

Informed newspaper readers from her column the consultative participation of school leaders, education officials, stakeholders in the field of education and business regarding the additional 2-years of basic education. The consultative forum was chained by Caloocan Bishop Deogracias Iniguez, who took initiative of conducting such forum as several numbers of negative comments; apprehensions were relayed to the church coming from all sections. Chief complaint raised was from parents with argument that adding years to basic education were bringing additional burden resulting to increase dropout of students. Bishop cautioned educational reformers including the national leadership to critically think deeper. This issue is presently water under the bridge. Macairan, (2010)

Project Implementation

The nature of the implementing process of a project for implementation will depend on the type and size of the project, scope, time, cost, risk,

quality, project organization, human resources and procurement of materials must be strictly managed. The requirements for a successful implementation of a project are: planning managing the project team, stakeholders, managing change, project reporting, communication and project records. Dillon, (2009)

Educational project management, which involves planning and implementation for optional returns from the input of the different resources, takes into consideration the allocation of scarce resources in the design of the plan of action or in the formulation of alternative course of action. Azanza, (2011)

Submission of Requirements

School head and teacher must be aware and understand the different programs, innovations and requirements in the DepEd like memoranda, circulars orders, bulletins and letters from higher offices and comply to all these upon receipt. Likewise, teacher should know that submitting and complying with all reports and requirements on time in an organized manner and parts of the teaching profession including authorized financial obligations. Bona, (2012)

School administrators have the responsibility to ensure that all teachers have to submit yearly clearance indicating that they have complied, accomplished this teaching and instructional duties, and responsibilities adherence and compliance to all these are manifestations that they are free from these obligations and prepared to do teaching from the next round of school year. Calampinay, (2012)

CONCEPTUAL FRAMEWORK

Figure 2 of the conceptual framework shows the underlying concepts of this study which delineates the behavior display of technical management skills by school managers or administrators on curriculum development, instruction, communication, assessment of teachers, physical plant development learning resources and discipline and rewards. These variables are considered in that managerial skills or competencies are grounded on proper application of technical knowledge and value to human relationships anchored on the compliances of academic communities along the following aspects; professions, adherence to policies, participation in programs and activities, project implementation and submission of requirements.
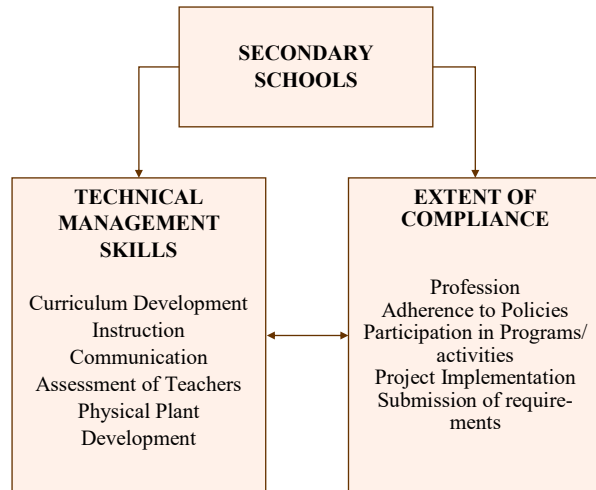

Figure 1. Research Paradigm

STATEMENT OF THE PROBLEM

This study attempts to determine the factors in Technical Management Skills and extent of compliance of academic communities among secondary schools.

Specifically, this study attempted to answer the following questions:
1. At what level are the Technical Management Skills of the School Heads demonstrated in the following areas:
    1.1 Curriculum Development,
    1.2 Instruction,
    1.3 Communication,
    1.4 Assessment of Teachers,
    1.5 Physical Plant Development,
    1.6 Learning Resources,
    1.7 Discipline and Rewards?
2. To what level do teachers manifest compliance on the following areas?
    2.1 Teaching Profession,
    2.2 Adherence to Policies,
    2.3 Participation in Programs and Activities,
    2.4 Project Implementation,
    2.5 Submission of Requirements?

RESEARCH METHODOLOGY

Research Design

The descriptive survey type of research will be used to determine the technical management skills of school heads and the extent of compliance of academic communities of public secondary schools in the province of Surigao del Norte.

Differential method was used as the study determined the significant difference among the rating of the respondents. On the other hand, the correlation method was employed to determine the significance relationship between ratings.

Research Environment

The study covered selected public secondary schools with at least fifteen teachers in the three divisions of Surigao del Norte, namely; Surigao City division, Surigao del Norte division and Siargao division.

Table 1. Distribution of Respondents

Name of Division	School Head	Academic Communities
Surigao City	6	154
Surigao del Norte	15	436
Siargao	6	160

Research Instrument

A researcher-made questionnaire (Appendix A) was used in this study. The items included in the instrument were adopted from the NCBTS (National Competency Based Teachers Standards) manual designed by the researcher to generate a variety of information significant to study.

Respondents

The respondents of this study involved the school heads and their academic communities (teachers) by respective divisions. The population and sample size of the respondents is shown in table 1.

Ethics and Data Gathering Procedure

The researcher asked a written permission for the conduct of the study to the Division superintendent of DepEd specifying the secondary schools to be survey. Upon approval, another letter was sent allowing the researcher to float the questionnaire. The questionnaire was distributed by the researcher himself to respective schools included in the study. The researcher likewise asked for the assistance of the school's guidance counselor in the retrieval of the questionnaire; after which tallying and analyzing of the data commenced.

Data Analysis

The following computations were employed in the study:

Weighted Mean. This tool was used to determine the extent of technical management skills of school heads and the level of compliances of aca-

demic communities to the different variables involved in the study.

RESULTS AND DISCUSSION

Level of Technical Management Skills of School Heads

Table 2. Level of Technical Management Skills of School Heads as to Curriculum Development

Item	Mean	Qualitative Value
1.Demonstrating knowledge, mastery and application of the concepts and principles of curriculum design and development.	3.59	Very Satisfactory
2.Possessing in-depth understanding of the subject area's learning goals, instructional procedures and content based of the current K to 12 curriculums.	3.63	Very Satisfactory
3. Appreciating integration of interdisciplinary mode of teaching.	3.63	Very Satisfactory
4. Valuing the importance of supervision to improved teaching-learning process in classroom setting.	3.93	Very Satisfactory
5. Supporting the integration of language, literary and skill development in school and community activities.	3.67	Very Satisfactory
6. Using appropriate technology processes and resources to achieve curriculum standards and objectives.	3.30	Satisfactory
Overall Mean	**3.62**	**Very Satisfactory**

The data pressed the idea that the school heads have "Very Satisfactory" level of technical management skills in curriculum development as supported by the obtained overall mean of 3.62. This further denotes that secondary schools are managed by school leaders with exemplary abilities to understand the purpose of every program and to apply some techniques to produce quality outcomes based on the national objectives.

Table 3. Level of Technical Management Skills of School Heads as to Instruction

Item	Mean	Qualitative Value
1.Implementing school policies rules, regulations and procedures.	3.63	Very Satisfactory
2. Knowing or understanding school operations.	3.81	Very Satisfactory
3. Applying knowledge on social learning in dealing with teachers and students.	3.81	Very Satisfactory
4. Providing instructional activities that allow teachers and students to reach their full potentials.	3.63	Very Satisfactory
5.Showing concern for classroom which safe and conducive to learning.	3.93	Very Satisfactory
6. Knowing ways of achieving high standards of learning for total student development.	3.59	Very Satisfactory
Overall Mean	**3.73**	**Very Satisfactory**

This further denotes that secondary schools are manage by school leaders with the exemplary abilities to understand the purposes of every program and to apply some techniques to produce quality outcomes based on the national objectives.

Table 4. Level of Technical Management Skills of School Heads as to Communication

Item	Mean	Qualitative Value
1.Disseminating all school stakeholders and other concerned persons regarding DepEd school rules, policies, regulations, and procedures.	3.85	Very Satisfactory
2. Modelling the value of punctuality.	3.81	Very Satisfactory
3. Maintaining integrity of the chain of communication.	3.78	Very Satisfactory
4. Valuing appropriate appearance and decorum.	3.74	Very Satisfactory
5.Encouraging a democratic free expressions of ideas from teachers and students.	3.85	Very Satisfactory
6. Communicating high standards of learning performance.	3.59	Very Satisfactory
Overall Mean	**3.77**	**Very Satisfactory**

The purposes of every program and to apply some techniques to produce quality outcomes based on the national objectives

Table 5. Level of Technical Management Skills of School Heads as to Assessment of Teachers

Item	Mean	Qualitative Value
1.Maintaining objectively of teachers performance and appraisal.	3.56	Very Satisfactory
2.Showing enthusiasm and openness regarding professional training and development of teachers.	3.70	Very Satisfactory
3. Employing the use of rubrics in assessing the performance of teachers.	3.44	Satisfactory
4. Understanding the proper use of assessment results to improve pedagogical behavior.	3.63	Very Satisfactory
5.Understandning the theories, approaches and strategies used in assessment.	3.56	Very Satisfactory
6. Demonstrating skill in the use of information and communicating techniques in teaching.	3.63	Very Satisfactory
Overall Mean	**3.59**	**Very Satisfactory**

The data pushed the idea that the school heads have the "Very Satisfactory" level of technical management skills in assessment of teachers as supported by the obtained overall mean of 3.59. This further denotes that secondary schools are managed by school leaders with the exemplary

abilities to understand the purposes of every program and to apply some techniques to produce quality outcomes based on the national objectives.

Table 6. Level of Technical Management Skills of School Heads as to Assessment of Teachers

Item	Mean	Qualitative Value
1.Maintaining objectively of teachers performance and appraisal.	3.56	Very Satisfactory
2.Showing enthusiasm and openness regarding professional training and development of teachers.	3.70	Very Satisfactory
3. Employing the use of rubrics in assessing the performance of teachers.	3.44	Satisfactory
4. Understanding the proper use of assessment results to improve pedagogical behavior.	3.63	Very Satisfactory
5.Understandning the theories, approaches and strategies used in assessment.	3.56	Very Satisfactory
6. Demonstrating skill in the use of information and communicating techniques in teaching.	3.63	Very Satisfactory
Overall Mean	**3.59**	**Very Satisfactory**

The data pushed the idea that the school heads have the "Very Satisfactory" level of technical management skills in assessment of teachers as supported by the obtained overall mean of 3.59. This further denotes that secondary schools are managed by school leaders with the exemplary abilities to understand the purposes of every program and to apply some techniques to produce quality outcomes based on the national objectives.

Table 7. Level of Technical Management Skills of School Heads as to Physical Plant

Item	Mean	Qualitative Value
1.Preparing the physical master plan.	3.48	Satisfactory
2. Understanding the principles and levels of building code.	3.48	Satisfactory
3. Familiarizing the use of different materials, resources needed in building construction and classroom structuring.	3.37	Satisfactory
4. Providing instructional spaces for classroom, shop rooms, laboratories, art stations and music classes.	3.41	Satisfactory
5. Providing for allied services like health, guidance, food and physical fitness.	3.59	Very Satisfactory
6. Providing maintenance and security measures for disabled and elderly in the form of signage's and warnings on walls, passageways, staircases and corridors.	3.07	Satisfactory
Overall Mean	**3.40**	**Satisfactory**

The data pushed the idea that the school heads have the "Satisfactory" level of technical management skills in physical plant as supported by the obtained overall mean of 3.40. This further denotes that secondary schools are managed by

school leaders with the exemplary abilities to understand the purposes of every program and to apply some techniques to produce quality outcomes based on the national objectives.

Table 8. Level of Technical Management Skills of School Heads as to Learning Resources

Item	Mean	Qualitative Value
1.Planning for the acquisition of needed tools, equipment facilities, supplies to carry out program objectives.	3.56	Very Satisfactory
2. Applying organizational contract and procurement rules and regulations in managing program work.	3.26	Satisfactory
3. Distributing procured tools and equipment according to priority needs.	3.41	Satisfactory
4. Participating in evaluating contractor or supplier activities in managing program work.	3.30	Satisfactory
5.Establishing policies or system for discarding, disposing, repairing and retooling tools and equipment.	3.37	Satisfactory
6. Distributing procured tools and equipment according to priority needs.	3.41	Satisfactory
Overall Mean	**3.38**	**Satisfactory**

The data pushed the idea that the school heads have the "Satisfactory" level of technical management skills in learning resource as supported by the obtained overall mean of 3.38. this further denotes that secondary schools are managed by the school leaders with the exemplary abilities to understand the purposes of every program and to apply some techniques to produce quality outcomes based on the national objectives.

Table 9. Level of Technical Management Skills of School Heads as to Discipline and Rewards

Item	Mean	Qualitative Value
1.Identifying student behavioral cases in the classroom that the adviser cannot handle anymore.	3.78	Very Satisfactory
2.Referringsensitive discipline problems to the school guidance counselor/ coordinator.	3.52	Very Satisfactory
3. Acting on the recommendation of the school guidance counselor on the interview of parents in student's behavioral problem.	3.93	Very Satisfactory
4. Commending teacher for a job well done.	3.81	Very Satisfactory
5.Recognizing the efforts of teachers when assigned task are accomplished.	3.93	Very Satisfactory
6. Expressing verbal appreciation during faculty meeting when teacher performance work or submit required reports ahead of time.	3.70	Very Satisfactory
Overall Mean	**3.78**	**Very Satisfactory**

"Recognizing the efforts of teachers when assigned tasks are accomplished," with the mean of 3.93 to indicate that they have "Very Satisfactory" level of management skill. It is seconded by the item "Commending teacher for a job well done," as marked by the mean of 3.81 that claimed the "Very Satisfactory" level.

Table 10. Summary Data on the Level of Technical Management Skills of School Heads

Item	Mean	Percent	Qualitative Value
1.Curriculum Development	3.60	90.00	Very Satisfactory
2. Instruction	3.73	93.25	Very Satisfactory
3. Communication	3.77	94.25	Very Satisfactory
4. Assessment of Teachers	3.59	89.75	Very Satisfactory
5. Physical Plant	3.40	85.00	Satisfactory
6. Learning and Resource	3.38	84.50	Satisfactory
7. Discipline and Rewards	3.78	94.50	Very Satisfactory
Overall Mean	**3.61**	**90.25**	**Very Satisfactory**

This further denotes that secondary schools are managed by school leaders with the exemplary abilities to understand the purposes of every program and to apply some techniques to produce quality outcomes based on the national objectives.

The data in Tables 2 to 10 present self-rating of the school heads on the level of their technical management skills in terms of curriculum development, instruction, communication, assessment of teachers, physical plant, learning resource and discipline and rewards.

Extent of Teacher Compliance

Table 11. Extent of Compliance of Teachers as to Profession

Item	Mean	Qualitative Value
1.Knowing the set of ethical and moral standards and values embodied in the Code of Ethics for professional Teachers.	3.81	Very Satisfactory
2 .Abiding by and practicing the code of ethics for professional teachers.	3.78	Very Satisfactory
3. Upholding the value of the dignity of teaching.	3.70	Very Satisfactory
4.Understanding the requirements and expectations for personal and professional advancement and growth.	3.74	Very Satisfactory
5.Allocating time for professional development through attendance/ participation to seminars, training and workshop.	3.70	Very Satisfactory
6. Manifesting enthusiasm, interest in undertaking educational research.	3.59	Very Satisfactory
Overall Mean	**3.72**	**Very Satisfactory**

This further denotes that teachers are managed by school leaders with the exemplary abilities to understand the purpose of every program and to apply some techniques to produce quality outcomes based on the national objectives.

Table 12. Extent of Compliance of Teachers as to Adherence to Policies

Item	Mean	Qualitative Value
1. Abiding with school policies, rules and regulation.	3.59	Very Satisfactory
2. Attending to called meetings, conferences and school activities.	3.78	Very Satisfactory
3. Manifesting professional decorum at all times.	3.74	Very Satisfactory
4. Participating actively to institutional programs and activities like brigade eskwela, Nutrition month, buwan ng wika, etc.	3.78	Very Satisfactory
5. Establishing linkage with other institution, organization or stakeholders helpful to the teaching profession.	3.67	Very Satisfactory
6. Manifesting determination to become a better person and teacher.	3.70	Very Satisfactory
Overall Mean	**3.71**	**Very Satisfactory**

The results indicated that teachers observed religiously with policies on attendance to called meetings and conferences including their ardent participation to routine school activities and remained loyal to school rules and regulations.

Table 13. Extent of Compliance of Teachers as to Participation

Item	Mean	Qualitative Value
1. Participating in school programs and activities.	3.89	Very Satisfactory
2. Participating in called meetings, workshop, seminars and trainings, local, regional and national.	3.78	Very Satisfactory
3. Participating social and community affairs.	3.70	Very Satisfactory
4. Participating in cooperative networking activities.	3.44	Satisfactory
5. Participating in Employees union groups and other teacher-welfare related organizations.	3.26	Satisfactory
6. Participating in spiritual enhancement programs.	3.52	Very Satisfactory
Overall Mean	**3.60**	**Very Satisfactory**

The data implied that teachers conscientiously adhered to all school programs and activities including those that required their attendance and participation to meetings, seminars, trainings whether local, regional or national. They have shown less participation to employees' unions and other related organizations concerning welfare of teachers.

Table 14. Extent of Compliance of Teachers as to Project Implementation

Item	Mean	Qualitative Value
1. Knowing the nature of the project along scope, type, time, cost, risk and size.	3.48	Satisfactory
2. Analyzing the potentials and fitness of people involved in the project.	3.41	Satisfactory
3. Managing communications and procurement of needed resources and materials.	3.48	Satisfactory
4. Ensuring all roles and responsibilities of team members are fairly distributed.	3.41	Satisfactory
5. Ensuring transparency regarding financial aspects.	3.67	Very Satisfactory
6. Ensuring unforeseen problems that may arise are dealt with promptly.	3.52	Very Satisfactory
Overall Mean	**3.49**	**Satisfactory**

The data implied that teachers conscientiously know on the project implementation in the school for the benefit of the community and learners.

Table 15. Extent of Compliance of Teachers as to Submission of Requirements

Item	Mean	Qualitative Value
1. Submitting year end reports like clearance, report cards, etc.	3.74	Very Satisfactory
2. Accomplishing daily lesson plans and daily time records.	3.63	Very Satisfactory
3. Accomplishing monthly reports and supervisory plan.	3.63	Very Satisfactory
4. Updating of 201 files. (Personal Data Sheet)	3.70	Very Satisfactory
5. Submitting of liquidation documents for expenditures incurred during travels on trainings and seminars.	3.78	Very Satisfactory
6. Submitting of research proposals and research outputs.	2.74	Satisfactory
Overall Mean	**3.54**	**Very Satisfactory**

The data implied that teachers conscientiously and promptly on the submission of reports for the good of the school.

Table 16. Summary Data on the Extent of Compliance of Teachers

Item	Mean	Percent	Qualitative Value
1. Profession	3.72	93.00	Very Satisfactory
2. Adherence to policies	3.71	92.75	Very Satisfactory
3. Participation	3.60	90.00	Very Satisfactory
4. Project Implementation	3.49	87.25	Very Satisfactory
5. Submission of Requirements	3.54	88.50	Very Satisfactory
Grand Mean	**3.61**	**90.25**	**Very Satisfactory**

The data in Tables 1 to 5 present the self-rating on the extent of compliance of teachers as profession, adherence to policies, participation, project implementation and submission of requirements.

SUMMARY, CONCLUSIONS, AND RECOMMENDATIONS

Summary

The study determined the technical management skills and compliances of academic communities among selected secondary schools in the Province of Surigao del Norte. The level of technical management skills as to curriculum development, instructions, communication, assessment of teachers, physical plant development, learning resources, discipline and rewards; the level of compliances of teachers along profession, adherence to policies, participation, project implementation and submission of requirements were also determined.

Conclusions

1. School heads demonstrated proficiency skills in all identified variables in technical management and so with the teachers showing high observance to compliances along the identified professional areas.
2. Technical management skills of school heads influence or affect the performance of teachers along compliance on adherence to policies, participation, communication and project implementation.
3. Clear, simple, plain and wide dissemination of communications result to easy compliance of teachers as directives and instructions.
4. Availability and accessibility of learning resources produce positive teaching-learning outcomes.

Recommendation

1. Teachers are encouraged to work out and submit research proposals and research outputs on the problem encountered in the teaching learning process.
2. School heads are requested to be aware of the tenets regarding organizational contract, procurement rules and regulations in managing work program particular in the aspect of building construction.
3. School heads are likewise encouraged to familiarized the used of different materials, re-

sources needed in building construction and classroom structuring.
4. School heads are also enjoined to provide maintenance and security measures for disabled and elderly in the form of signage and warning on walls, passageways, staircases and corridors in every school premises.
5. Teachers are requested to join or participate in Employees union groups and other teacher-welfare related organizations as an exercise of their rights and academic freedom.

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IMPACT OF K–TO–12 CURRICULUM IMPLEMENTATION TO STAKEHOLDERS

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ABSTRACT

The study determined the impact of K to 12 curriculum to the stakeholders among secondary schools in Surigao City and Surigao del Norte offering Technical-Vocational Livelihood track in terms of knowledge, technical skills, work attitudes, employability, scholarships, and internationalization. There were 13 schools administrator, 98 TVL teachers, 525 parents, and 525 students as respondents and made to answer the researcher-made instruments. A descriptive-inferential research design was employed and the data were analyzed using then mean and ordinal rank, one-way analysis of variance for repeated data to determine the presence of significant differences in their responses. The findings of the study revealed that administrators and teachers rated the highest impact on work attitudes, while the students and parents respondents on knowledge. They claimed that the K to 12 has the overall satisfactory impact to the various aspects of education of the students. Conclusively, this states that there are intervening challenges in the implementation of K to 12 curriculum are felt by the stakeholders in basic education. Thus, there is urgency for an intensive training of teachers, in-dept dissemination of information to stakeholders, and close monitoring of the curriculum vis-à-vis its vision, goals and objectives.

INTRODUCTION

The implementation of the K to 12 Curriculum is the greatest reform in the Philippine educational system today, as it pursues the achievement of excellent graduates in the elementary and secondary levels. The Department of Education pronounces the addition of two more years in the basic education of students, which accordingly, will benefit not only the Filipino youth but all the Filipinos in the Philippines (http://studymoose.com, 2014).

K to 12 Curriculum has been implemented by the Department of Education throughout the whole country by virtue of the Republic Act 9155. In June 2012, the Filipino children started their first grade subjects towards twelve years of basic education instead of ten years. This first group of learners shall finish the six years elementary and another six years in secondary, prior to entrance of college level.

The K to 12 Basic Education Program seeks to realize with the outcome goals that; (1). Philippine education standards to be at par with international standards ;(2). more emotionally mature graduates equipped with technical and or vocational skills who are better prepared for work, middle level skills development and higher education;(3). significantly addressed shortages or gaps in educational inputs (teacher items, school head items, classrooms, instructional materials) addressed significantly ;(4). broadened and strengthened stakeholders' support in the improvement of basic education outcomes; (5). improved internal efficiency; (6). improved system of governance in the Department; and (7). improved quality of teachers.

The addition of two years of the curriculum is designed to make the educational system of the country comparable to the international standards of the Association of Southeast Asian Nations (ASEAN). One of the foci of the curriculum is to train the students in their junior and senior high school levels on technical-vocational education, where they honed for their technical, intellectual, personal, and social competencies they need for

employment even without entering the tertiary level.

The educational leaders, both in national and local levels, claimed that the curriculum assures a more responsive program and avoids wastage of the national resources in the human development of young Filipinos. They promote the concept that the educational system is more responsive to the national goals of maximizing the development of human capital towards nation building, in the context of national and international indeces. They are fixed in concept that the introduction of the curriculum is the only solution to poverty and unemployment problems of the country.In addition, the curriculum also attempts recognition in the educational and labor standards in international and global markets.

The implementation of the K-to-12 Curriculum plan in the Philippine Basic Education Curriculum is the key to our nation's development. Though the government faces many problems as it implements the program over the course of several years, it is a necessary improvement since increasing the quality of our education is critical to our nation's success (Cruz, I. 2010).

However, it is undeniable that there are alleged problems arising in the implementation of the program, and these includes family financial problem for the parents in terms of sending students to school, lack of competent teachers to handle the technical-vocational-livelihood track, lack of budget for facilities, machineries and supplies for skills training of the students as career track,and lack of instructional and laboratory classrooms that are considerably the long-term effects of Kto12 Curriculum though beneficial to us Filipinos (Cruz, I., 2010). Thus, this study is developed.

REVIEW OF LITERATURE

The Senior High School Education

Senior High School (SHS) consists of Grades 11 and 12. The program for SHS consists of a core curriculum that prepares students for college and career pathways that prepare students for employment or engaging in a profitable enterprise after high school. In Grade 11, more time of the student will be spent studying core subjects while in Grade 12, more time of the student will be spent on internship or immersion (SeameoInnotech, 2012).

Senior High School is two years of specialized upper secondary education; students may choose a specialization based on aptitude, interests, and school capacity. The choice of career track will define the content of the subjects a student will take in Grades 11 and 12. SHS subjects fall under either the Core Curriculum or specific Tracks consists of two distinct parts: first, a core curriculum that prepares students for college, and second, a set of subjects called "career pathways" that prepare students for careers. All students must take the core curriculum, as well as to choose at least one of the career pathways.

The core consists mostly of the same subjects that make up the rest of the K to 12 Curriculum as such English, Filipino, Math, and Science. The content of Araling Panlipunan (Social Studies) continues in a new subject called "Contemporary Issues." New in basic education are subjects taken from the General Education Curriculum (GEC) of college like Literatures of the Philippines, Literatures of the World, and Philosophy of the Human Person.

The career pathways are of various kinds. There are those that come with a National Certification Level 2 (NC2) from the Technical Education and Skills Development Authority (TESDA) that enable Grades 7 to 10 students to obtain an NC1. Examples of these are Animal Production, Caregiving, Computing and Internet Fundamentals, Crop Production, Dressmaking, Electrical Installation and Maintenance, Food Processing, Home Management, Tailoring, Technical Drawing, and Welding. A school will most likely offer only one or two of these.

In the original K to 12 program, the first Grade 11 sections are expected to be offered only in 2016. Few public and private schools, however, are offering Grade 11 on a voluntary basis to their graduates by June as models accredited by the Department of Education (DepEd). These models will serve two purposes: they will enable recent high school graduates to enjoy the benefit of a dual-based Senior High School – where the students become both college-ready and work-ready, after this last grade level. Hence, thus, the educational trainings stand as laboratories to validate the basic curriculum (Cruz, 2012).

Knowledge and Technical Skills

The K to 12 Curriculum will provide learners with aof competencies important in the world of work and in a knowledge-based society. It envisions the development of scientifically, technologically, and environmentally literate and productive members of society who are critical problem solvers, responsible stewards of nature, innovative and

creative citizens, informed decision makers, and effective communicators. This curriculum is designed around the three domains of learning: understanding and applying scientific knowledge in local setting as well as global context whenever possible, performing the processes and skills, and developing and demonstrating scientific attitudes and values. The acquisition of these domains is facilitated using the following approaches: multi-interdisciplinary approach, contextual learning, problem/issue-based learning, and inquiry-based approach. The approaches are based on sound educational pedagogy namely, constructivism, social cognition learning model, learning style theory, and brain-based learning.

As a whole, the K to 12 Curriculum is learner-centered and inquiry-based, emphasizing the use of evidence in constructing explanations. Concepts and skills are presented with increasing levels of complexity from one grade level to another in spiral progression, thus paving the way to a deeper understanding of core concepts. The integration across science topics and other disciplines will lead to a meaningful understanding of concepts and its application to real-life situations.

Work Attitudes

The implementation of K to 12 Curriculum in the country drew negative reactions from various societal groups. Since 2011, critics have been very vocal on their primary concerns. They insist the government isn't yet ready for this new system and that this is more of additional burden to students and their parents.

Despite calls to suspend the program, the government remained firm saying this new educational system offers opportunities for Filipino students and the national economy. For its part, the Department of Education (DepEd) stresses that the country is prepared for a big shift in education system. In fact, it has worked to fulfill the gaps on the number of classrooms, teachers, and textbooks. Also, it has finished the planning phases along with stakeholders.

The present curriculum is designed to be taught in a span of twelve years and not the current ten. This may be contributory to the poor quality of education. Moreover, high school graduates are allegedly younger than 18 years old and lack basic competencies and maturity, the Department of Education said. Thus, they could not legally enter into contracts being minors, and are not emotionally mature to work or become entrepreneurs. The first year senior high school or the eleventh year started this school year 2016 –

2017. The first graduates of the 12- year curriculum will be in 2018.

Employability

Though Filipinos are known to be competitive in the international community, our current education system hinders us in becoming more competitive among other countries. The K to 12 education plan offers a solution to that problem. In as much as employment in the Philippines is concerned, the K to 12 educational system also responds to the fact that most countries in the world already have the same plan in their educational institutions. With this, the standards of these countries go a mark higher than what the country has, thus, creating an expansion in the global competency, and that need to add two years to basic education.

K to 12 Curriculum has been one of the greatest issues in the country ever since it was implemented. Some are in favor yet some of them questioned the capability of the country to conform to what is generally accepted by the world in terms of educational standards. Philippines have been trying to keep up with what the world have set as standards especially when it comes to the educational sector. Filipinos are known to provide valuable manpower to the world and to conform with what is generally accepted by the majority as standards when it comes to employee's educational attainment. Matching to what the world has set shows that the Philippines is continuously getting more and more globally competitive. The K to 12 Curriculum is just another step closer to a brighter and more competitive future to all students and professionals alike (DepEd Complex, 2012).

The implementation of the K to 12 plan in the Philippine Basic Education Curriculum is the key to our nation's development. Though the government faces many problems as it implements the program over the course of several years, it is a necessary improvement since increasing the quality of our education is critical to our nation's success. The Reasons for the K to 12 Education System why it is implemented; it give More Skilled and Competent Labor Force in the labor market. This reason, support K-12 education because the graduates of this program will be more prepared to enter the labor force. High school graduates of the 10-year curriculum were not yet employable since they were not competent or well–equipped enough for the workplace (Cruz, 2010).

In addition, high school graduates of the 10-year curriculum are not yet 18. With the new curriculum, senior high school students can special-

ize in a field that they are good at and interested in. As a result, upon graduation they will have the specific job-related skills they need even without a college degree. When they graduate from high school, these young people will be 18 and employable, adding to the nation's manpower.

DepEd has entered into an agreement with business organizations, local and foreign chambers of commerce, and industries to ensure that graduates of K to 12 will be considered for employment. There will be a matching of competency requirements and standards so that 12-year basic education graduates will have the necessary skills needed to join the workforce and to match the College Readiness Standards for further education and future employment. Entrepreneurship will also be fostered in the enhanced curriculum, ensuring graduates can venture into other opportunities beyond employment.

The goal, according to DepEd, is for a student who completes K to 12 to be equipped with skills, competencies, and recognized certificates equivalent to a two-year college degree. After finishing Junior High School (Grade 10), the curriculum will enable students to acquire Certificates of Competency (COCs) and National Certifications (NCs) in accordance with the training regulations of the Technical Education and Skills Development Authority (TESDA).

This will allow graduates to have middle-level skills and will offer them better opportunities to be gainfully employed or become entrepreneurs," according to DepEd.

There will be a school–industry partnership for technical–vocational tracks to allow students to gain work experience while studying and offer the opportunity to be absorbed by the companies, it added (Fernandez, 2012).

Scholarship

The K to 12 Curriculum is a flagship education program of the Aquino administration, as enunciated in the Philippine Development Plan (PDP) 2011 2016. Its framework aims to ensure that it will: a) meet legal and other formal requirements of employment; b) pass the test of global standards; and c) prepare students for the higher levels of learning and employability. Moreover, government shall also reinforce career consciousness among students as well as provide guidance and counseling throughout the K to 12 Curriculum (Baldevarona, 2013).

The processes in the K to 12 Curriculum are intertwined and are organized around situations and problems that challenge and arouse students'

curiosity and motivate them to learn and appreciate its relevant. There are varied hands-on, minds-on, and hearts on activities that are used to develop students' interest and let them become active learners instead of just relying solely on textbooks. As a whole, the K to 12 Curriculum is learner-centered and inquiry-based, emphasizing the use of evidence in constructing explanations. These concepts and skills are integrated rather than discipline-based, stressing the connections across topics and other disciplines as well as applications of concepts and thinking skills to real life. After completion of grade 10, the students' learning competencies and skills will be assessed to match the areas of specialization or tracks they are to pursue in the senior high school level. These tracks will be either on Academic, Technical-Vocational Livelihood, or Sports and Arts. Students will be required to undergo immersion activities which may provide rich experiences relevant to their chosen specialization (Cabansag, 2014).

Internationalization

In K to 12 Curriculum, Filipino graduates will be automatically recognized as professionals abroad because we are following the international education standard as practiced by all nations. There will be no need to study again and spend more money in order to qualify to their standards. With this, Filipino professionals who aspire to work abroad will not find a hard time in getting jobs in line with their chosen field and will be able to help their families more in the Philippines as well as the country's economy with their remittances, property buying, and creation of businesses (http://cianeko.hubpages.com, 2014).

The community of K to 12 Curriculum has seen explosive growth over the last decade in distance learning programs, defined as learning experiences in which students and instructors are separated by space and/or time. While elementary and secondary students have learned through the use of electronic distance learning systems since the 1930s. Online virtual schools may be ideally suited to meet the needs of stakeholders calling for school choice, high school reform, and workforce preparation in 21st century skills. The growth in the numbers of students' learning online and the importance of online learning as a solution to educational challenges has increased the need to study more closely the factors that affect student learning in virtual schooling environments (Cavanaugh, et.al, 2009).

Prior to the implementation of the K-12 Curriculum guide, the Philippines was one of only three countries in the world and the only one in Asia that still had only 10 years in basic education. This has always been seen as a disadvantage for our students who are competing in an increasingly global job market. The longer educational cycle of the K to 12 Curriculum is seen as critical in giving Filipino students a higher quality of education.

The implementation of the K to 12 plan in the Philippine Basic Education Curriculum is the key to our nation's development. Though the government faces many problems as it implements the program over the course of several years, it is a necessary improvement since increasing the quality of our education is critical to our nation's success (Cruz, 2010).

FLOW OF THE STUDY

INPUT	PROCESS	OUTPUT

| RESPONDENTS

PARENTS
STUDENTS
FACULTY
ADMINISTRA-
TORS | IMPACT OF
K TO 12
CURRICULUM

1. Knowledge,
2. Technical Skills,
3. Work Attitudes,
4. Employability,
5. Scholarships
and,
6. Internationaliza-
tion | IMPACT OF K
TO 12 CURRIC-
ULUM TO THE
STAKEHOLD-
ERS AMONG
SECONDARY
SCHOOLS |
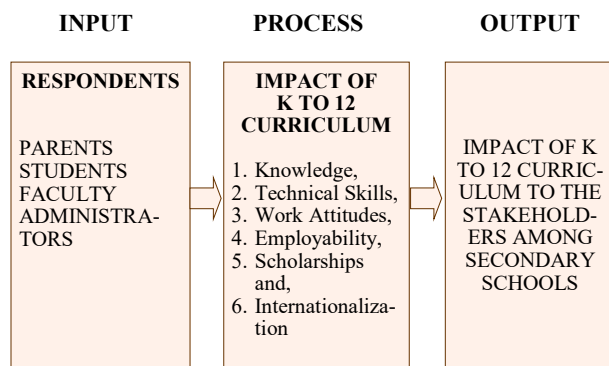
Figure 1. Research Paradigm

STATEMENT OF THE PROBLEM

The ultimate purpose of this study was to determine the impact to the stakeholders the implementation of K to 12 Curriculum among Surigao City and Norte Division high schools offering Technical-Vocational-Livelihood Track, School Year 2016-2017.

Specifically, this study sought the answers to the following problems:

1. To what extent is the impact of K to 12 Curriculum to the stakeholders in terms of:
    1.1 Knowledge,
    1.2 Technical Skills,
    1.3 Work Attitudes,
    1.4 Employability
    1.5 Scholarships, and
    1.6 Internationalization?

2. Is there a significant difference in the impacts of the K to 12 implementation as rated by the following stakeholders:
    2.1 Parents,
    2.2 Students,
    2.3 Faculty, and
    2.4 Administrator?
3. Is there a significant difference among the impacts of the implementation of K to 12 Curriculum as cited in problem 1?

RESEARCH METHODOLOGY

Research Design

This present professional investigation used the descriptive design adopting the differential method. This method was more appropriate as it analyzed and described the Implementation of K to 12 Curriculum: Impact to the Stakeholders. The study also aims at examining factors that influence the impact of K to 12 Curriculum to the stakeholders through a differential method.

The differential method was employed in determining the significant difference in the ratings of the respondents on the problem of impacts of the K to 12 implementation as rated by the following stakeholders.

In addition, inferential research design was utilized to determine the significant differences that exists that were drawn from the results of the acceptance or rejection of null hypotheses.

Research Instrument

Four sets of researcher-made survey instruments were utilized as tools in obtaining the needed data in the study. One set for the Parents, one set for the Students, One set for the Faculty, and one set for the School Administrator. Each of these instruments was made to determine the impact of K to 12 Curriculum in terms of the knowledge, technical skills, work attitudes, employability, scholarships, and internationalization.

Validity. The drafts foreach of these sets of research instrument were prepare by the researcher. The instrument was validated in terms of the content. These were presented to the panel of researchers who are experts in constructing the instrument. Their suggestions for improvement were followed and dry run of the instrument was made among selected senior high schools student and faculty. Getting all positive comments from the dry run, the reliability test of the instrument was made.

Reliability. The process was done after the content validity was established. In this process, the researcher used the run-rerun method where copies of the same instrument were conducted twice to the same respondents after an interval of one day. The responses in these twice conduct were statistically treated using the Pearson Product-Moment Correlation Coefficient (r_{xy}).

Research Environment

The present study was conducted in the City of Surigao and in the Province of Surigao del Norte, specifically, in the Division of Surigao City, Division of Surigao del Norte caters Senior High School offering Technical-Vocational-Livelihood Education.

Respondents

The respondents of this study were the parents who have students in senior high school, Grade 11 students and school administrators facilitating Senior High School curriculum offering Technical-Vocational-Livelihood Education in Surigao City and Surigao Del Norte. The Table 2 shows that plurality of student respondents is the fifty percent plus one method used in selecting the respondents of the study in the two (2) Divisions of Surigao catering Senior High School so as the parent, teacher, student, and school administrators respondents.

Table 1. Population and Sample of Respondents

Division	School	Student		Parent	School Adminis-trator	TVL Teach-er
		N	n			
Surigao City	Anomar NHS	54	28	28	1	6
	Day-asan NHS	84	43	43	1	1
	Surigao City NHS	260	131	131	1	20
	Taft NHS	120	61	61	1	8
	Ipil NHS	35	18	18	1	2
	Mat-I NHS	148	75	75	1	28
	Lipata NHS	23	13	13	1	9
Surigao del Norte	AMANDO FABIO MNHS	56	29	29	1	4
	CAMPO NHS	30	16	16	1	2
	CLAVER NHS	136	69	69	1	10
	MAGPAYANG NHS	18	9	9	1	2
	TIMAMANA NHS	5	5	5	1	2
	TUBOD NHS	54	28	28	1	4
Total		1,023	525	525	13	98

Data Analysis

The data were analyzed and interpreted using the following statistical tools.

Weighted mean. This tool was used to determine the implementation of K to12 curriculum: impact to stakeholders to answer Problems 1 and 2. This served as the preliminary to answer the subsequent problems of the study.

Ordinal Rank. This tool was used to show a comparative order of position on the implementation of K to 12 Curriculum: impact to stakeholders based on the obtained mean in aid of the sequence of analyses and interpretations of data.

Analysis of Variance (ANOVA). This tool was used to determine the significant difference among the ratings of the respondents on the impacts of the implementation of K to 12 Curriculum. The repeated measurement of this tool was used.

RESULTS AND DISCUSSIONS

Impact of the K to 12 Curriculum

The extent of the impact of the implementation of K to 12 curriculum in the DepEd secondary schools in terms of knowledge, technical skills, work attitudes, employability, scholarships, and internationalization of the student development are contained in this section. The data are presented in the succeeding Tables according the groups of respondents: school administrators, teachers, students, and parents.

Ratings of School Administrators

Table 2. Summary Data of Administrator Ratings on the Impact of K to 12 Curriculum

K to 12 Goals on:	$\bar{x}$	Evaluation
1. Knowledge	3.45	Satisfactory
2. Technical Skills	3.53	Very Satisfactory
3. Work Attitudes	3.55	Very Satisfactory
4. Employability	3.32	Satisfactory
5. Scholarship	3.36	Satisfactory
6. Internationalization	3.48	Satisfactory
Overall Mean	**3.45**	**Satisfactory**

Table 2 revealed that the administrators rating on the impact of k to 12 curriculum. The highest was on "work attitudes" with the mean of 3.55 and followed by "technical skills" with the mean of 3.53 with an obtained rating of "very satisfactory". The lowest was "employability" with the mean of 3.32 marked as "satisfactory".

Teacher Ratings

Table 3. Summary Data of Teacher Ratings on the Impact of K to 12 Curriculum

K to 12 Curriculum Goals on:	$\bar{x}$	Evaluation
1. Knowledge	3.35	Satisfactory
2. Technical Skills	3.39	Satisfactory
3. Work Attitudes	3.48	Satisfactory
4. Employability	3.45	Satisfactory
5. Scholarship	3.31	Satisfactory
6. Internationalization	3.34	Satisfactory
Overall Mean	**3.39**	**Satisfactory**

The data presented in Table 3 reflected that among all the items on the teachers rating on the impact of k to 12 curriculum, the highest was on "work attitudes" with the mean of 3.48with obtained evaluation rating of "satisfactory".

Student Ratings

Table 4. Summary Data of Student Ratings on the Impact of K to 12 Curriculum

K to 12 Curriculum Goals on:	$\bar{x}$	Evaluation
1. Knowledge	3.25	Satisfactory
2. Technical Skills	3.20	Satisfactory
3. Work Attitudes	3.21	Satisfactory
4. Employability	3.18	Satisfactory
5. Scholarship	3.19	Satisfactory
6. Internationalization	3.23	Satisfactory
Overall Mean	**3.21**	**Satisfactory**

The Table 4 revealed that among all the items on the students rating on the impact of k to 12 curriculum, the highest was on "knowledge" with the mean of 3.25 obtaining an evaluation of "satisfactory". The item that seconded was on "work attitudes" with the mean of 3.21 marked as "satisfactory". "Technical skills" ranked third with the mean of 3.20 with the obtained rating of "satisfactory". The lowest was "employability" with the mean of 3.18 marked as "satisfactory".

Parent Ratings

Table 5. Summary Data of Parent Ratings on the Impact of K to 12 Curriculum

K to 12 Curriculum Goals on:	$\bar{x}$	Evaluation
1. Knowledge	3.30	Satisfactory
2. Technical Skills	3.24	Satisfactory
3. Work Attitudes	3.24	Satisfactory
4. Employability	3.28	Satisfactory
5. Scholarship	3.24	Satisfactory
6. Internationalization	3.25	Satisfactory
Overall Mean	**3.26**	**Satisfactory**

As presented in Table 5 displayed the parent ratings on the impact of k to 12 curriculum. the highest was on "knowledge" with the mean of 3.30 and followed by "employability" with the mean of 3.28 each obtained an evaluation of "satisfactory", and followed by the impact on "employability" with the mean of 3.28, still "satisfactory". The lowest was "technical skills", "work attitudes", and "scholarships" with the mean of 3.24 marked as "satisfactory".

Table 6. Holistic Data of Respondent Ratings on the Impact of K to 12 Curriculum

K to 12 Curriculum Goals on:	Respondent Ratings				Mean ($\bar{x}_g$)	Evaluation
	Administrators	Teachers	Students	Parents		
1. Knowledge	3.45	3.35	3.25	3.30	**3.34**	Satisfactory
2.Technical Skills	3.53	3.39	3.20	3.24	**3.34**	Satisfactory
3. Work Attitudes	3.55	3.48	3.21	3.24	**3.37**	Satisfactory
4. Employability	3.32	3.45	3.18	3.28	**3.31**	Satisfactory
5. Scholarship	3.36	3.31	3.19	3.24	**3.28**	Satisfactory
6.Internationalization	3.48	3.34	3.23	3.25	**3.33**	Satisfactory
Overall Mean	**3.45**	**3.39**	**3.21**	**3.26**	**3.33**	**Satisfactory**

Analysis of the overall mean of 3.45 for administrator, 3.39 for teachers, 3.21 for students, and 3.26 for the parents, results to the 3.33 for over-all ratings. This means that the respondents rating on the impact of the k to 12 curriculum is satisfactory. This means that the implementation of k to 12 curriculum needs further improvement and increase self reflective practice among teachers in higher education settings to strengthen level of standards in terms of curriculum programs.

The highest was on "work attitudes" with the mean of 3.37 marked as "satisfactory". The item that seconded was on "knowledge" and "technical skills" with the mean of 3.34 as marked "satisfactory". "Internationalization" ranked fourth with the mean of 3.33 with the obtained rating of "satisfactory", the followed by "employability" with the obtained main of 3.31. The lowest was "scholarships" with the mean of 3.28 marked as "satisfactory".

Difference in the Ratings of the Respondents On the Impact of K to 12 Curriculum

The answer to the second query of the study on the existence or non-existence of significant difference in the ratings of the four groups of respondents on the impact of K to 12 curriculum is discussed in this portion. The data on the difference in impact ratings as to the factors of

knowledge, technical skills, work attitudes, employability, scholarship, and internationalization are presented in Table 6.

Table 7. ANOVA Data of the Ratings of Respondents on Impact of K to 12 Curriculum by Factors

Factor	F-value	Decision on Ho	Conclusion
Knowledge	3.53	Accepted*	Not Significant
Technical Skills	5.32	*Rejected*	*Significant*
Work Attitudes	8.33	*Rejected*	*Significant*
Employability	8.29	*Rejected*	*Significant*
Scholarship	2.22	Accepted	Not Significant
Internationalization	2.02	Accepted	Not Significant

(df = 3/1128, F.05 = 2.60, & F.01 = 3.78)

The Table unfolds the absence of significant difference in the impact of K to 12 curriculum to student development along with its goals on knowledge, scholarship, and internationalization.

Difference among the Impacts of K to 12 Curriculum to the Development of Students

This portion presents the data, analysis, and interpretation in answer to the third problem of the study on whether or not there exists a significant difference among the impact ratings, singly or in combination, of the 4 respondents in the 6 identified goals of the K to 12 curriculum. Taking account on the presence or absence among the impact ratings of the school administrators on the K to 12 curriculum to the student development, the data are offered in Table 7 for analysis.

Table 8. ANOVA Data of the Ratings of Respondents on Impact of K to 12 Curriculum by Factors

Among the Ratings of:	F-value	df	F-.05-value	Decision on Ho	Conclusion
Administrators	2.43	5/60	3.34*	Accepted	Not Significant
Teachers	3.98	5/340	2.25	*Rejected*	*Significant*
Students	4.92	5/524	2.21	*Rejected*	*Significant*
Parents	5.81	5/524	2.21	*Rejected*	*Significant*
					Significant

(df = 3/1128, F.05 = 2.60, & F.01 = 3.78)

The data disclosed no significant difference among the impact ratings of the schools administrators on the 6 goals of the K to 12 curriculum to the student development. The significant differences in the impact ratings existed along with those of teachers, students, parents, and in combined respondents.

CONCLUSIONS AND RECOMMENDATIONS

Conclusions
1. The K to 12 curriculum are geared towards achieving the goals and objectives along the knowledge, technical skills, work attitudes, employability, scholarships, and internationalization in ASEAN countries.
2. School administrators are positive of achieving the goals and objectives of the K to 12 curriculum.
3. The implementation of K to 12 curriculum is not fully convincing to the students, teachers, and parents.
4. The mind sets of the stakeholders are not similarly attuned in the same direction towards ASEAN integration of basic education through the implementation of K to 12 curriculum.
5. Disturbing problems in the process of implementation are still occurring among secondary schools.
6. Stakeholders are challenged in facing the present and future state of the educational philosophy for millennial generations.

Recommendations

Intensive training of teachers, in-dept dissemination of information to stakeholders, and close monitoring of the curriculum are necessary.

In specific terms, th recommendations below may pave the way to the solutions of the problems mentioned in this study and are addressed to the following:

School Administrators. They are requested to provide sufficient and comprehensive background on skills competencies of every student toward employability that anchored to the implementation of K to 12 curriculum by sending the tvl teachers through trainings in order to equip with necessary skills to become competent teacher in their fields of specialization. They are likewise requested to provide tools and equipment for the hands-on activities of students as well as planning and revising the programs that will address the demands of the industry either in local or abroad.

Teachers. They are encouraged to upgrade, revise and improve their teaching skills, strategies, methods, techniques in delivering their assigned tasks by attending seminar-workshops and trainings related to their area of specialization. They are urged to keep updated with the recent current trends and innovation of technology in line with the implementation of the k to 12 curric-

ulum that will serve as their guide in enriching course syllabi to suit the needs of the industry nowadays.

Students. They are encouraged to accept the best opportunity extended to them especially during the practical exercises given by technology teachers, and desire for making them responsible, competent workers and useful citizen of the country.

Parents. They are encouraged to extend moral, financial and spiritual supports to their students in accomplishing the requirements of the K to 12 curriculum with thorough monitoring of their academic activities.

Local Government Unit. They are requested to provide training activities and opportunities to enhance the skills of the students which geared towards the implementation of the K to 12 curriculum. Likewise, they are requested to sponsor scholarship grants to those financially less fortunate but deserving individuals.

ACKNOWLEDGMENT

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STUDENTS' LEXICAL CONFLICTS IN CALCULUS WITH ANALYTIC GEOMETRY LEARNING AND APPLICATION

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ABSTRACT

This phenomenological study attempts to determine the role of language in calculus with analytic geometry learning and application in terms of the lexical conflicts encountered and coping strategies employed by the students. Colaizzi's descriptive approach was used on the gathered information from the interview of the purposely selected participants. The results show that students had vocabulary struggle that caused difficulty in using Calculus with Analytic Geometry lexicons and their related concepts. This identified lexical conflict was coped with through the assistance of ICT application and social connection. Different ways of teaching these lexicons could be used to help learners understand better. Language and mathematics educators have to address the issue of the language associated with mathematics to find means of improving students' proficiency in using mathematical lexicons.

INTRODUCTION

Students' understanding of the English language influences their mathematical ability. In Calculus with Analytic Geometry, good communication between the teacher and learners is necessary. Learning language is learning "what to signify." Thus, understanding how to make and exchange mathematical concepts using context-appropriate language is more than recognizing and responding to isolated terms in the said subject (Jourdain and Sharma, 2016). As a result, proper language (words and symbols) must be used with difficulty that corresponds to the learners' cognitive skills.

The role of language in mathematics, particularly in calculus, with analytic geometry training, is to allow both the instructors and the learners to communicate mathematical knowledge precisely. To meet the goals, teachers and textbook authors must use language whose structure, meaning, technical terminology, and symbols can be understood by learners at a particular class level. In communication, the receiver's interpretation is recurring in the transfer of meaning, and this should serve as a caution that misinterpretation of the message could be given (Mulwa, 2015).

However, teachers should be mindful that the abstract nature of calculus combined with analytic terminology and the complexity of the language used to refer to them can make acquiring definitions more difficult. Because students may struggle to understand the meaning of some terms even after they have been defined, the instructor should discuss multiple interpretations and meanings of such words and phrases so that each student understands what the other means and what specific linguistic forms signify (Abramovich, et al., 2019).

From the preceding assertion, it can be seen that language is critical to many learning and teaching processes. It offers various benefits in terms of defining, objectifying, and analyzing the issues that mathematics presents. On the other hand, language has its own set of rules and expectations that are not always in perfect accord with the norms and needs of mathematics, particularly in the areas of calculus and analytic geometry. It contains ambiguities and inconsistencies that can lead to misinterpretation and confusion.

Thusly, issues on the role of language in Calculus with Analytic Geometry instruction have not been dealt with, yet studies with learners who speak English as a first language have revealed that they have difficulty using mathematical terms (Muhandiki, 1992). In connection to this, even countries that used English as L1 encountered issues or problems on the lexical items found in the subject. Consider how difficult it is for the students who use English as L2, such as those in a state university campus located a Cogtong, Candijay, Bohol. So, with this, the paper would like to determine the problems that the students have encountered in calculus with analytic geometry lexicons and concepts, find out how they cope with the difficulties caused by the lexical items and looks forward to accentuating implications to calculus with analytic geometry learning and application.

LITERATURE REVIEW

This study anchored on the cognitive flexibility theory of R. Spiro, P. Heltovitch, and R. Coulson that promoted teaching students how to deduce the meanings of mathematical terminologies from context. The idea was primarily concerned with the transfer of knowledge and abilities outside the context of their initial learning. However, the theory also claimed that efficient learning was context-dependent, which necessitated comprehensive training. Furthermore, the idea emphasized the necessity of created knowledge; learners must develop their representations of information to learn correctly.

Language was the primary way through which the teacher and students could exchange precise mathematical information. A teacher must utilize language that was appropriate for the cognitive growth of students. According to Di Gisi and Fleming (2005), the ability to comprehend language in various mathematical situations and for a variety of goals was essential to solving mathematical problems. In addition, language, according to Sapra (2011), was a powerful tool for forming concepts, acquiring specific viewpoint abilities, and transferring or communicating those notions.

Moreover, Hornburg et al. (2018) asserted that comprehension skills (i.e., reading comprehension, listening comprehension, general vocabulary) were related to different types of mathematics performance and different types of Mathematics Vocabulary. Further, the study of Thornburg was affirmed by Lin, X. (2020), who stated that the role of mathematics vocabulary was more than direct retrieved mathematics conceptual knowledge. He added that learning the language of mathematics served as a medium that could facilitate cognitive reasoning in mathematics learning. With this, it could be ascertained that learners who were well equipped with vocabulary related to mathematics had an outstanding possibility to perform better in their mathematics class.

Furthermore, understanding a word issue required comprehending the relationships between language and symbolic representations of numerals and math operations. One of the most challenging tasks for students to figure out was what operations (addition, subtraction, multiplication, and division) were represented by the problem's terminology when they weren't clearly stated. In the context of a word problem, possessing the linguistic skills to recognize past, present, and future, possession, direction, pronouns, and verbs was also required. (Carey and Jacobson, 2020). In their accentuation, Teachers could think diagnostically about where a student is becoming "stuck" in math if they were aware of the importance of language in math.

In addition, Walinga and Stangor (2014) asserted that language served three important functions: first, it enabled people communicate with one another; second, it facilitated the cognitive process; and third, it allowed people to recall information beyond the limitation of their memory. This statement highlighted the importance of language in not just transmitting meaning but also in facilitating thought. Because the language used for thinking was most frequently the first language, mathematics communicated in one language may need to be translated into another to allow for thinking, and then back into the first language to talk with the teacher. At any point during this two-way inmost translation process, errors and misunderstandings occurred.

Berry (1985) compared a group of Botswana university students to Chinese university students in Canada in terms of mathematical advancement. The first group stated that they had to complete all of their reasoning in English because their native tongue does not permit mathematical proofs, which they found challenging. On the other hand, the Chinese students said they finished their explanations in their mother tongue and then translated them back to English, and that they were successful. Due to this, there was a possibility to speculate that the more severe challenges were

attributable to students attempting to study mathematics in a foreign language other than their own.

Gagne (1970) "Defined concept" and "concrete concept" where the two categories in which concepts are classified. According to him, a teacher must understand what the learner needs for them to grasp new concepts. When a youngster had mastered all of the sub-concepts that were prerequisites to the concept, He or she was then prepared to advance to the next level. He proposed that children learn capacities in an orderly additive succession, with each new capability being more sophisticated than the prerequisite competence on which it was based.

However, Dienes (1960) as cited by Mulwa (2015) argued that mathematical concepts can only be fully comprehended if presented in various actual, physical forms. He divided these ideas into three categories: pure mathematical, notational, and applied. His teaching methods included mathematical laboratories, where he praised the use of MAB to create an appropriate early learning environment to develop the place-value notion. Free play, playing games, seeking for commonalities, representation, symbolism, and formalization are the six steps proposed for teaching mathematical concepts.

Ausubel (1960) as cited by Mulwa (2015) agreed that idea formation works best when the broadest, most encompassing parts of a concept are provided first, followed by a gradual differentiation in terms of depth and specificity. Also, Choat (1974) as cited by Mulwa (2015) emphasized the strong relationship between language and conceptual development, stating:

Even though the learner interacts with physical parts of the learning scenario, such as objects, the verbal element is critical for communication and as a tool for individual representation. A youngster will not grasp the word in acquiring mathematical knowledge, a new thought, because he will not be able to integrate and accommodate the concept as quickly without the word.

The preceding statement underscored psychologist Vygotsky (1962) theory that language and thought were inexorably intertwined. Even Piaget later admitted that language and cognitive skills for making sense of the environment might develop simultaneously.

Language and concept acquisition was a dynamic process. The child's understanding and use of language vary depending on how involved he was in the situation and how important it was to him. As a result, both the student and the instructor must investigate the various meanings and interpretations of words and phrases to know what the other meant and what specific language patterns meant. (De Bot, 2008).

Pimm, (1992) found that hearing an instructor was typical in asking students if they grasp the meaning of a word and sometimes attempting to test their understanding by looking for a formal definition or a paraphrase. Indeed, teachers should be mindful that the abstract character of some mathematical vocabulary and the intricacy of the language used to refer to it can make learning definitions more difficult. Because some students may struggle to grasp the meaning of terms even after being described, the instructor should provide suitable learning opportunities for students to develop their definitions (Jourdain and Sharma, 2016).

OBJECTIVES

The prime thrust of this study is to look into the lexical conflicts encountered by students enrolled in calculus with analytic geometry by interviewing social media (group chat, google meet, google forms).

Specifically, this study answers the following:
1. What are the lexical conflicts revealed in Calculus with Analytic Geometry learning and application?
2. How do the students cope with the difficulty caused by these lexical items?
3. What are the implications of the role of language in teaching and learning calculus with analytic geometry?

SIGNIFICANCE OF THE STUDY

Curriculum designers could benefit from this study's outcomes responsible for crafting the different subjects under mathematics, particularly calculus with analytic geometry.

It also looks forward to these findings being beneficial to CTE instructors or College of Teacher Education of the different Universities. They may need to reorganize their units in the teaching of Calculus with Analytic Geometry to pay special attention to the language of this subject.

In addition, Calculus with Analytic Geometry teachers will also benefit as this study has identified the shortcomings in teaching and learning the subject. This study would improve the teaching and learning process, as well as the subject's performance. The findings would also serve as a data

bank for future reference and a location for more educational study.

SCOPE AND LIMITATION

This study restricted itself to investigating the extent to which students encounter lexical challenges with Calculus and Analytic Geometry learning and application and their related concepts. It was conducted in Public University within the municipality of Candijay, Bohol. The study included the whole population of students enrolled in the subject Calculus with Analytic Geometry.

RESEARCH METHODOLOGY

DESIGN
This study primarily used qualitative research. This involved in-depth one-on-one interviews with the purposely selected participants by the researcher to collect information relevant to the study. This design was deemed appropriate in that it helped to reveal the insights of the target participants regarding the study. Moreover, this interview provided an excellent opportunity to gather precise data about the participants' thoughts regarding the matter at hand. The study utilizes purposive sampling technique.

ENVIRONMENT AND RESPONDENTS
The study was conducted in the province of Bohol. At present, Bohol has several Higher Education institutions. Two of these are private universities, one state university, and the rest are colleges. Due to the limited human strength and important factors beyond the researchers' control, this study only covered one campus of the state university, which is located in Cogtong, Candijay, Bohol.

The participants of this study were the twenty-five (25) selected participants who encountered the lexical conflict phenomenon in Calculus with Analytic Geometry. The participants' experiences regarding the encountered lexical items were considered important factors to draw different perspectives about the study.

INSTRUMENT
The main instruments of this study were the researchers, who conducted the interview to the participants. The researchers used interview guide questions and an audio-video recorder to docu-

ment all the details of the conversation during the interview. If the participants would not prefer that the interview would be recorded through a video, google form was given as an option for them to answer the questions. Aside from the audio-video recorder and the google form, the researchers also used a journal notebook as a supplementary tool in documenting what happened as the information gathering progresses.

DATA GATHERING PROCEDURE
The researchers secured a letter of permission to conduct the study, which will be addressed to the institution's campus director. The researchers gave a copy of the permission letter and the nature/background to the selected participants. In addition, the researcher reassured that the participants were voluntarily admitting themselves to undergo the said interview. The researcher acquired permission to record the interview through audio, video, and google form as a supplementary platform to gather data. After that, the participants were given the option of preference, allowing the interview to be done through either face-to-face or google meet or with any available social media platforms. At the point that the interview started, the researcher's made interview guide was used. Finally, when the discussion of the selected participants was made successful, thematic analysis was used to analyse the data.

DATA ANALYSIS
This study engaged an in-depth interview with the selected participants. In this sense, Colaizzi's thematic analysis was used considering that the mean of gathering data was through interviews. This method of analyzing information was appropriate. In this study, the researcher closely examined the significant statements and phrases from the consultation to formulate meaning, categorize, and cluster themes associated with Calculus with Analytic Geometry learning and application.

ETHICAL CONSIDERATIONS
This section of the study showed some ethical considerations needed for the study. The following ethical considerations were: first, all the required permits should be provided and given to the selected institution and individuals involved. Second, the researcher made sure that the participants were fully informed about the nature of the study. Next to consider was in respect to intellectual property. With this, the researcher made sure that all information should be appropriately cited and authors were given credits. It was also of the

same importance given to the right to privacy and confidentiality. Hence, the researcher assured the participating bodies that all the personal and institutional information will be kept private and not exposed to the public. Finally, the researcher also gave incentives and compensation to all involved participants for their time and effort allocated to attend the study.

FINDINGS

Participants Lexical Conflicts Encountered in Calculus with Geometry

The participants shared their feelings, thoughts, and perceptions on the difficulties they encountered. A variety of responses emerged as a result of the one-on-one in-depth interview. The following significant statements and phrases were used in formulating, categorizing, and clustering themes.

Table: 1. Participants Lexical Conflicts

Significant Statements (lexical conflicts)	Formulated Meanings
"terms about ellipse, focus, and some of the rules in finding the derivatives, and many more"	The informant recognized the terminologies that caused difficulty in learning the subject.
"yes, I encountered words which are difficult, like chain rules derivative."	They gave an example of the problematic words encountered
"Terminologies that I find so hard to get the idea of the process in learning."	Lack of understanding of the terms can confuse the processes embedded in the subject.
"implicit differentiation, I often don't also understand the point of process about derivatives and parabola."	Performing the processes is affected by the lack of understanding of the terminologies.
"Derivative, directrix and latus rectum."	The informant recognizes these as terminologies that need further elaboration/explanation
"There are lots of words I encountered which are hard to understand in the subject, especially the maxima and minima problems."	There is an admission that there is a presence of difficult lexicons
"Yes. I admit sometimes there are difficult words that I cannot understand, especially this kind of system we are facing today, online learning. Still, I will find a way to research on Google to make it understand as possible as I can."	The informant has a lack of vocabulary on the subject.

Based on Table 1, it was observed that most of the participants' responses had the same code. In line with this, as viewed through the formulated meanings from the participants' significant statement, the presence of difficulties in understanding the lexicons embedded in the subject impeded the learning and performance in Calculus with Analytic Geometry subject.

Table 1.1 Formation of Emergent themes based on formulated meanings

Formulated meanings	Theme Clusters	Emergent Themes
• Difficulties in understanding the lexicons embedded in the subject • Lexicons affect the applications of concepts in calculus with Analytic Geometry	• Lexicons are not known, which affect the learning and application.	• Vocabulary struggle

Table 1.1 showed the emergent theme that comes out from the formulated meaning based on the participants' responses. The students' issue with vocabulary in Calculus with Analytic Geometry emerged as an emergent theme, causing the students to struggle learning and performing well in the subject. This vocabulary struggle was evident in the statements from the participants.

"There are lots of words I encountered which are hard to understand in the subject, especially the maxima and minima problems." – P6

"yes, I encountered difficult words, like chain rules derivative saddle"- P2

The result implied that vocabulary played a vital role in learning concepts and performs better in math-related subjects, particularly in Calculus and Analytic Geometry. The findings were similar to Riccomini et al. (2015), who emphasize that vocabulary knowledge was a critical component of general comprehension in various academic areas, including mathematics. Furthermore, it had been established that students' mathematical vocabulary acquisition was an essential component of their language development and, ultimately, their mathematical proficiency.

Table 2. Participants Lexical Conflicts Coping Strategies

Significant Statements (lexical conflicts)	Formulated Meanings
"To understand those words, I go to Google and search for their meaning."	Online search engine helps the participant to understand the problematic terminologies
"I can't deny the fact that I've always used Google and watch in YouTube for me to couldn't be left behind, especially this subject."	The participant used multi-media applications to understand the confusing terminology
"Mangutana ko sa akong mga amigo ug klasmet"	The asking classmate was the resort of some participants.
"Sometimes, I ask my classmates, Kuya."	The participant refers to their classmates and relatives to understand the problematic terminologies
"I usually search in Google Apps and watch videos on YouTube for a tutorial."	The participant used multi-media applications to understand the confusing terminology

"I search it on Google or in the Merriam dictionary."	The participant used multimedia applications to understand the confusing terminology
"Nagsearch sa Google aron masabtan."	Online search engine helps the participant to understand the challenging terminologies
"Do some further research and watch some videos on how to solve them. It would take a while since we have to repeat reading and to watch them understand the terminologies used fully."	The participant recognized the use of videos to learn the processes
"Well, we can use a lot of strategies to understand the topic about this matter. As a student, I use Google to search for everything involved in math. and I also use YouTube to be able to see video on and in order these kind strategies, I see potential, or I see how important this app is for me to guide along the journey as a math major."	The participant used an ICT application to learn the process involved in the subject.

As the interview progressed, it was observed in Table 2 that most of the participants in the study shared the same sentiments regarding their coping strategies to understand better the lexicons and the concepts related to the processes involved in the subject. The students widely used ICT applications as demonstrated in the formulated meaning. Yet, few called on seeking classmates, relatives, and peers for help to understand the difficult terminologies and processes related to calculus with analytic geometry.

Table 2.1 formation of Emergent themes based on formulated meanings

Formulated meanings	Theme Clusters	Emergent Themes
Students employed different ICT applications to assist them in learning difficult lexicons.	Utilizing ICT applications (YouTube, Google search, online dictionary, video tutorials) supports learning lexicons related to the subject.	ICT assistance
Seeking classmates, relatives, and peers to understand the difficult terminologies and processes.	People from the community support learning	Social connection

Based on the table above, it was found out in this study that students sought assistance from different ICT tools and applications and were clever enough to use their social connections to cope with the difficult lexical items and processes related to calculus with analytic geometry. Statements to prove this were found in the participants' responses which are stipulated below.

"To understand those words, I go to Google and search for their meaning."- P3

"Do some further research and watch some videos on how to solve them. It would take a while since we have to repeat reading and to watch them understand the terminologies used fully." – P8

It was evident that ICT tools and applications offered clear support to learn complicated terminologies and processes related to the subject calculus with analytic geometry. As proven in the study of Das (2019) stating that the integration of knowledge and communication technologies (ICT) into the teaching and learning of mathematics had played an essential role in better understanding and performance. On the other hand, the social connection was also one of the driving forces for the participants to deal with the lexical difficulties encountered. It was also affirmed by the participants' responses stating that:

"Mangutana ko sa akong mga amigo ug klasmet" – P5

(I'll ask my friends and classmate)
"Sometimes I ask my classmates, kuya." – P6
(kuya – elder brother)

In connection to the respondents' responses, a study conducted by Apriliyanto et. al. (2018) agreed that social connection was a crucial factor in learning Mathematics lexicons and related processes. This was because students could interact with others and get the chance to say what they were thinking to inspire them to think about what they had learned. Indeed, the result concluded that students' social connection and interaction influenced student learning achievement in Mathematics subjects. Despite the difficult circumstances, the participants demonstrated resiliency. It was worth noting that to cope with such conflict, participants used both ICT applications and social connection assistance.

As for the enlightenment and awareness of teachers handling Calculus with Analytic Geometry and mathematics subjects. The following were the lexical items which cause difficulties of the selected participants: ellipse, focus, rules in finding the derivatives, implicit differentiation, parabola, derivative, directrix and latus rectum, terminologies related to maxima and minima problems.

CONCLUSION

The study revealed that lexical conflicts caused students difficulty that prevent them from learning and performing effectively in calculus with analytic geometry. The students' lack of understanding of the subject's vocabulary was due to that the lexicons used in calculus with analytic geometry were technical jargon and not expressed in ordinary language. This lexical conflict was cope with through ICT and social assistance. Therefore, language learning on associated mathematical terms had significant role for teaching and learning calculus with analytic geometry. Hence, the results of this study have implications for the teachers to engage students in the exploration of mathematical lexicons, concepts and procedures. Vocabulary enrichment or unlocking difficult words prior to giving instruction is equally important. Accordingly, it can be concluded that there is a need for language and mathematics educators to address the issue of the language associated with mathematics to find ways of improving students' proficiency in using mathematical lexicons.

RECOMMENDATIONS

Due to the limited coverage of this paper, the authors felt that more thorough research in the same field is required to reach results that are more valid and applicable to a more significant population.

- Conduct research on the language of mathematical textbooks, learning modules. With this, particular attention will need to be made to both learners' and students' use of mathematical language.
- A study on the simplification and contextualization of learning modules in Calculus with Analytic Geometry shall be conducted.

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TEACHING PRACTICES AND BENEFITS OF THE TEACHER-MODIFIED MANIPULATIVES IN RELATION TO LEARNERS NUMERACY SKILLS

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ABSTRACT

The study aims to determine the teachers practices and benefits of the teacher-modified manipulatives in relation to the learners' numeracy skills in Candijay, Anda, Mabini, Alicia, and Guindulman (CAMAG) District during the school year 2021 – 2022. This study employs a descriptive documentary and survey method using a modified and validated questionnaire from the studies of Schoolyard (2021), Chen (2019), Sebesta and Martin (2004), and TeacherVision (2018). It was conducted using stratified random sampling and administered to one hundred (100) teacher-respondents using google forms through email and messenger. Simple percentage and weighted mean were used. The study found that most teachers were females, married with six years and above of teaching experience with a master's degree units, and attended seminars related to the kindergarten curriculum. Finding revealed that modified manipulatives help pupils recognize and write numbers, identify shapes, explore numbers, and efficiently apply real-life problems performing basic operations. The numeracy skills of the pupils were described as developing. Pattern blocks are the most used modified manipulative as it benefits the pupils, build confidence, and make learning enjoyable. Paired t-Test revealed that the numeracy skills of the learners have a relationship to the teacher's practices in using manipulatives. There is a relationship between the teachers' practices and the benefits of the modified manipulatives. The study concluded that pupils' numeracy skills were directly influenced as the teacher applied or used modified manipulatives. Learners were benefited and improved their numeracy skills as the teacher use modified manipulatives. It recommends that teachers may apply modified manipulatives in teaching mathematics, finish their master's degree and attend webinars related to modified manipulatives in teaching mathematics. Administrators should organize seminars/webinars and training workshops to improve teachers' knowledge and skills in creating and innovating modified manipulatives to cater the needs of the kindergarten learners.

INTRODUCTION

Learning is fun to the learners when they have a supportive school environment. Using manipulatives, learners can be stimulated to engage in the activities provide by the teacher (Furner & Worrell, 2017). Today's fast-paced, ever-changing world necessitates the use of math abilities to ensure survival. We must be aware of the importance of maintaining an open mind when utilizing manipulatives because these are skills that children will need in their daily lives.

More than 70 countries participate in the Programme for International Student Assessment (PISA) assessment, which assesses 15-year-old students' skills and knowledge. Also, since 2000, Australia's 15-year-olds' scores in reading, math, and scientific literacy have declined statistically and significantly.

This year, the Philippines did not participate in the Trends in International Mathematics Sciences Survey (TIMSS). Asiatic countries are consistently at the top of the list, including Singapore, Taiwan, South Korea, Hong Kong, and Japan. Students from the Philippines have won interna-

tional math competitions. These students are primarily educated in the best Chinese schools in the country.

Learners have low performance in mathematics in Candijay, Anda, Mabini, Alicia and Guindulman (CAMAG) districts. The above-stated scenario prompted the researchers to conduct a study in order to determine the use of mathematics manipulatives for the development of numerical abilities in kindergarten learners.

LITERATURE REVIEW

Educators use manipulatives to engage pupil's kinesthetic ability, such as coins, blocks, puzzles, and markers. Constructivist learning involves students actively engaging in exploration during the learning process. Along with basic instructions, a teacher should give his students time to research and ask questions before and during class. When it comes to numbers, numeracy refers to the ability to find out what they are, how to utilize them, how to comprehend them, and how to convey them. Primary educational goals include improving and extending knowledge. When students utilize mathematical manipulatives, they not only improve their math success levels, but they may also learn extra methods or tactics that are crucial to developing problem-solving ability.

For children, manipulatives can be a great tool for helping them to think and reason. A firm foundation in mathematics can be built by using manipulatives such as pattern blocks and cubes, which give children a tangible way to compare and manipulate amounts. Teaching and learning should be enhanced by the use of manipulatives as cognitive aids. These findings suggest that teacher-modified manipulatives may assist students in the classroom as a result of this research study. Manipulative can be improvised to cater the need of the pupils at different levels. Leaders and teachers must integrate tangible and virtual manipulatives in their classrooms says the National Council of Mathematics Supervisors (NCMS) (Jones, 2019).

Educators must carefully and purposefully select the manipulatives being used, along with the order in which they are introduced, in order to maximize effectiveness. Research on manipulatives stressed that manipulatives increase math achievement if used frequently (Suydam & Higgins, 2019).

There are various kinds of manipulatives like math tubs loaded with "math games and puzzles as well as number cubes or tangrams. There are also other types of manipulatives consist of math challenges—questions which require no materials but creative brain ability" (Currie, 2005). As a result of free exploration time, students can focus on the subject at hand. Consider testing whether tiles can fall like dominoes or whether youngsters can build buildings from sticks and launch rockets from cubes.

A study made by Bjørnebye's (2019) revealed that children's interaction and responses as well as comprehension are facilitated in the used of dice game through multiple representations and embodiment of counting procedures. The use of manipulatives to teach mathematics is not a novel concept. Some strategies such as the use of beans or counters, were outsmarted by more complex objects such as linking cubes, fraction circles and other technologies that are employed in mathematics classroom (Piaget's,1952).

For pupils to learn, Hurrell (2018) argues that manipulatives must be used. The ability to physically control the materials benefits the student. Moreover, Moch (2021) tested if employing manipulatives in conjunction with math instruction would improve fifth graders' knowledge of math concepts by using tangrams and centimeter cubes. It's also been proven through research that studying numeracy skills improves oral language abilities such as vocabulary and grammatical complexity. mathematical manipulatives can help students learn arithmetic more effectively if they are used during instruction. In fact, counting isn't just one of several skills that a child has. As a child's grasp of numbers, number words count increases, so does this skill set. To the extent that they can count, count again, and tell how many there are in an object or a set is a reflection of their understanding. Operational and algebraic thinking models real-life and subtraction issues using physical objects up to 10. Mathematical notions such as patterns, symbols, and relationships are explored by young children in the course of learning about number and algebra concepts. To learn about this topic, you'll need to be able to use figures in a practical way, materials for comprehending what happens when numbers are combined and connected to help us makes sense of the world. When confronted with familiar situations, children were able to answer word problems, according to a study on learners' capability to work with figures (Young-Loveridge and Bicknell 2016).

Manipulatives are helpful because they are multimodal, shared concepts in more than one manner, talk with the learners, and boost self-confidence leading to less uncertainty and deeper

knowledge cited by Michelle Cromer (2018). Using manipulatives and stimulants to stimulate student activity to create a conducive learning style environment and make learning fun for our pupils (Furner & Worrell, 2017). Numeracy helps youngsters make sense of the world around them by understanding and applying mathematical principles. According to research results that mathematics and numeracy skills of the learners' paves the way for the children to interact in this complicated community of the 21st century with confidence and competence. (VCAA, 2019).

In order to solve problems, students must be able to use existing methodologies to find solutions and check that the answers are reasonable. To reason out, pupils must develop logical thinking and reasoning skills, as well as the ability to explain their thoughts. Mathematical ideas such as patterns, symbols, and relationships are explored by young children as they study number and algebra. To study in this area, you must be able to count objects, add up quantities, and grasp how numbers combine to explain the world and give us meaning.

Researchers have found that manipulatives aid to create a more positive learning environment in mathematics classrooms. Not only does math learning improve when students utilize manipulatives and subsequently reflect on their experience (Cain-Caston, 1996; Heuser, 2000). According to additional research, "children who engage with objects in mathematics courses are distinctly possible to succeed for those who don't. Manipulatives are necessary for some youngsters to learn how to count, whereas manipulatives help other pupils understand place value. The use of manipulatives has also been shown to be particularly effective in educating slow achievers, in English language learners.

Manipulatives are effective for the following reasons, they are multimodal, they depict ideas in multiple ways, they encourage conversation among students, and they boost confidence, reducing confusion and deepening knowledge (Cromer, 2018). Math fluency is developed through continuous practice and manipulative play. In a scenario where one of the main goals of the new curriculum will be able to increase students' abilities to solve problems and reason quantitatively. Manipulatives will play an important role in the family whether formal and informal way still it fosters positive outlook and interaction of learner and boost their confidence (Furner & Worrell, 2017). Liggett (2017) cites additional studies showing that students from kindergarten through college who use manipulatives in their mathematics class frequently outperform those who do not.

The findings of Scott (2017) stressed that using mathematical manipulatives to answer mathematical problems would be beneficial to students' learning and development. To give information regarding the value of manipulatives as another tool available to educators in the goal of enhancing student learning (Saskatchewan 2016), children lag below all provinces in reading, science, and math based on an Organization for Economic Cooperation and Development test.

Manipulatives employed by teachers have the potential to inspire student reflection when applied in the right way. According to Golafshani (2013), mathematical training should begin with real-world experiences that act as symbols for children throughout their Learning, and manipulatives are clearly important instruments in efforts to make mathematics more real. To get the finest results, they must be treated with care and attention, just like any other equipment. When they are used inappropriately, they can generate annoyance or misunderstanding, which can lead to a loss of student enthusiasm and learning opportunities.

The curriculum for K-12 basic education Kindergarten Curriculum Guide on developmental principles that mathematics requires children to acquire and demonstrate knowledge, thinking abilities, and insights into mathematical patterns, number ideas, length, capacity, mass, and time using real-world objects or materials, and to use them meaningfully in their daily lives. Children are given a variety of manipulative projects to assist them identify arithmetic links and interconnections and to allow them to interact with mathematical ideas and concepts in a flexible manner.

The Kindergarten Program (2016) includes developmentally appropriate ideas, learning goals, and pedagogical approaches for four and five-year-old children (Ministry of Education of Ontario, 2016). Based on the Standards and Competencies for Five-Year-Old Filipino Children as of May 2016, these manipulatives were utilized to develop the numeracy skills of Kinder-Daffodil students. Along with the figures, there is a brief summary of its learning skills, learning codes, topic, resources, and usage methods.

Students mathematics learning should begin with real-life experiences that act as symbol throughout the process, (Golafshani, 2013, Liggett, 2017), and manipulatives are certainly key instruments in to attempt to make numeracy more tangible. Like an instrument it must be used with

prudence in getting the best outcomes. If employed incorrectly, it can lead to irritation or misunderstanding, which can lead to a decrease in student motivation and a reduction in total learning possibilities for the student.

According to Hurst and Linsell (2020), it is essential for teachers to model the use of manipulatives so that students may grasp correctly and fundamentally the concepts using concrete material in developing their arithmetical skills. School personnel are continually on the lookout for new ways to boost student learning. This will necessitate hard work and the use of different tactics or methods. Measurement and data use suitable vocabulary to recognize the length, width, weight, and capacity of everyday things. Early math concepts such as size, form, position, and measurements of items are explored by young children. It's important to understand how to describe objects with the help of numbers and language. In 2017, the Virginia Chamber of Commerce and Industry (VCCA, 2017).

Kullberg and Björklund's (2020) investigation of using of fingerprints in building concepts at the same time while completing an arithmetic function supports these findings. Children's involvement with more detailed mathematical notions and mathematical thinking improved when learners were exposed to directed play engagement. Another study made by Thom & Elia (2018) posits that geometric and spatial thinking skills of the young learners can relate dimensional thinking through their bodies and other semiotic resources (words, drawings, and artifacts).

As part of their investigation into the quantitative skill repertoire of kindergarteners, Van den Heuvel-Panhuizen and Elia (2020) attempted to untangle its complexity of the young children's early number understanding. An analysis of the available research led them to develop a model that included quantification and mathematical skills.

Project-Based Learning (PjBL) is a learning approach that is ideal for instructional with a specific product as an output, such as developing learning media. This strategy is ideal for students in elementary school through university (Jacques, 2017; Burlbaw, 2013). There is a collaborative learning environment that promotes conceptual understanding as well as the ability of students to apply existing information and build skills. Project-based Learning, according to Coyne, Hollas, and Potter (2016), increases material understanding and fits the needs of students with a variety of skills and learning styles. Simple modifications

of manipulatives may improve the children's problem-solving skills and mathematical learning outcomes. Students can learn more effectively by using manipulatives when teaching math. Manipulatives can be beneficial to students of all ages and abilities and introducing relevant manipulatives into mathematics classes makes instruction more effective."

Experiential learning theory (Kolb, 1984) holds that learning improves when students acquire knowledge through active methods that engage them (Hartshorn and Boren, 1990). Experiential learning focuses on the idea that the best ways to learn things is by actually having experiences. Those experiences then stick out in your mind and help you retain information and remember facts (WGU, 2020).

Constructivist Theory is dealing with the diverse ways of cognition used to express and arrange knowledge (or representation) (Bruner was born in 1966). Piaget's (1970) learning theory suggests that young infants may learn mathematical concepts more successfully through concrete objects (Bakos and Sinclair, 2019). According to Cognitive Development Theory of Piaget (1936), every experience and interaction has an impact on early childhood development. Piaget's constructivist principles underpin his learning theory. According to Driscoll (2005), "Piaget firmly believed that construction of knowledge takes place if there is an actual hand on manipulation of objects. Besides the child experiences and his interaction of the environment offers opportunity to learn.

The Kindergarten Education Act Republic Act 10157, Kindergarten was designated a compulsory and mandatory first stage in basic education. According to Section 2 of this Act, all five (5)-year-old children must be given an equal chance for Kindergarten Education in order to successfully support their physical, social, emotional, and intellectual development, as well as value formation, so that they are ready for school.

The Republic Act 10533 or better known as the "Enhanced Basic Education Act of 2013" under section 4 "the enhanced basic education program encompasses at least one (1) year of kindergarten education". Kindergarten education shall mean one (1) year of preparatory education for children at least five (5) years old as a prerequisite for Grade I. For kindergarten and the first three (3) years of elementary education, instruction, teaching materials and assessment shall be in the regional or native language of the learners.

OBJECTIVES

The main purpose of the study was to determine the teachers practices and benefits of the teacher-modified manipulatives in relation to the learners' numeracy skills in Candijay, Anda, Mabini, Alicia, and Guindulman (CAMAG) District during the school year 2021 – 2022.

This study specifically aims to answer the following:

1. What is the profile of the respondents in terms of:
   1.1 age;
   1.2 sex;
   1.3 civil status;
   1.4 highest educational attainments;
   1.5 years in teaching experience;
   1.6 early childhood education units earned;
   1.7 relevant seminars/ training attended; and
   1.8 types of manipulatives used and frequency of use?
2. What is the numeracy skills of the pupils in terms of:
   2.1 counting and cardinality;
   2.2 operations and algebraic thinking;
   2.3 measurement and data; and
   2.4 geometry?
3. What is the perception of the teachers on their practices in teaching numeracy?
4. What is the perception of the respondents on the benefits of teacher modified manipulatives?
5. What are the practices of teacher's teaching practices in using improvised manipulatives in their classes to improve the performance of learners in terms of:
   5.1 types of manipulatives and practice;
   5.2 understanding;
   5.3 fluency;
   5.4 problem solving; and
   5.5 reasoning?
6. Is there a significant relationship between the numeracy skills of the kindergarten learners and teachers practices in using manipulatives?
7. Is there a significant difference between the perception of the respondents on the benefits of the teacher modified manipulatives and the teacher's teaching practices?

RESEARCH METHODOLOGY

DESIGN

This study employs descriptive-documentary and survey method, intended to provide the needed data to determine the appropriate manipula- tives in teaching numeracy in kindergarten pupils. Data were gathered using Google forms. The study utilized stratified random sampling.

ENVIRONMENT AND RESPONDENTS

This study was conducted in the districts of Candijay, Anda, Mabini, Alicia and Guindulman (CAMAG) specifically the kindergarten teachers. These locations are situated in the eastern part of the province of Bohol and forming a zone district of the Department of Education. The respondents subjected in this study were all the kindergarten teachers in the CAMAG District comprising of nineteen (19), seventeen (17), twenty-five (25), nineteen (19) and twenty (20) teachers in Alicia, Anda, Candijay, Guindulman and Mabini, respectively.

INSTRUMENT

The instrument has five parts: questionnaire on the demographic profile of the respondents, the types of manipulatives and its frequency of use, the students' numeracy skills, and teachers teaching practices. The questionnaire for the types of manipulatives and its frequency of use was adapted from --the study of Schoolyard (2021). The questionnaire for the pupils' numeracy skills was adapted from the study of Chen (2019). The questionnaire for the benefits of pupils in using manipulatives was adapted from the study of Sebesta and Martin (2004). The questionnaire for the teachers teaching practices was adapted from the study of TeacherVision (2018).

DATA GATHERING PROCEDURE

Initially, the researcher has gone through a proper procedure of securing the approval from the Dean of the College of Advanced Studies and an official permit from the Schools Division Superintendent of the Department of Education in the province of Bohol, specifically in Candijay, District and the School Head of each school to conduct this study, the researcher likewise asked permission to the teachers for this study. The researcher distributed the questionnaires personally to the respondents and explained to them thoroughly the importance of the study. They were also given enough time to answer the questionnaire. The researchers took all of the given questionnaires back after the participants answered the items.

After gathering the data, it was then tallied, tabulated, collated, and subjected to descriptive and inferential statistics for analysis and interpre-

tation in accord to the specific problems of the study. Thus, adding empirical data.

STATISTICAL TREATMENT

The following statistical treatment were utilized in the study.

1. Frequency and percentage were used to determine the profile of the respondent.
    Formula:

    $$P = \frac{F}{N} \ x \ 100$$

    Where:
    P = percentage
    F = Frequency
    N = Number of Cases

2. To determine the types of manipulatives and their frequency of use and teachers teaching practices, the formula for weighted mean was used:
    Formula:

    $$WM = \frac{\sum Fx}{N}$$

    Where:
    WM = weighted mean
    $\sum Fx$ = summation of frequency of scale value x
    N = number of cases

3. To evaluate the significant relationship between the respondents' profile and the types of manipulatives and teachers' teaching practices, the chi-squared test was used employing statistical software.
    Formula:

    $$x^2 = \sum \frac{(O - E)^2}{E}$$

    Where:
    x^2 = Chi squared
    O = Observed Frequency
    E = Expected Frequency

THE FINDINGS

Table 1. Profile of the Teacher-Respondents

1.1 Age	Frequency	Percentage
20 – 29	9	9
30 – 39	65	65
40 – 49	17	17
50 years old and above	14	14
Total	100	100%
1.2 Sex		
Male	4	4
Female	96	96
Total	100	100%

1.3 Civil Status		
Single	15	15
Married	83	83
Widow/Widower	2	2
Total	100	100%
1.4 Highest Educational Attainment		
Bachelor's Degree Graduate	28	28
Bachelor's Degree Graduate with Master Units	63	63
Master's Degree Graduate / Doctorate Units	9	9
Total	100	100%
1.5 Number of Years of Teaching Experience		
1 – 5 years	39	39
6 – 10 years	57	57
11 years and above	4	4
Total	100	100%
1.6 Number of ECE units earned in Kindergarten		
0 units 0-9	2	2
12 units 10-18	70	70
18 units 19-27	12	12
21 units 28 and above	25	25
Total	100	100%
1.7 Relevant Seminars/Training Attended		
MID Year Assessment and INSET	45	97.8
National Kindergarten Curriculum	32	69.6
Strengthening Kindergarten Teaching and Learning	37	80.4
Utilization of the ECCD	37	80.4
Classroom-Based Assessment Tools for Kindergarten	37	80.4
Kindergarten Pedagogies Child-Centered Approaches	39	84.8
DAP-ELLN	34	73.9
Total	298	100%
1.8 Types of Manipulatives and Frequency of Use	**WM**	**DI**
Pattern Blocks	3.47	A
Tangrams	2.90	F
Color Tiles	3.33	A
Unifix/Snap Cubes	2.43	F
Geared Clock	2.40	R
Abacus	2.83	F
Scale Balance	2.23	R
Bugs Counters	2.70	F
Color Cubes	3.43	A
Rekenrek	2.07	R
Two-Color Counters	3.20	F
Average Weighted Mean (AWM)	**2.81**	**F**

Legend: 1.00-1.75 = Never (N), 1.76-2.49 = Rarely (R), 2.50-3.24 = Frequently (F), 3.25-4.00 = Always (A); WM = Weighted Mean; DI = Descriptive Interpretation

Table 1 shows the profile of the teacher-respondents in the CAMAG districts. The majority of the teachers belong to the age range of 30 – 39 (65%), females (96%), already married (83%) and has obtained masters units (63%). Majority of the teachers also has 6 – 10 years of teaching experience (57%), obtained eighteen (18) ECE units (67%) and has attended MID Year Assessment and INSET (17.24%). Pattern blocks are the mostly used modified manipulative (WM = 3.47).

Table 2. Numeracy Skills of the Kindergarten Learners

Statements	WM	DI
2.1 Counting & Cardinality		
The teacher …		
1. recites or sings chant songs, rhyme, or fingerplays that include numbers or counting sequences	3.40	AP
2. uses concrete actions to demonstrate awareness of quantities and numbers	3.47	AP
3. fills in the following number when the teacher says, "1, 2, 3, 4, …	3.43	AP
4. counts concrete objects in a meaningful context	3.6	AP
5. matches quantities of objects up to at least 10 with numerals and spoken words	3.47	AP
6. recognizes and practices writing of numerals from 0-10	3.60	AP
Average Weighted Mean (AWM)	**3.50**	**AP**
2.2 Operations & Algebraic Thinking		
1. understands addition and subtraction	3.23	D
2. solves simple word problems using addition	3.03	D
3. performs simple operations	3.07	D
4. adds and subtracts integers quickly	3.00	D
Average Weighted Mean (AWM)	**3.08**	**D**
2.3 Measurement & Data		
1. describes the size and weight of everyday materials.	3.03	D
2. selects an object that represents a given attribute an assortment using appropriate vocabulary	3.10	D
3. matches objects of similar size to show a beginning understanding of attributes.	3.27	AP
4. recognize and describe measurable attributes of a single object	3.13	D
5. explains information gathered using comparative language	2.97	D
Average Weighted Mean (AWM)	**3.10**	**D**
2.4 Geometry		
1. follows directional language in daily routines and activities	3.2	D
2. locates objects in response to directional words	3.03	D
3. responds to and begin to use positional language	3.07	D
4. assembles simple puzzle by recognizing when pieces turned to fit.	3.27	AP
5. combines different shapes into a new one	3.13	D
Average Weighted Mean (AWM)	**3.14**	**D**

Legend: 1.00-1.75 = Not Observed (NO); 1.76-2.49 = Beginning (B), 2.50-3.24 = Developing (D); 3.25-4.00 = Approaching Proficiency (AP); WM = Weighted Mean; DI = Descriptive Interpretation

Table 2 illustrates the numeracy skills of the students. In table 2.1 in terms of Counting & Cardinality, item no. 6 "recognizes and practices writing of numerals from 0-10" got the highest weighted mean of 3.6 described as approaching proficiency. In terms of Operations & Algebraic Thinking in table 2.2, item no. 1 "understands addition and subtraction" got the highest weighted mean of 3.23 described as developing. In table 2.3 in terms of Measurement & Data, item no. 3 "matches objects of similar size to show a beginning understanding of attributes" got the highest weighted mean of 3.27 described as approaching

proficiency. In table 2.4 in terms of geometry, item no. 4 "assembles simple puzzle by recognizing when pieces turned to fit" got the highest weighted mean of 3.27 described as approaching proficiency.

Table 3. Teachers' Teaching Practices

Statements	WM	DI
3.1 Types of Manipulatives and Practice		
As a teacher, I use …		
1. geoboards for the pupils to recognize area as an attribute of plane figures.	2.70	FP
2. pattern blocks for the pupils to identify shapes as two-dimensional or three-dimensional.	3.50	FP
3. tangrams for the pupils to distinguish between defining attributes versus non-defining attributes.	3.03	FP
4. color tiles for the pupils to partition a rectangle into rows and columns of same-size squares.	3.23	FP
5. unifix or snap cubes for the pupils to recognize volume as an attribute of solid figures.	2.87	FP
6. triman compass for the pupils to draw points, line segments, rays, angles and perpendicular and parallel lines.	2.60	FP
7. cuisenaire for the pupils to compute unit rates associated with ratios of fractions, including ratios of length, areas and other quantities measured in like or different units.	2.59	FP
8. base-10 blocks for the pupils to understand that the two-digit number represent amounts of tens and ones.	3.23	FP
9. number tiles for the pupils to write numbers from 0 to 20.	3.13	FP
10. two-sided counters for the pupils to understand that positive and negative numbers are used together to describe quantities having opposite directions or values.	3.00	FP
11. judy clock for the pupils to tell and write time in hours and half-hours using analog and digital clock.	2.8	FP
12. abacus for the pupils to add between 100, including adding a two-digit number and a one-digit number.	3.00	FP
13. scale or balance for the pupils to identify when two expressions are equivalent.	2.67	FP
Average Weighted Mean (AWM)	**2.95**	**FP**
3.2 Understanding		
Using modified manipulatives, as a teacher I…		
1. associate names to numbers.	3.47	AP
2. explore numbers and sizes.	3.57	AP
3. explain the learners in different ways in grouping numbers.	3.47	AP
4. identify quantities and numbers	3.53	AP
Average Weighted Mean (AWM)	**3.51**	**AP**
3.3 Fluency		
Using modified manipulatives, as a teacher I…		
1. use drills in sequences readily.	3.37	AP
2. locate numbers in a number line.	3.40	AP
3. name the days of the week.	3.53	AP
4. count forward and backward.	3.47	AP
Average Weighted Mean (AWM)	**3.44**	**AP**

3.4 Problem Solving		
Using modified manipulatives, as a teacher I…		
1. use materials in modeling real-life problems.	3.43	AP
2. give directions to unfamiliar places.	3.30	AP
3. solve simple unfamiliar problems	3.27	AP
4. discuss reasonable answers	3.3	AP
Average Weighted Mean (AWM)	**3.33**	**AP**
3.5 Reasoning		
Using modified manipulatives, as a teacher I…		
1. explain direct and indirect comparisons of length	3.40	AP
2. use uniform informal units	3.23	FP
3. justify representations	3.27	AP
4. explain patterns created	3.37	AP
Average Weighted Mean (AWM)	**3.32**	**AP**
Overall Average Weighted Mean (OAWM)	**3.31**	**AP**

Legend: 1.00-1.75 = Never Practiced (NP), 1.76-2.49 = Rarely Practiced (RP), 2.50-3.24 = Frequently Practiced (FP), 3.25-4.00 = Always Practiced (AP); WM = Weighted Mean; DI = Descriptive Interpretation

Table 3 illustrates the teacher teaching practices using modified manipulatives. In table 3.1, the use of pattern blocks for the pupils to identify shapes as two-dimensional or three-dimensional got the highest weighted mean of 3.5 described as frequently practiced. In table 3.2, the learner explores numbers and sizes got the highest weighted mean of 3.57 described as always practiced. In table 3.3, the learner can name the days of the week using manipulatives got the highest weighted mean of 3.53 described as always practiced. In table 3.4, learners using materials in modeling real-life problems got the highest weighted mean of 3.43 described as always practiced. In table 3.5, learners who explain direct and indirect comparisons of length using manipulatives got the highest weighted mean of 3.4 described as always practiced.

Table 4. Benefits of the Use of Teacher-Modified Manipulatives

Statements	WM	DI
Math manipulatives can …		
1. facilitate learning concepts.	3.60	A
2. build learners' confidence.	3.80	A
3. facilitate learners in solving problems.	3.73	A
4. aid in comprehension of patterns and figures.	3.70	A
5. make learning enjoyable.	3.80	A
6. aid to create a more positive learning environment.	3.77	A
7. verbalize mathematical thinking.	3.70	A
8. relates real-world mathematical ideas and concepts.	3.77	A
9. expresses problems and solutions using a variety of mathematical symbols.	3.60	A
10. take ownership of their learning experiences.	3.77	A
Average Weighted Mean (AWM)	**3.72**	**A**

Legend: 1.00-1.75 = Never (N), 1.76-2.49 = Rarely (R), 2.50-3.24 = Frequently (F), 3.25-4.00 = Always (A); WM = Weighted Mean; DI = Descriptive Interpretation

Table 4 illustrates the benefits of the use of teacher modified manipulatives. Modified manipulatives build learners confidence and makes learning enjoyable got the highest weighted mean of 3.8 described as always practiced.

Table 5. Significant Relationship between Numeracy Skills of the Kindergarten Learners and Teachers Practices in using Modified Manipulatives

Variable	Df	Correlation Coefficient (r) between Numeracy Skills and Teachers Practices	Critical Value	p-value	∝	Interpretation
Counting and Cardinality	8	0.661574	0.6319	7.5E-07	0.05	Significant, moderate positive relationship
Operations and Algebraic Thinking	8	0.653486	0.6319	0.514767	0.05	Not Significant, moderate positive relationship
Measurement and Data	8	0.694402	0.6319	0.539557	0.05	Not Significant, moderate positive relationship
Geometry	8	0.653485	0.6319	0.522039	0.05	Not Significant, moderate positive relationship

Table 5 reveals the significant relationship between the numeracy skills of the kindergarten learners and teachers practices in using modified manipulatives. The variables operations and algebraic thinking, measurement and data, and geometry have obtained p-values of 0.514767, 0.539557, and 0.522039 which are greater than the 0.05 level of significance. Thus, the variables operations and algebraic thinking, measurement and data, and geometry have no significant relationship to the teachers practices in using modified manipulatives. On the other hand, the variable counting and cardinality has obtained a p-value of 7.5E-07 which is lesser than the 0.05 level of significance. This means that the variable counting and cardinality has a significant relationship to the teachers practices in using modified manipulatives.

Table 6. Significant Difference between Teachers Practices and Benefits of using Modified Manipulatives

Variables	Df	Correlation Coefficient (r)	Critical Value	p-value	∝	Interpretation
Teachers Practices vs Benefits in using Modified Manipulatives	8	0.538347	0.6319	1.61E-10	0.05	Significant, moderate positive relationship

Table 6 shows the significant difference between teachers practices and benefits of using modified manipulatives. The teachers practice versus benefits in using modified manipulatives has obtained a p-value of 1.61E-10 which is lesser than the 0.05 level of significance. This indicates that there is a significant difference between the teachers practices and benefits of using modified manipulatives.

CONCLUSION

Based on the findings presented, the researcher was able to draw conclusions that pupils' numeracy skills were directly influenced as the teacher applied or used modified manipulatives. Learners were benefited and improved their numeracy skills as the teacher use modified manipulatives.

RECOMMENDATION

Based on the findings and conclusions of the study, the following were formulated by the researcher:

Administrators should organize seminars/ webinars and training workshops to improve teachers' knowledge and skills in creating and innovating modified manipulatives to cater the needs of the kindergarten learners.

Teachers may use modified manipulatives in teaching mathematics. They may continue and finish their master's and doctorate degree and earn more ECE units for their educational advancement and proficiency. They may also attend webinars and trainings relevant to kindergarten curriculum to improve their knowledge and skills in creating modified manipulatives that will address and cater the needs of the learners.

Pupils should diligently use the modified manipulatives with the help of their parents.

ACKNOWLEDGMENT

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TEACHERS' LEVEL OF COMPETENCE, PRACTICES AND PROBLEMS ENCOUNTERED IN CONDUCTING RESEARCH

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ABSTRACT

The study aims to determine the teacher's competence, practices, and problems encountered in research in the public elementary schools in Candijay, Alicia, Mabini, Anda, and Guindulman (CAMAG) districts during the school year 2021 – 2022. The researcher utilized a descriptive survey method using a modified and validated questionnaire with a Cronbach's alpha of 0.983 from the studies of Cabigao (2019), Tindowen, Guzman & Macanang (2019) and Bocar (2013) as the main tool in data gathering. Data were gathered via messenger and email using Google forms and sent to the one hundred ninety-eight (198) teachers-respondent who were selected using purposive sampling. The study revealed that most teacher-researchers had no completed research, presentation, publication, experience in conducting research but had attended some training or seminar workshops related to research. Moreover, results revealed that teachers were slightly competent in conducting research and moderately practiced standard protocols in conducting research. Teacher-researchers experienced difficulties in conducting research and the top three difficulties were financial burden, struggle in the identification of researchable issue and construction of research title. Teachers' profile and perception on the level of competence in conducting research were not significantly correlated. The Chi-square test revealed a significant relationship between teachers' practices and problems encountered and the teachers' level of competence and practices implemented in conducting research. The study concluded that the teacher-respondents were challenged on the financial aspect, identification of researchable issues, construction of research title, interpretation, analysis, conclusion, and recommendation. It was recommended that school administrators allocate and provide financial support to motivate the teachers to conduct research and send them to seminars/training workshops to acquire additional research knowledge and skills. The teachers should attend training and workshops related to research.

INTRODUCTION

Research activity is essential in the field of education as well as in many areas of society. Research in education provide dependable data related to educational problems and solutions. The quality of a product greatly depends on the output of the research endeavor while theories and new knowledge are formulated. Research provide an answer to the queries, solves a given problem, and improves the quality of life as knowledge is widening and increasing" (Forbes, 2015).

Amidst this pandemic time, the educational system and almost everything is changing especially in our way of life. Despite the lockdowns and restrictions researchers remain consistent in their undertakings in searching for the answers to their queries. Their concern is the assurance of their safety as they interact while gathering the necessary data (Mitchell, 2021).

Academic researchers engage in a big problem in finding enough and appropriate time in conducting and managing their time in their research undertakings. Researchers were not only anxious between their work as researchers and teaching roles and administrative responsibilities but also their incapability to maintain a work-life balance (Ex-Libris, 2020).

Educators in some places of the world like the United States are also facing problems and deviations in their educational system. They need research to improve and innovate tools that can support them in their classroom (Boser, 2019).

In the Philippines, conducting research is also an essential role and responsibility of the teachers and professionals. It is stressed in the Department of Education (DepED) and the Commission on Higher Education (CHED) to engage in research undertakings. Besides, it is also the mandate of the university both private and public educational institutions to conduct research in addressing their need and learning issues and concerns in their areas of endeavor (Ulla, 2017).

The researchers also faced similar problems and challenges in conducting research and there is no available data on the problems and challenges as well as competencies in the conduct of research to address the teachers needs. The foregoing scenario prompted the researchers to conduct a study on teachers' level of competence, practices and challenges encountered in conducting research.

LITERATURE REVIEW

The demand for teacher research has been very important at the current time, considering some of the ideas vanish after a challenge of new opposing ideas. The involvement of teachers and other professionals is important in searching for the best and novel concepts and designs (Dana & Yendol-Silva, 2003; Simms, 2013 and Borg, 2013) as cited by Al-Ghattami and Al-Husseini (2014).

Teacher researchers confirm that research outputs conducted are a springboard for teacher professional development comprising the stock knowledge of the teachers from their experiences and their learning during the time of educational endeavor in addition to the new knowledge gained. It paves the way to improve their teaching practices for the welfare and benefits of their students (Avalos, 2011) as cited by Al-Ghattami and Al-Husseini (2014).

Other professional researchers in other fields as long as it is their area of specialization can easily recognize the research problem as they are quite acquainted with the given situation. However, researchers who are neophytes in their work need absolute carefulness and attention on the onset of a research project (Pardede, 2018).

Competencies in research methodologies and techniques, as well as developing and conducting research in teachers' domains, are included in the research competencies. They encourage collaboration with colleagues, other experts, and anyone interested in curriculum studies and education. Teachers who have strong research skills are better able to keep up with changes in their domains and grow themselves as a result of those changes. Moreover, teachers' research skills are critical for students' development of scientific thinking and process skills. According to Selvi (2010), research competencies assist in the improvement of all teachers' competencies and also promote research-based teacher education, which is a novel method in teacher education.

Another competency is identifying and characterizing the problem in which testing is the basis of the theory and hypothesis based on the collated data. The collated data are analyzed and interpreted where conclusions were based. It is a problem-solving activity that is a part of the methodology. Research is problem-oriented which is the first step in conducting research in defining a problem to be investigated.

Because writing a literature review is time-consuming, the subject should be one that both the author and the reader are interested in. As a result, scanning the topic as a first step is a good idea to account for any existing literature reviews, estimate the number of research studies that need to be evaluated, and help establish and clearly describe the review's aim, scope, and specific research issue. These are crucial steps since they will assist in determining the best approach (Snyder, 2019).

After the formulation of problems, another competency is the crafting of the conceptual framework. It explains the current situation based on previous studies from the researcher's opinions and investigation. It refers to the understanding and interplay of the given variable in doing research. It serves as the road map in the conduct of research (Regoniel, 2015).

Educational research activities become a problem as it paves education in achieving goals and objectives in restoring the faith in public school and embracing cultural differences and educating for awareness and reflections, re-establishing faith, moral, democratic values affecting attitudes achieving quality and relevance (Boykin, 1972 as cited by Wanasinghe, 2020).

Educators make use of the findings in conducting research. Teachers are end-users of research findings in education. As a result, its critical to encourage aspiring scholars to pursue studies in the subject of education. This situation illus-

trates concerns connected to the low completion rate to develop techniques to motivate future educational researchers (Wanasinghe, 2020). Participating in research should also allow instructors to have their voices heard and express their opinions. It is also urged for more democratic schooling (Cochran-Smith & Lytle, 1990).

The pandemic crises are changing our way of life, it is also overturning behavioral research. Educational institutions in the country opt to adapt virtual psychological research to protect the participants and the subjects of the study and their work. Due to the limitation of our activities amidst pandemic crises, it creates a chain reaction decent tasks in research. Written consent is hard to obtain especially the physical and the face-to-face discussion of the process. One solution is utilizing emails to which some consideration is created, deliberated, and responded to. An oral agreement is recorded which needs to be defined during the ethical clearance process. In the operational research setting, participants may overlook the research context during the conversation, particularly when they are at home. It offers substantive and robust data and offers an opportunity in the process, to note that an interview conducted was recorded (Mitchell, 2021).

The levels of contact with participants vary. In places where research has been conducted, contacts in faraway barangay have happened. But for an area in which research has commenced. A face to face contact was required for the new community mobilizers. Carrying out voice or audio calls needs a strong internet connection. Research travel funds can be converted to the improvisation of internet connections for the researchers, organizations, and participants. It is difficult to communicate via telephone and video calls compared to face-to-face communication. The use of personal follow-up and continued communication with the participants has been a beneficial way to endure research and build relationships and trust (Mitchell, 2021).

Teacher research, on the other hand, challenges standard ideals of impartiality, replicability, rigor, and reliability because of the insider posture of teacher researchers, the emphases of their inquiries, how their data is acquired, and the validity of their conclusions. "For many academics, recognition of practitioner research is given solely on the condition that a separate category of knowledge is formed for it," according to Anderson and Herr (O'Connell Rust, 2009). Teachers struggle with conducting action research, particularly with literature searches, presentation and publication of findings, and data gathering. Educators stated that they had difficulty doing their action research, particularly during the conceptualization of the variables (Toquero, 2021).

According to the study of Toquero (2021), most teacher-researchers are a novice in terms of research skills in conducting research which they developed the practical implementation of research skills. Those can be materialized through their action research. However, teachers have some problems in conducting research in the formulation of literature review and research formulation.

Some trials in conducting research are the lack of adjustment in the research procedure for remote places. With limited resources, researchers are facing the struggle of discovering original strategies for encouraging the participation of respondents. A challenge in conducting research on the student population is the correctness of data without the accessibility of data for cross-checking. Research in other places needs constant follow-up of a synergistic team to be conducted effectively. However, educational institutions are not supporting group research, which is proof of insufficient facilities and resources resulting in different individuals communicating one research.

Certain impediments arose that made conducting research initiatives more difficult. They were unable to collaborate with fellow researchers in labs due to social distance policies. Working from home made it difficult for graduate students to get access to supplies and equipment. The respondents also had troubles with the university VPN (a virtual private network). Conducting research at home is a challenge considering the time involved (Sui and Needy, 2020).

Ulla (2018) discovered that instructors' motivations for conducting research were more personal than professional. Financial assistance was lacking, as was a hefty teaching load, a lack of research skills and knowledge, and a shortage of research materials and tools. Additional effort and responsibility on the side of the teacher, writing anxiety, lack of time and inadequate knowledge in the conduct of action research are four primary themes that emerged as major concerns and obstacles for instructors in the conduct of action research (Tindowen et al., 2019).

Specifically, instructors' research abilities had a low, negative, but significant connection with their age and years of service. As a result, as they age and collect years of service, their competence deteriorates. The number of studies completed, motivation to write research, and age were all fac-

tors in determining research capability. It was established that how motivated teachers are to write research, how productive they are in research, and how young they are when they participate in this demanding activity can all be used to identify and predict research capability (Caingcoy, 2020).

This study is anchored on different theories and legal bases which help strengthen the study.

In the late 1960s, Edwin Locke is the pioneer of the goal-setting theory and motivation which gave us the modern understanding of goal setting. In his 1968 article "Toward a Theory of Task Motivation and Incentives", he showed that clear goals and appropriate feedback motivate employees. He went on to highlight that working on a goal is also a major source of motivation that improves performance.

Victor Vroom (1964) suggested that the relationship between people's behavior at work and their goals was not as simple as was first imagined by other scientists. Vroom realized that an employee's performance is based on individuals' factors such as personality, skills, knowledge, experience, and abilities. "Expectancy theory proposes that work motivation is dependent upon the perceived association between performance and outcomes and individuals modify their behavior based on their calculation of anticipated outcomes" (Fang, 2008).

Vygotsky (1934) believed that parents, caregivers, peers, and the culture at large were responsible for developing higher-order functions. According to him, learning has its basis in interacting with other people. He strongly believed that community plays a central role in the process of "making meaning".

Pursuant to Republic Act 9155 or the Governance of Basic Education Act of 2001, DepEd was mandated to "undertake national educational research and studies" (Chapter 1 section 7(5)).

Moreover, the DepEd Order No. 43 series of 2015 or the revised guidelines for the Basic Education Research Fund (BERF) aims to promote the culture of research projects anchored on the following thematic areas: improving access to education, improving the quality of education, and improving governance.

Further, the DepEd Order No. 16 series of 2017 or the Research Management Guidelines stated that "in support of the Department's policy development process, research agenda, and policy and program development and implementation, the Department of Education (DepEd) continues to promote and strengthen the culture of research in basic education."

OBJECTIVES

This study aimed to determine the teachers' level of competence, practices and problems encountered in conducting research of the public elementary schools in Candijay, Alicia, Mabini, Anda and Guindulman (CAMAG) Districts during the school year 2020 – 2021.

Specifically, this study sought to answer the following questions.
1. What is the profile of the teachers' respondents in terms of:
   1.1 number of researches conducted;
   1.2 number of researches completed;
   1.3 number of researches published;
   1.4 number of years in conducting research;
   1.5 relevant seminars/trainings/workshops attended?
2. What is the teachers' level of competence in conducting research?
3. What are the practices implemented by teachers in conducting research?
4. What are the problems encountered by teachers in conducting research?
5. Is there a significant relationship between the respondents' profile in conducting research and teachers' perceived level of competence?
6. Is there a significant relationship between the practices implemented and problems encountered by teachers in conducting research?
7. Is there a significant relationship between teachers perceived level of competences and practices implemented in conducting research?

RESEARCH METHODOLOGY

DESIGN

This study used the descriptive survey method using a modified and validated questionnaire utilizing Google forms. The study employed a random purposive sampling technique.

ENVIRONMENT AND RESPONDENTS

The study was conducted in the districts of Candijay, Alicia, Mabini, Anda and Guindulman (CAMAG), about 99.3 kilometers from Tagbilaran City of Bohol province in the eastern part of the province. They are composed of public elementary schools. There were forty-six (46), thirty-five (35), forty-two (42), thirty-six (36), and thirty-nine (39) purposively chosen teacher-respondents from Candijay, Alicia, Mabini, Anda and Guindulman districts, respectively, with a total number

of one hundred ninety-eight (198) respondents who were the respondents of the survey.

INSTRUMENT

The researchers utilized a modified research tool from Cabigao (2019), Tindowen, Guzman & Macanang (2019) and Bocar (2013). The questionnaire has four (4) parts namely: Part I is the questionnaire for research profile of the teacher-researcher to determine the respondents' number of research completed, number of research presented, number of research published, number of years conducting research in the district and relevant seminars/trainings/workshops attended. Part II is the teachers' perceptions on their level of research. Part III is the teachers' perceptions on the practices implemented in conducting research and Part IV is the teachers' perceptions on the problems encountered in conducting research.

DATA GATHERING PROCEDURE

The modified questionnaire undergone the validation process to make sure that the instrument was valid and reliable. Cronbach's alpha test was used for testing the questionnaire reliability and obtained 0.983, 0.984 and 0.921 for most items of the questionnaire for teachers' perception on their level of competence, practices implemented, and problems encountered in conducting research, respectively.

The researcher, then seeks approval to conduct a study from the following: thesis adviser; Dean of the College of Advanced Studies; Campus Director of BISU Candijay Campus; Schools Division Superintendent of Division of Bohol and Public School District Supervisor of Candijay, Anda, Mabini, Alicia and Guindulman Districts. Then, the researcher distributed the questionnaires together with the approved letter from the supervisor to conduct a study to the elementary school teachers in CAMAG Districts. Then, the researcher distributes the questionnaires through the google forms to be electronically answered by the identified respondents to adhere the IATFs mandate of strictly observing safety health protocols, thus, limiting face to face interaction.

The researcher assured the respondents regarding the confidentiality of their responses and solicited their sincere cooperation to answer the questionnaires honestly and objectively. After the data collection, answers were then tallied then prepared for tabular presentation. Afterward, they were subjected to analysis and interpretation.

STATISTICAL TREATMENT

Data were thoroughly collected and interpreted to solve the given problem of this study. Several statistical treatments were used to come up with a feasible analysis of the collected data.

1. Frequency and percentage were used to determine the profile of the respondents.
   Formula:

   $$P = \frac{F}{N} \times 100$$

   Where:
   P = percentage
   F = Frequency
   N = Number of Cases

2. To determine the teachers' level of competence in conducting research, the formula for weighted mean was used:
   Formula:

   $$WM = \frac{\sum Fx}{N}$$

   Where:
   WM = weighted mean
   $\sum Fx$ = summation of frequency of scale value x
   N = number of cases

3. To evaluate the significant relationship between the respondents' profile and their level of competence as well as the practices implemented and problems encountered in conducting research, the chi-squared test was used employing statistical software.
   Formula:

   $$x^2 = \sum \frac{(O - E)^2}{E}$$

   Where:
   x^2 = Chi squared
   O = Observed Frequency
   E = Expected Frequency

THE FINDINGS

Table 1. Profile of the Teacher-Respondents

1.1 Number of Research Completed	Frequency	Percentage
None	151	76.26
1	38	19.19
2 and above	9	4.55
Total	**198**	**100%**
1.2 Number of Research Presented		
None	151	76.26
1	43	21.72
2 and above	4	2.02
Total	**198**	**100%**
1.3 Number of Research Published		
None	177	89.39
1	16	8.08
2 and above	5	2.52
Total	**198**	**100%**

1.4 Number of Years in Conducting Research		
None	148	74.7
1 – 2 years	44	22.22
3 – 4 years	4	2.02
5 years and above	2	1.01
Total	**198**	**100%**
1.5 Number of Relevant Trainings/ Seminar Workshops Attended		
None	99	44.8
Capability Building of Teachers on Action Research	78	35.29
Seminar-Workshop on Action Research Writing	20	9.05
Seminar-Workshop on Thesis Writing	19	8.6
Division Wide Research Forum	3	1.36
VINSET and Thesis	2	0.9
Total	**221**	**100%**

Table 1 shows that majority of the elementary teachers have no research completed (76.26%), no research presented (76.26%) and no research published (89.39%). The majority of the teachers have no experience in terms of years in conducting research (74.7%) and they also did not attend trainings and seminars (44.8%).

According to the study of Toquero (2021), most teacher-researchers are a novice in terms of research skills in conducting research which they developed the practical implementation of research skills. Those can be materialized through their action research. However, teachers have some problems in conducting research in the formulation of literature review and research formulation.

Table 2. Teacher's Perception on their Level of Competence in Conducting Research

Statements	WM	DI
The teacher has competence in terms of …		
1. identifying issues to be investigated by the researchers.	2.38	SC
2. formulating of research problem.	2.32	SC
3. writing the related literature.	2.29	SC
4. writing of specific question and hypotheses.	2.35	SC
5. identifying the significance of the study.	2.39	SC
6. selecting the research population and respondents.	2.41	SC
7. selecting a research design.	2.34	SC
8. presentation and discussion of research results.	2.32	SC
9. deriving a conclusion.	2.37	SC
10. writing of recommendation.	2.39	SC
Average Weighted Mean (AWM)	**2.36**	**SC**

Legend: 1.00-1.75 = Not Competent (NC), 1.76-2.49 = Slightly Competent (SC), 2.50-3.24 = Competent (C), 3.25-4.00 Very Competent (VC); WM = Weighted Mean; DI = Descriptive Interpretation

Table 2 illustrates the teacher's perception on their level of competence in conducting research. The item no. 6 "selecting the research population and respondents" got the highest weighted mean of 2.41 described as slightly competent while the item no. 3 "writing the related literature" got the lowest weighted mean of 2.29 described as slightly competent.

The result of the study is parallel of the study conducted by Caingcoy (2020) found out that teachers were only moderately capable of performing research and had neutral attitudes about it. They were motivated to write research, had a high level of difficulty in research procedures, and were moderately capable of action planning. They also demonstrate that mentorship is a viable option for them. Furthermore, at varying magnitudes of the association, mentorship and action planning abilities, motivation to write research, attitudes toward research, and the number of studies completed by instructors were found out to be correlated to their research capability.

Table 3. Teachers' Perception on the Practices Implemented in Conducting Research

Statements	WM	DI
As a teacher, I…		
1. observe applicable regulations and policies in research.	3.04	MP
2. follow related roles and responsibilities as researchers.	3.08	MP
3. review the protocol about the research development with research advisers.	3.07	MP
4. maintain two-way communication lines and interpersonal relations of members of teachers.	3.07	MP
5. ensure access to the most current documents.	3.05	MP
6. follow proper health protocols.	3.25	HP
7. create and uses tools to assist in securing the study worksheets, data collection form and logs of checklist.	3.12	MP
8. develop an effective system for data collection.	3.1	MP
9. maintain an appropriate storage data as inputs for data base.	3.1	MP
10. observe intellectual property rights of other researchers' studies which are used as related studies.	3.13	MP
Average Weighted Mean (AWM)	**3.1**	**MP**

1.00-1.75 = Not Practiced (NP), 1.76-2.49 = Slightly Practiced (SP), 2.50-3.24 = Moderately Practiced (MP), 3.25-4.00 Highly Practiced (HP); WM = Weighted Mean; DI = Descriptive Interpretation

Table 3 illustrates the teacher's perception on the practices implemented in conducting research. The item no. 6 "follow proper health protocols" got the highest weighted mean of 3.25 described as highly practiced while the item no. 1 "observe applicable regulations and policies in research got

the lowest weighted mean of 3.04 described as moderately practiced.

Several authorities, such as the World Health Organization (WHO), provide guidelines on conducting research on human participants during emergencies. According to these guidelines, the scientific and social value of a research project involving humans must outweigh the risks involved at the time of emergency. Furthermore, all standard ethical guidelines should be followed strictly, including acquisition of informed consent and protection of research participants so that they are subjected to minimal risk (Editage Insight, 2021).

Table 4. Teachers Perception on Problems Encountered in Conducting Research

Statements	WM	DI
As a teacher, I …		
1. find it difficult to have the cooperation of respondents.	2.77	SE
2. struggle in time management.	2.91	SE
3. struggle in the identification of researchable issue and construction of research title.	2.95	SE
4. encounter financial problem.	3.00	SE
5. find it hard in the constructions of interpretation, analysis, findings, conclusion, and recommendation.	2.95	SE
6. have insufficient knowledge in formatting of the text context.	2.87	SE
7. have the difficulty in tallying of responses.	2.67	SE
8. don't get cooperation between research partners.	2.67	SE
9. have problem on the statistical treatment of data or what statistical too to use.	2.8	SE
10. have problem with collection and choice of related studies/theories as bases to support the study.	2.79	SE
Average Weighted Mean (AWM)	**2.57**	**SE**

Legend: 1.00-1.75 = Never Encountered (NE), 1.76-2.49 Rarely Encountered (RE), 2.50-3.24 Sometimes Encountered (SE), 3.25-4.00 Always Encountered (AE); WM = Weighted Mean; DI = Descriptive Interpretation

Table 4 shows the teacher's perception on problems encountered in conducting research. The item no. 4 "encounter financial problem" got the highest weighted mean of 3.00 described as sometimes encountered while the items no. 7 "have the difficulty in tallying of responses" and no. 8 "don't get cooperation between research partners" got the lowest weighted mean of 2.67 described as sometimes encountered.

The result of the study is supported by the study of Ulla (2018) that researchers had encountered problems on the lack of financial assistance and burden in additional to their teaching load, lack of research skills and knowledge, and shortage of research materials and tools.

Table 5. Significant Relationship between Teachers' Profile and Perception on Level of Competence in Conducting Research

Profile	Df	∝	Chi-square Value (X^2)	Critical Value	Interpretation
Number of Research Completed	1	0.05	0.41113	3.841	Not Significant
Number of Research Presented	2	0.05	0.008725	5.991	Not Significant
Number of Research Published	1	0.05	0.394 589	3.841	Not significant
Number of Years in Conducting Research	2	0.05	0.244142	5.991	Not Significant
Number of Relevant Trainings/ Seminar Workshops attended	3	0.05	0.003284	7.815	Not Significant

Table 5 exhibits the insignificant relationship between the teachers' profile and their perception of level of competence in conducting research. The profiles of teachers in terms of number of research completed, presented and published, number of years in conducting research and number of relevant trainings/seminar workshops attended obtained chi-square values of 0.41113, 0.008725, 0.394589, 0.244142 and 0.003284 which are less than the critical values of 3.841, 5.991, 3.841, 5.991 and 7.815 at 0.05 level of significance, respectively. This means that the teachers profile in terms of their low research performance in conducted, presented and published has no connection on their research competence in conducting research as there are other variable that hinders or serves as barriers in conducting research like lack of budget and financial support and time in conducting research as they are overlooked with their responsibility as a teacher specially during pandemic time.

The result of the study is not parallel with the study of Caingcoy (2020) that teachers research abilities had a low, negative, but significant connection with their age and years of service. As a result, as they age and collect years of service, their competence deteriorates. The number of studies completed, motivation to write research, and age were all factors in determining research capability. It was established that how motivated teachers are to write research, how productive they are in research, and how young they are when they participate in this demanding activity can all be used to identify and predict research capability.

Table 6. Significant Relationship between Teachers Practices Implemented and Problems Encountered in Conducting Research

Variable	Df	∝	Sig. value	Critical Value	Interpretation
Teachers Practices Implemented	64	0.05	0.000	79.08	Significant
Problems Encountered	64	0.05	0.000	79.08	Significant

Table 6 shows the significant relationship between teacher's practices implemented and problems encountered in conducting research. The teacher's practices implemented, and problems encountered both have 0.000 sig. value which is lesser than the significance level of 0.05. This means that there is a significant relationship between the teacher's practices implemented and the problems encountered in conducting research. Teachers encountered problems in terms of financial support in the conduct of research, overloaded in their work as a teacher and have difficulty in managing their time.

Moreover, teachers have difficulty in following the regulations and policies in research, identifying of researchable issues and construction of research title, maintaining two-way communication lines with the respondents and teachers as co-researchers, and ensuring access to the most current documents.

The study is parallel to the study of Bullo et al. (2021) that the lack of time, anxieties in writing and conducting of the study and their perception that research adds burden on their part are among the challenges the respondents encountered in the conduct of research.

Table 7. Significant Relationship between Teachers Level of Competence and Practices Implemented in Conducting Research

Variable	Df	∝	Sig. value	Critical Value	Interpretation
Teachers Perception on their Level of Competence	64	0.05	0.000	79.08	Significant
Teachers Practices Implemented	64	0.05	0.000	79.08	Significant

Table 7 shows the significant relationship between teachers' level of competence and practice implemented in conducting research. The teacher's perception on their level of competence and practices implemented both have 0.000 sig. value which is lesser than the significance level of 0.05. This means that there is a significant relationship between the teacher's perception on their level of competence and practices implemented in conducting research.

Teachers were not competent in terms of writing the related literature, formulating of research problem and discussing of research results were directly related to their problems in the conduct of research considering that they were still novice in the conduct of research.

The study is parallel to the study of Toquero (2021), most teacher-researchers are a novice in terms of research skills in conducting research which they developed the practical implementation of research skills. Those can be materialized through their action research. However, teachers have some problems in conducting research in the formulation of literature review and research formulation.

CONCLUSIONS

Based on the findings, the following conclusions were drawn. The teacher-respondents were challenged on the financial problems encountered, identifying researchable issues and construction of research title, interpretation, analysis, findings, conclusion, and recommendation. Furthermore, they also experienced difficulties writing the related literature, formulating the research problem, and presenting and discussing research results as well as observing proper regulations and polices in conducting research.

RECOMMENDATIONS

Based on the findings and conclusions of the study, the following were formulated by the researcher:
1. The Department of Education should provide support through allocation of research funds and providing research resources and materials. Moreover, they should accept research proposals for the benefit of the entire department especially during this pandemic.
2. School Heads and administrators should extend their support to teachers by sending them to research seminars and training workshops designed for them to be more prepared in conducting research and develop a growth mindset of time management, prioritization, and professional development.
3. Teachers should be given sufficient seminars, trainings, and workshops on research, and they must religiously attend these to acquire re-

search skills and processes so that they can come up with quality research.

4. Future researchers should conduct further research related to this study to deepen the study to a different extent, and to address specific research problems of classroom teachers mainly.

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POPULATION DENSITY OF MANGROVE CLAM (*ANODONTIA EDENTULA*) IN COGTONG BAY CANDIJAY, BOHOL, PHILIPPINES

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ABSTRACT

This study sought to determine the population density of mangrove clam *Anodontia edentula* in the mangrove forest located in Cogtong Bay, Candijay, Bohol, Philippines. The methods used were point intercept by transect line (100 m) and 3 quadrats measuring (10x10) m., a total of 25 transects. Data collections were done during the low tide of the day. The study found that *Anodontia edentula* had a very low population size 2.23 percent per 100 square meters. It was concluded that there was a scarcity of this mangrove shell as seen in their population size, this species inhibited in a muddy and loamy substrate and the majority of samples were 4.6 cm. to 5.6 cm. in length, 4.8 cm. to 5.6 cm. in width and 3.4 cm. to 4.0 cm. in height. The study recommended that degraded mangrove ecosystem where this mangrove clam thrive should be protected, size restrictions on collecting this type of shell with less than 3.0 cm. in length should be implemented, issuance of permits for shell collectors from the local government unit to reduce the exploitation of this mangrove clam, lastly, there should be conduct of year-long monitoring of the population to determine the spawning season.

Keywords: Population Density, Anodontia edentula, mangrove clam, Avicennia, Sonneratia, clam

INTRODUCTION

Mangrove ecosystems have provided a variety of goods and services to coastal communities and the larger society over the centuries. Fisheries products from mangrove are important for food security and income and maybe harvested offsite or onsite. Popular among the latter are the crustaceans and the bivalve mollusks such as the mangrove clam Anodontia edentula, the mangrove clam known as "imbao/imbaw" in the Philippines. Anodontia edentula commands a high priced because of its large size, the taste, and its high protein content clam and reputed also having aphrodisiac properties. Anodontia edentula is an infaunal species of marine animals belongs to family Lucinidae.

Anodontia edentula is found throughout in the Philippines archipelago (Poutiers, 1998) and widespread harvesting/collecting of this clam has reportedly damaged mangrove stands (Walters, 1995).

The researcher conducted the evaluation on the status of mangrove clam Anodontia edentula "imbao" in Cogtong mangrove forest for two months. It was set to determine the population of the population density of the clam "imbao" in the area. We used to find out the population size and their distributions to the mangroves environment and also to determine the factors that affect its population and distributions and the methods of collection.

In the Philippines, it is one of the famous bivalves harvested from sandy-muddy bottoms near mangrove areas. (Poutiers, 1998., Sotto and von Cosel, 1982). It is a unique species and a highly priced delicacy in the coastal areas where it is abundant. Hence, an essential source of livelihood. Mollusk are considered cheap sources of proteins. In 1996 world production of mollusks constitute about 32% of the total world aquaculture production. Oyster and mussels together constitute 49% of the World's production of mollusks (FAO, 1997).

OBJECTIVES

Generally, this study would determine Anodontia edentula "imbao" distribution and specifically aims to:
1. Determine the population density of a mangrove clam Anodontia edentula "imbao"
2. Identify mangroves species present in the area
3. Verify the collection methods employed by gleaners.

RELATED LITERATURE

Cogtong Bay in southeastern Bohol in the Central Visayas Region. Two municipalities, Mabini on the north and Candijay on the south, share the Bays 10,000 hectares of municipal waters which include 2000 hectares of mangrove forest land. On these 1,400 hectares are still intact while the rest have been converted to fishpond.

Fishers and other dependents on mangrove resources constitute about 15 percent of the workforce in these two towns with a total population 52,500 in 9300 households. Fishing is almost entirely small scale, with handlines, gillnets, spears, cast nets, fish corals, and fish traps being the dominant gears. One commercial fishing gear called bagnet (basnigan) is based in Candijay and five Danish seines (hulbot-hulbot) are based in northern Mabini.

Mud crabs (alimango) and mangrove clams (imbao) are important mangrove fisheries while shrimps and prawns are commonly caught in the rivers. Rabbit fish (dangit) mullet, blue crabs, sea cucumber and seaweed (gracilaria) are taken from the seagrass beds. Small pelagic fishes including sardines and mackerel dominate the offshore catch.

Nipa shringle making is major income generating activity, particularly in the inner portion of the Bay. On the other hand, firewood gathering is the primary income source of a few families in large (200 or more hectares) mangrove areas.

Fourteen coastal barangays are found bordering Cogtong Bay, four in Candijay and ten in Mabini. The national highway bypasses the Bay proper but passable secondary roads extend along the edge of the mangrove near the two points which demarks south and north boundaries of the Bay. Agriculture dominates the economy in both municipalities. In 1985, average annual family income was reported to be 5,000.

This species is found buried in mudflats in the intertidal and subtidal zones. They have a some-what Elongate adductor muscle, part of which is separate from the pallial line. The hinge is essentially toothless in the adult, hence its name.

Anodontia edentula inhabiting sandy-muddy substrate near mangrove areas or adjacent mudflats (Sotto and von cosel 1982). It belongs to order Veneroida, family Lucinidae (Poutiers 1998), to which eulamellibranchs containing symbiotic bacteria predominantly belong (Schweimans and Felbeck, 1985).

They are interesting animals, harboring sulphur-oxidising bacteria in their gills from which they derive most of their nutrition. Many lucinids have therefore lost their siphons and their ability to filter feed and make connections with the outside world with their piston like feet.

A study on the biology and fishery of the "imbao" Anodontia edentula, another mangrove-associated bivalve, is now on going. Field sampling revealed that "imbao" can be collected at mean depths of 25-30 cm (Primavera, 2002). Monthly range of sizes of "imbao" was 42.8-51.1 mm mean shell length and 21.3-170.0 g total weight. Spawning and larval rearing in the laboratory showed that 0.3 ml of 4mm serotonin was effective in inducing spawning in female and male adults, but not temperature shock and ammonium hydroxide injection. Females that spawn range from 60 g, 57.4 mm shell length to 125 g, 73.1 mm shell length. The maximum eggs spawned by a 71 g female was 892,000. Development stages monitored were first polar body, 2-cell stage, morula, ciliated, gastrula, trochophore, veliger and hatching of D-veliger.

METHODOLOGY

Research Design
This study on Anodontia edentula distribution utilized a descriptive research design. Samples were collected in a specified area in Cogtong Bay. Samples collected, area counted for their density and shell size were measured.

Methods of Collection
Collection of Anodontia edentula were conducted using the hand -picking method which is done by feeling the mollusc with their barefoot. Samples were collected along the transect lines within the specified quadrat. Anodontia edentula collected during ebb tide of the day (morning / afternoon) with the help of identified clam collectors who were keen on identifying the signs of availability. Clam collectors were interviewed

covering personal information, collecting place, time of collection and collecting methods. Mr. Fermin del Valle, known to be the imbao collector in the area and 51 years old, he is engaged in gleaning activity for 15 years.

Transect set-up procedure

Twenty-five transect lines were laid out with corresponding quadrant, measuring 10x10 m. in each quadrant. Transect lines were set perpendicular to the shoreline and starting and endpoint of each transect. Utilizing 10% of the total land area selected 25 has. With a total land area of 25,000 sq. m. Each transect was set 10 m. apart, having 3 quadrats (10x10 m.) every transect.

Timing of Survey

A survey for the population density of mangrove clam Anodontia edentula known as 'imbao or imbaw' was conducted during ebb tide of the day (morning/afternoon) by November and December 2018 and January 2019.

Study Site

This study site (Fig.4) was conducted in a mangrove forest of Cogtong, Candijay, Bohol, Philippines. Cogtong is situated at 9.84° North latitude and 124.53° East longitude. The study site is adjacent to University Fishpond (BISU – Candijay campus), located almost 100 kilometres away from Tagbilaran City and around six kilometres from the Town of Candijay wherein Barangay Cogtong is located. Cogtong, Candijay, Bohol is eastern part of the province. Cogtong Bay is facing Limasawa island and Maasin Leyte.

Fig. 4 The study site in Cogtong mangrove forest

Shell Dimension Measurement

Clam length was measured from anterior side to posterior side of a shell. Height is from ventral side to dorsal side of a shell while the width is from both side of the shell, unit of measurement in centimeter.

Population Density Analysis

Population density is equal to number of animals over the land area (times per 100m^2 or times per 1000m^2).

Population Density = $\dfrac{\text{number of animals}}{\text{Land area}}$

Where:
Dp -is Population density
N is number of animals
A is the area
Dp = N/A

FINDINGS

Population Density

The Cogtong mangrove forest is highly diverse mangrove ecosystem in eastern part of Bohol, but one thing about the clam "imbao" is declining of its population size compared to other mangrove associated mollusc like the blood cockle "bakan" were densely populated in Cogtong Bay areas. This study utilized the point intercept transect, within 2.5 hectares with 25 transects.

Population density of *A.edentula* had a very low population size at 2.23 percent per 100 square meters . It was concluded that there was a scarcity of this mangrove shell as seen in their population size. *A. edentula* are mainly found under *Sonneretia* and *Avicennia* mangroves due to their roots being aboveground. *Anodontia edentula* "*imbao*" were only found in transects 1 to 14 amounting of 94 clams.

The population size of "imbao" in Cogtong bay areas (in mangroves) is not so large compared to any related shells, like the blood cockle, as it observed. *Anodontia edentula* has less ability to grow in high densities compared to any related shells. If we make some projections, the ideal healthy population size is in the proportion of 5-10 pieces/100 square meters.

Distribution

The clam *Anodontia edentula* are mostly found inhabiting the muddy or loamy substrate. It does not favor a hard or sandy substrate. Also, to mangroves with high concentration of pneumatophores and dense creeping roots underneath the soil which competes for space with *A. edentula*.

In the study area they lived particularly to place where there is a natural canal or a passage of water where it flows or to a small creek created naturally or to the remains of soil that is being dig –up by blocks for making fishpond dikes.

Mangrove Components

Mangrove species in the study area are; *Avicennia sp*, the *Rhizophoraceae sp*, *Sonneratia sp* and *Ceriops sp*. Mangrove species or the type of mangroves greatly affects the population and distribution of the clam (imbao) in the mangrove forest. *A. edentula* are burrowing bivalves and are usually found near a *Sonneratia alba*, a mangrove species whose root system are above-ground which does not compete with *A. edentula* for space.

Based on the results, the type of mangroves ideal for the growth of *Anodontia edentula* "imbao" are the *Sonneratia* and *Avicennia* species. These types of mangroves create a unique environment for shell fishes. The substrate or the soil condition of this type of mangroves will not be changed. It remains muddy or loamy condition in which mangrove clams "imbao" may inhabit. The distributions of clams or any benthic organisms are highly present. Mangrove's vegetation plays a vital role in the distributions of different mangrove clams.

Table 1. Mangrove species in the area

| Mangrove Species in the Study Site	
*Avicennia alba (*piyapi*)*	*Lumnitzera littorea (*tabao*)*
*Avicennia lanata (*piyapi*)*	*Exoecaria agallocha (*buta*)*
*Avicennia marina (*piyapi*)*	*Phemphis acidula (*bantigui*)*
*Avicennia officinalis(*piyapi*)*	*Xylocarpus granatum(*tabigi*)*
*Rhizophora apiculata (*Bakhaw*)*	*Aegiceras floridum (*Tinduk*)*
*Rhizophora mucrunata (*bakhaw*)*	*Osbornia octodonta (*tualis*)*
*Rhizophora stylosa (*bakhaw*)*	*Nypa fruticans* (nipa*)*
*Sonneratia alba(*pagatpat*)*	*Ceriops decandra (*malatangal*)*
*Sonneratia caseolaris(*pagatpat*)*	*Ceriops tagal* (tangal*)*

Clam Sizes
Length

Shell length collected samples ranges from 3.0 to 3.8 is the shortest length and 6.6 to 7.4 is the longest length of clams. Based on the results majority of the clams collected is in the range of 4.8 to 6.5 cm and the least of the collected clams falls to the 3.0 to 3.8 cm. range. In terms of shell dimensions, most of the clams is in the length ranging from 4.8cm to 6.5cm and followed by 3.0 to 3.8 cm and 5.7 to 6.5, majority of sampled *A. edentula* are of ripe gonads which is more than 3.0 cm in shell length.
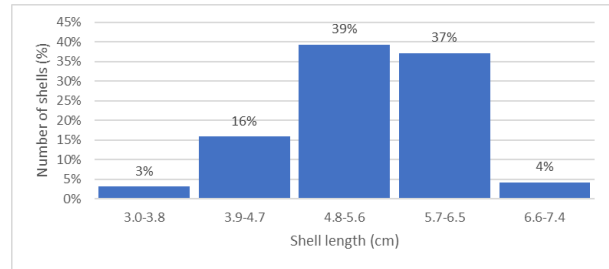
Fig. 15   Shell length frequency of collected samples

Height

Height range of the clams *Anodontia edentula* collected at study site was at 3.0 to 3.8 being the shortest and 5.7 to 6.5 is the longest. With the most collected clams belonging to the range of 4.8 to 5.6 cm followed by 3.9 to 4.7 and 5.7 6.5 cm.
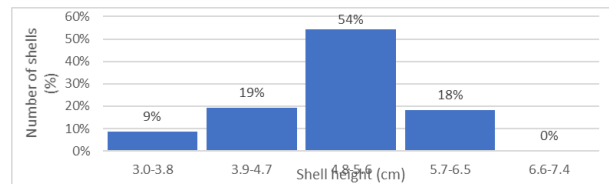
Fig. 16   Shell height Frequency

Width

Width variations of collected clams *Anodontia edentula* 'imbao' at the study site. Width the widest ranging from 4.1 to 4.6 cm and the least is 2.0 to 2.6 cm. (Figure 12) Majority of clams collected is in the range 3.4 to 4.0 cm in width followed by 2.7 to 3.3 cm and the lesser in number is 4.1 to 4.6 cm and the third is 2.0 to 2.6 cm width.
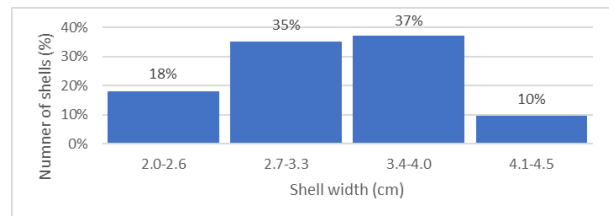
Fig. 17 Width Variations of samples

Collection methods

One method of collection in Cogtong, Candijay, Bohol, and that is by hand picking. The gleaners detect the presence of clam by looking at a type of mangroves or the type of suitable substrates where the clam is possibly occupied. The collectors start to walk bare foot into the knee-deep purely muddy substrate, feeling the clams by

their foot then by hand-picking. Clams can be collected only during daylight at low tide for 2 to 4 hrs. Gleaning is done for the whole year, but it is quite tricky, although gleaning is possible year-round. The collection is not possible during the rainy season due to tide conditions.

Collection methods are traditional, a non - destructive way of collecting the clams, hand-picking, or touching their bare feet into the deep of the mud where the animal live. The "mata" system is not used in the study area. Even high tide, they collect the clams at the side of the creek.

Mean size

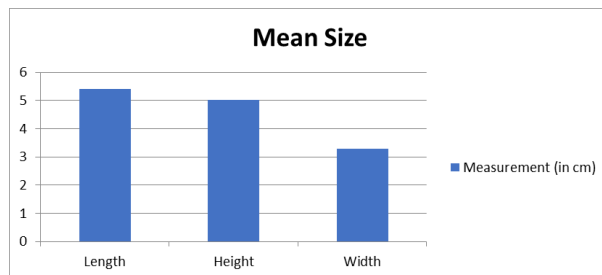Mean shell length is at 5.41 cm, with mean height of 5.03 cm and mean width of 3.08 cm

Fig. 18 Mean size of the clam

DISCUSSION

Anodontia edentula is one of the highly valued mangrove clam species throughout the Country. One of the sources of livelihood of all the coastal Barangays, particularly in the mangrove forest. Shellfishes gleaners are focusing on this kind of clam due to its high price and its desirable taste compared to other species and it contributes many health benefits like essential fatty acids, vitamins, iron, protein, and other minerals.

The survey was conducted on the mangrove forest of Barangay Cogtong. The methods used was point intercept by transect line (100m) and 3 quadrats, a total of 25 transects. Samples were collected within the designated quadrats through the aid of local gleaners. The collections happened during low tide of the day. *Anodontia edentula* population is very low at 2.23 percent per 100 square meters, with majority of the samples collected have shell length ranging from 4.8 to 5.6 cm. Collected samples were found to be inhabiting a muddy loamy substrate and usually near a mangrove with aboveground roots (*Avicennia sp.* and *Sonneretia sp.*) and burrowing at a depth of

40-80 cm. Method of collection by the local gleaners non-destructive and sustainable way, by feeling the bivalve by their feet and hand picking.

CONCLUSIONS

Based on the findings of the study, the following conclusions were drawn:
1. There is a very low population at 2.23 percent per 100 square meters.
2. *Anodontia edentula* inhabits the mid tidal zone at muddy loamy substrate and near *Avicennia sp* and *Sonneratia sp* mangroves with aboveground roots.
3. Majority of collected samples were at 4.8 to 5.6 cm in length, 4.8 to 5.6 cm in width and 3.4 to 4.0 cm in height.
4. The methods of collection were a non-destructive method by hand-picking.

RECOMMENDATIONS

In the status of *Anodontia edentula* at Cogtong Bay:
1. Conservation of mangrove forest specially in Cogtong Bay and Replanting of degraded mangrove areas as these are the habitats of *A. edentula*
2. Implementation of size regulation on the collection of *Anodontia edentula* prohibiting the collection the shell with less than 3.0 cm in length, these are considered juveniles which still;
3. Issuance of permits for shell collectors from the local government unit to minimize the exploitation of *A. edentula*;
4. Conduct a year-long monitoring on the population, distribution, spawning season and the seasonal characteristics of the shell Anodontia *edentula*.
5. Replanting of degraded *Sonneratia sp.* and *Avicennia sp.* as these are the primary habitat of *A. edentula*

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DEVELOPMENT AND VALIDATION OF PROPOSED PRACTICE TEACHERS HANDBOOK AT THE CATANDUANES STATE UNIVERSITY

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ABSTRACT

This study is a descriptive- developmental type of research which involved planning, development, and evaluation of a handbook. The development and validation of Practice Teachers Handbook adapted the ADDIE Model of Instructional Design with an innovation on the model wherein the study followed only three phases. First phase is the Analysis and Design Phase, second is the Development Phase and the third is the Evaluation Phase. This study likewise involved documentary analysis with regards determining the content of the handbook. The contents of the handbook were based on the CMO for Teacher Education Programs and data gathered from pre-service teachers. Finding of the study revealed that the fostering factors from the pre-service teachers' responses include creating an engaging environment, giving clear and relevant instructions, knowing competencies, setting clear and achievable objectives, using videos and educational sites, having the ability to prepare visual aids, preparing rules with the students and maintaining class routines, using appropriate evaluation techniques. On the other hand, the limiting factors include difficulty in handling behavior of students, not having interest in the lesson, sustaining interest on the lesson, limited resources, students' abilities, not conducive environment, low comprehension level. The contents of the handbook include Learner's behavior, Motivation in Education, Teaching Strategies, Managing Classroom Environment and Assessing Learning. The practice teachers' handbook passed the evaluation criteria in terms of content, accuracy and up-to-datedness of information, organization and presentation and format. It is recommended to submit the handbook to the Committee on Instructional Materials of the university and for copyright.

INTRODUCTION

The primary aim of any educational enterprise is to equip learners with skills, knowledge, competencies and attitudes that can make them function effectively in the society. Thus, education is a powerful tool used to develop desirable habits, skills and attitudes through the shaping of behavior of individuals for adequate adjustment in the society. Considering this, quality education becomes an essential factor in realizing the desired aims of education of every nation. Hence, the role of teachers is a crucial factor in determining whether these desired educational aims and objectives are to be achieved. This suggests that for quality education to be achieved, there should be teachers who are professionally trained, physically and psychologically sound, and possess quality knowledge, skills and attitudes. For this reason, Corcoran, R. P., & O'Flaherty, J., (2018). are of opinion that the teaching profession should be for those who are intellectually competent, effective and efficient decision-makers, creators of warm classroom environment, seekers of alternative strategies, and possessors of professional interest and pride (p.175). This makes teachers become the center of attraction in the educational system of every nation.

Cognizant to this, The Philippine Government has consistently pursued teacher quality reforms through a number of initiatives. As a framework of teacher quality, the National Competency-

Based Teacher Standards (NCBTS) was institutionalized through CHED Memorandum Order No. 52, s. 2007 and DepED Order No. 32, s. 2009. It emerged as part of the implementation of the Basic Education Sector Reform Agenda (BESRA), and was facilitated by drawing on the learning considerations of programs, such as the Basic Education Assistance for Mindanao (BEAM), the Strengthening Implementation of Visayas Education (STRIVE) project and the Third Elementary Education Project (TEEP). The K to 12 Reform (R.A. 10533) in 2013 has changed the landscape of teacher quality requirements in the Philippines. The reform process warrants an equivalent supportive focus on teacher quality – high quality teachers who are properly equipped and prepared to assume the roles and functions of a K to 12 teachers.

Additionally, the shift to learning competency-based standards outcomes-based education, in response to 21st century Philippine Teacher Education Framework is implemented through CMO's Policies, Standards and Guidelines. (CMO Nos. 74, 75, 79, 80, 82). The PSGs are anchored on the K to 12 Enhanced Curriculum (RA 10533) The Philippine Qualifications Framework (EO 83 s. 2012), the National Competency-based Teacher Standards (NCBTS) now the Philippine Professional Standards for Teachers. (PPST).

Under the new CMO, Experiential Learning Course which is composed of 6 units Field Study (FS) and 3 units Teaching Internship are being offered when the pre-service teachers are on their 4th year level. During this period, the pre-service teachers no longer have their academic courses being taken instead they already have their class observation under the tutelage of a cooperating teacher. The class observation actualizes the theories they have learned from the various academic courses taken.

In the previous curriculum, when face to face interaction was practiced in teaching, Experiential Learning Course was taught through lecture and observation of classes. During lecture, pre-service teachers were oriented on what the students will observe. Most of the times, it was through the initiative of the teacher what observation activities and tools will be used. Since there was no available complete instructional material, the teachers together with the students have no standard and specific aide to use during the observation of classes.

During the new normal, an instructional material will be more needed when students are going to take their Field Study course. An added feature of the handbook is the self-learning guide through the given activity templates that they will use.

The handbook which is the output of this study will serve as guide of the pre-service teachers during their experiential learning course specifically for their Field Study 1.

OBJECTIVES OF THE STUDY

This study was conducted to develop a Practice Teachers' Handbook to be used by the Pre-Service Teachers in the College of Education. Specifically, this study has the following objectives:
1. Plan and design a Practice Teachers Handbook for the Teacher Education programs of the Catanduanes State University.
2. Develop a Practice Teachers Handbook for the Teacher Education programs of Catanduanes State University.
3. Subject the developed Practice Teachers Handbook for the Teacher Education programs of Catanduanes State University for validation by pool of evaluators

METHODOLOGY

The study is a descriptive- developmental type of research which involved planning, development, and evaluation of a handbook. The development and validation of Practice Teachers Handbook was guided by the ADDIE Model of Instructional Design. This model has five stages, Analysis, Design, Develop, Implement and Evaluate. However, this study followed an innovation of the model wherein the study had only three phases. First phase is the Analysis and Design Phase, second is the Development Phase and the third is the Evaluation Phase.

The first phase included documentary analysis where documents such as CMOs, syllabus, DepEd Orders, which served as basis for the content of the handbook were analyzed. Another part was the analysis of the feedback gathered from practice teachers themselves. In selecting the participants in the Focus Group Discussion, the researchers made sure that all programs are represented and has complied with the criteria such as completing the number of hours in practice teaching, demo-teaching and has submitted portfolios and other requirements. From there, the researchers selected seven (7) to ten (10) participants from

each program. Using the results of the Focus Group Discussion revolving around limiting and fostering factors affecting practice teaching experiences, feedback from the practice teachers were gathered.

The second phase is the development phase. Here, outline of the content of the handbook was decided. This phase also included the writing of the content of the handbook considering the results of the performance rating and gathered feedback.

Finally, third phase is the validation of the handbook. Expertise of the pool of evaluators was sought. The evaluation instrument in evaluating instructional materials in CSU was used. Each evaluator was provided with a copy of the handbook and the evaluation instrument. After a week, they were invited in a round table discussion. They discussed on the overall comments for the improvement of the handbook.

The study was conducted at CatSU College of Education from August 2018 to August 2020. Data regarding feedback of practice teachers were taken from the responses of practice teachers enrolled in BSED, BEED and BTTE who are enrolled in Education 14 (Practice Teaching) during the 2nd semester of SY: 2017-2018 .

Since the research involved both quantitative and qualitative data, descriptive statistics such as Mean was utilized in order to determine the rating in the handbook. However, to determine the limiting and fostering factors that affect the performance of pre-service teachers, qualitative analysis was utilized.

FINDINGS

1. Planning and Designing the Content of the Practice Teachers Handbook

The Practice Teachers Handbook (PTHB) is an observation guide of the Practice Teachers when they enroll in Field Study 1 (FS 1) – Observation of Teaching Learning in Actual School Environment. FS 1, under the Teacher Education Curriculum of College of Education is a 3-unit experiential learning course offered during 1st Sem. of fourth year level for all programs in the College of Education. The course description focuses on the application of educational theories learned in content and pedagogy courses. Observations on learner's behavior, motivation, teachers' strategies of teaching, classroom management, assessment in learning among others shall

be given emphasis. A portfolio shall be required in the course. (CMO No. 75 s. 2017). The course description served as the main basis in designing the content of the handbook. A syllabus was prepared aligning the outcomes to PPST Beginning Teachers and program outcomes for teacher education. Moreover, another feature of the PTHB is contextualization. Feedback of practice teachers during their off-campus teaching were considered in determining the sub-topics, teaching-learning activities and assessment activities.

Feedback from Practice Teachers

To gather the feedback from practice teachers a Focus Group Discussion was made. The discussion centered on the fostering and limiting factors affecting practice teaching experiences along professional skills and personal and social qualities. Under professional skills are topics, which include planning the learning activities, teaching techniques, communication skills, mastery of subject-matter, classroom management, and use of instructional materials. On the other hand, along personal and social qualities are physical and mental health, human relations, professional growth and attendance report preparation. A group of 7 – 10 practice teachers were formed from every block of BEED, BSED and BTTE. It was facilitated after the practice teachers have returned to the college after their off-campus practice teaching.

Based from the responses of the practice teachers during the focus-group discussion conducted by the researchers, the following feedback are summarized and presented in two themes revolving around limiting and fostering factors along professional skills and personal and social qualities affecting practice teaching experiences.

The first theme is the fostering and limiting factors of the practice teachers along professional skills. This include the feedback of the practice teachers on their planning learning activities, teaching techniques, communication skills, mastery of subject matter, classroom management, and use of instructional materials.

When asked by the researchers on "What factors helped them in successfully doing/performing their assigned task along planning learning activities, they said that "knowing the competencies for a particular grade level and specific subject", helped them in understanding the lesson. After which, they "set clear and achievable goals and objectives". The objectives they set then serves as guide on what activities to be given to their pu-

pils/students as well as the proper evaluation to be conducted.

This finding is in consonance with the study of Tugano and Sumulat (2018) that BEEd and BSEd students of Catanduanes State University, College of Education, demonstrate "Very Satisfactory" in Curriculum and Planning which implies that BEEd and BSEd students translates curriculum content into learning activities that are relevant to learners and based on the principles of effective teaching and learning.

However, when asked on "What Problems and challenges did you encounter that hindered you in doing/performing your assigned tasks as student teacher along planning and learning activities?", most of their responses is along the difficulty in handling student behavior. Some of the practice teacher said "It is very hard to sustain their interest, and cooperation to class discussion and activities, that is why no matter how we prepare our lesson, we are not able to execute properly all that we plan". "We have to adjust to the learners while trying to complete the lesson for the day", they added.

Evans and Tribble (2015) study concludes that beginning teachers stress problems with classroom discipline, assessing student work and relationship with parents, whereas preservice teachers stress problems with subject matter. In a similar note, Poznanski and Cramer (2018) revealed a large gap in preservice teachers' knowledge of ADHD and classroom management strategies.

Along **teaching techniques**, practice teachers said that watching videos from YouTube and other educational sites helped them get techniques in delivering their lesson, giving clear, appropriate and relevant question and motivation and inspiration from their previous teachers, professors and cooperating teachers helped them in successfully doing their assigned task. Nevertheless, behavior of students, limited resources and students' level of comprehension is the biggest challenge in performing their task along teaching techniques.

Communication Skills. "The lessons we learned from our professors and cooperating teachers are some of the reasons why were able to deliver our lessons properly". "I made sure to read my lesson before going to class", "I write important notes on the board while making sure that my handwriting in the board is readable, and "I read books and practice to improve my speaking skill and broaden my vocabulary". On the other hand, lacking of confidence in speaking English is one of the limiting factor the practice teachers experienced. "were not used and confident in speaking English", one BTTE student narrated. Even Filipino majors experience problem on their limited Filipino vocabulary.

Blaik (2013) found out that among the limitations and constraints that hindered preservice teachers from reflecting on their teaching were language barrier, multi-layered tasks, nature and dimensions of reflection, lack of reflection skills, absence of post development plan, emotional barrier, external locus of control and socio-cultural contest of learning.

Mastery of subject matter. Practice teachers also shared their practices in mastering the subject matter assigned to them. According to them, they do research to varied and reliable sources for their lesson, motivating and setting goal for themselves, familiarizing the flow of topic to be discussed, some said that they are practicing in their room before delivering the topic, and most of them are doing the simplification of the topic into its main point so that students can easily understand the lesson. According to them, it is also of advantage if they are already familiar with the lesson because the can easily integrate related field of studies as well as real life scenario and experiences. However, as beginner, they shared that one of the limiting factor in mastering the subject matter is their lack or limited knowledge about a particular topic because of the limited time of preparation or unavailability of reading materials. "There are instances that we can't answer the questions of the students, if we can, we are only giving a glimpse, or we give it as assignment", one of the practice teachers shared.

In the study of Marshman and Porter (2010) on the implication of teaching of pre-service teachers' pedagogical content knowledge, they suggested that pre-service teachers be given activities that will develop their explicit thinking so that they can see the complexity of issues of lessons they will be teaching and to be fully understood by the students. This study is supported by the study of Mingoa & Ramos (2017), implying that pre-service teachers should be strong in content knowledge and pedagogy and that learning experientially in an authentic learning environment is essential in learning to teach.

Classroom Management. Educating elementary and secondary students today is a tough challenge for teachers. According to Bradshaw (2010) classroom management is one of the greatest concerns of teachers today. It often leads to burnout, job satisfaction, and early exit from the profession. To cope with this challenge, practice

teachers of Catanduanes State University implements classroom policy. According to them, they asked the cooperation of the students in planning and drafting their classroom rules and regulations. "*Mas magayon po mam na kaibahan sinda sa pag-gibo ning rules and regulations sa room para aware sinda so mababawasan ang pag violate*".

Some of them added that they create and maintain routines and procedures inside the classroom so students will be accustomed to the requirement of the subject when it comes to classroom management, giving more attention to those who are violating the rules by reminding them of the rules and regulations they agreed and maintaining positive atmosphere in the classroom through motivation and reinforcement.

But no matter how they try to create an engaging classroom environment, it remains to be the most challenging for the practice teachers because of students' behavior. "They are not following our agreement like following sitting arrangement and not making unnecessary noise". "They would sit wherever they want or would talk even we are having our class" are some of the sentiments of the practice teachers. Some of them also shared that some classrooms are not conducive to the learners, which results to uncontrollable behavior of students.

Effective classroom management skills are essential for teachers. Unfortunately, many teachers do not receive adequate classroom management training prior to beginning their teaching careers and feel unprepared for the demands of managing student behaviors in their classrooms. In the study of Freeman, Briere, Simonsen & Gage (2014), they describe (a) the number of states with state policy that requires pre-service teachers to receive instruction in evidence-based classroom management practices and (b) the extent to which teacher preparation programs provide this instruction for pre-service teachers. The results of the review indicate that although effective classroom management practices have been identified, a significant gap exists between the effective classroom management research base and requirements for teacher training. As a result, many pre-service teachers may not be prepared to effectively manage student behavior upon completion of a teacher preparation program due to a lack of exposure to classroom management content.

Use of Instructional Materials. Practice teachers are confident when asked about the factors that helped them in successfully doing/performing their assigned task along use of instructional materials. According to them, they are confident that they know how to make traditional and IT-based instructional materials. "Thanks to our professors who hone us in creating attractive and informative learning materials when doing our reports". "We make sure to prepare IT-based and traditional IM because we always experienced brown out in the province. "To avoid interruption of classes due to brown out, we also prepare "tarp-papel and manila paper". Aside from brown out, another problem they encountered along the use of instructional material is the availability of raw materials specially for Science experiments and their limited financial capability.

This finding is in consonance with the study of Zyad (2016). The paper investigates the extent to which the teachers employ technology to accomplish pedagogical goals as well as the instructional methodology they embrace when they use ICT in the classroom. It was found that the integration of technology, pedagogy and content was left to the discretion of the teachers. This approach resulted in limited ICT implementation for instructional purposes and inconsistent interpretations of how ICT can best be used in the classroom. Although the teachers reported that they embraced a student-centered methodology while using ICT, they also fell back on teacher-centered instructional principles. On the basis of the results obtained, a number of implications will be offered for an effective ICT-oriented ELT teacher education.

Koehler and Mishra (2009) argued that since technological tools were not originally meant to serve students' learning, teachers are supposed to leverage them to achieve desirable instructional goals. On another note, Burden and Hopskin (2017) stated that first order barriers such as access, infrastructure and training still remain significant challenge for preservice teachers attempting to learn with and use mobile technologies in their practice.

The second theme is the fostering and limiting factors of the practice teachers along ***personal and social qualities***. This include physical and mental health, human relations, professional growth, and attendance report preparation.

Twenty-first century teachers value personal growth and professional development and exhibit high personal regard for the profession by maintaining qualities that uphold the dignity of teaching such as caring attitude, respect and integrity. In the column, The Professional Teacher, Corpuz (n.d) identified a 21st century teacher as an individual who lives an ethical and moral life by

demonstrating responsibility, and by sticking to high standards which in return can infect students with the desire to lead morally upright life, to show civic responsibility and to pursue excellence in every task.

When asked about how they take good care of their physical and mental health, most of the practice teachers shared that they always start the day with a prayer and affirming themselves that "I can do it", sleeping at the right time, reading joke notes to increase sense of humor and affirming students that they are special and that they are loved. On the other hand, there are practice teachers who find it hard to cope with the challenges inside the classroom. According to them, no matter what preparation they did, if students and other unavoidable circumstances occur, their physical and mental health suffer. When asked about unavoidable circumstances, they shared "anxiety in front of the class, because no matter how you practice, when nervous attacks, everything is affected".

Pre-service teacher's personality traits and teaching performance was identified to have no significant relationship. (Corcoran, 2018) Moreover, the development of preservice teachers' professional identity during field teaching practice further promoted their professional commitment.

Human Relations. This includes relation with pupils/students, relation with cooperating teachers, relation with peers and other student teachers, and relation with school officials. According to the practice teachers, to be able to establish harmonious relationship with the stakeholders of the schools they were taught and oriented to be friendly and approachable, be respectful, humble, be understanding and empathize. "That is true specially in establishing relationship with the students, we really need to empathize with them. We should understand where they're emotions are coming to avoid misunderstanding" one practice teacher shared. When asked to elaborate their answer, they said that "when students started to dislike us, they will dislike us for the rest of the duration of our practice teaching", "they will not cooperate in the discussion", or they will ignore you, and we don't want that to happen". With these statements, another practice teacher shared, "too much empathy to students is one of the limiting factors". When asked why? "Students tend to forget their limitations". "Too much empathy leads to disrespectful treatment, like they treat us like their barkada, and I don't find it comfortable". They were also asked on their relationship with their cooperating teacher,

peers, and other school officials. According to them, there were no problem with their peers because they are working as team. "We help each other by sharing resources, advices, and sometimes financial assistance. Majority of them doesn't experience bad treatment from their cooperating teacher and other school officials.

Professional Growth. Quality teachers should establish school-community partnerships aimed at enriching the learning environment, as well as the community's engagement in the educative process. They understand and fulfill their obligations in upholding professional ethics, accountability and transparency to promote professional and harmonious relationships with learners, parents, schools, and the wider community. When asked about the factors that foster and limit their professional growth, practice teachers shared that they accept tasks not as another burden or extra work but as an opportunity to learn and experience, which will make them a better teacher in the future, they would also ask their mentor, family and friends on what else to improve, self-reflection, open to suggestions and criticism, self-evaluation, personal accountability, considerate and understanding other opinion, being accountable, and open minded. On the other hand, the limiting factor they had was a personal criticism. According to them, "it is very hard to accept personal criticisms, but we have to be open minded. We listen to what they say, improve what we can improve, and extend help to whoever needs our help. It's all part of learning".

Attendance Report Preparation. Practice teachers of Catanduanes State University, College of Education undergo series of training and seminars under Special Topics in Education. Here, punctual submission of reports is emphasized. According to the practice teachers, although there are instances that they are late in submitting reports because of unavoidable circumstances like being sick, work overload, personal, technical and environment factors, they make sure to meet the deadline in every report they are to submit. They do this by "sleeping at the right time", "preparing the needed materials early", "waking up early and coming to school before time and "being anxious and cautious with every detail in the reports".

These feedbacks gathered from the practice teachers were used as inputs and considerable given focus in the preparation of activities in the handbook.

Content of the Practice Teachers Handbook

After analyzing the available data, a syllabus for the course was designed. The outcomes were aligned to the program outcomes and PPST- Beginning Teachers indicators. The content was based on the course description. Feedbacks gathered were considered in determining specific topics, teaching-learning activities and assessment activities.

Based from CMO No. 74, s. 2017, Field Study 1 with a course title, Observation of Teaching-Learning in Actual School Environment, is the first experiential course, which will immerse a future teacher to actual classroom situation and learning environment episodes that focuses on application of educational theories learned in content and pedagogy courses will be made. Observations on learner's behavior, motivation, teacher's strategies of teaching, classroom management, assessment in learning among others shall be given emphasis. A portfolio shall be required in the course.

2. Development of the Practice Teachers Handbook

Following the adapted ADDIE Model, this is the development phase.

Every topic is called Experiential Learning; thus, the handbook has five Experiential Learning. Every experiential learning has the following sections: a. outcomes b. guide questions c. discussion of sub-topics d. observation tasks/ performance activities e. reflection

The outcomes are aligned to the PPST Beginning Teachers indicators and to the program outcomes of the teacher education programs. However, there are still desired learning outcomes for every sub-topic. In the handbook, this part is termed "target".

The Guide Questions serve as the motivation. These are prompts to trigger the interest of the students. The Guide Questions will also serve as introduction to the lesson. In the handbook, it is termed "Discover"

In the discussion of sub-topics, important concepts are explained. Since most of the topics were learned already in the professional courses or major courses taken by the students, this part will serve as refresher or enhancement lessons leading to the actual observations that they will do. In the handbook, it is termed "Deepen"

Observation Tasks or Performance Activities are the different guides and instructions that the students are going to follow when they conduct their observations. The activities have to be accomplished in order to achieve the set objectives. In the handbook, it was termed "Observe and Do"

Reflection part of the episode is the summary of learnings acquired by the practice teachers. Significant realizations while having their observation will be listed in this part. Practice Teachers may be required to include documentation of activities done.

A rubric will be used in rating the accomplished activities/ tasks of the practice teachers. This is an important part of the handbook.

Table 1 shows the outline of the contents of the handbook. The actual handbook is a separate output.

Table 1. Outline of the Contents of the Handbook

Experiential Learning	Title/ Topics of the Experiential Learning
Experiential Learning 1	Learners' Behavior Theories of Learning Behavior in the Classroom and Its Effects on Learning Understanding Students Behavior
Experiential Learning 2	Motivation in Education Theories of Motivation in Education Effects of motivation on Learning Styles
Experiential Learning 3	Teaching Strategies Different Teaching Strategies
Experiential Learning 4	Managing Classroom Environment Key to Effective Classroom Management Universal Classroom Strategies
Experiential Learning 5	Assessing Learning Assessment in Learning Principles of assessment Purposes of Assessment Traditional and Authentic Assessment

3. Validation of the Practice Teachers Handbook

The process of validation is the evaluation phase of the Practice Teachers Handbook by the pool of evaluators. The five evaluators are composed of two supervising teachers from the College of Education, one cooperating teacher from the Laboratory Schools where the practice teachers have their in-campus practice teaching and two cooperating teachers from the DepEd cooperating schools – one elementary teacher and one secondary teacher.

As reflected in the table, the content passed the criterion having total points of 27. Content refers to learning outcomes, lesson inputs, performance tasks in each of the experiential learning

Another criterion in evaluating the handbook is Accuracy and Up-to-datedness of Information. It refers to absence of conceptual, factual, grammatical and typographical errors as well as new-

ness of information. Having a total point of 19 out of 24 points, the handbook Passed this criterion.

Table 2. Summary of Evaluation of Handbook

I – Content *(an IM must obtain a score of at least 21 points with a maximum point of 28 to pass the criterion)*	O 4	VS 3	S 2	NI 1	Mean	QnR	QlR
Data presented are accurate (including diagrams, graphs, and similar illustrations).	3	2			3.6	4	O
The instructional material provides different activities with varying levels of difficulty.	4	1			3.8	4	O
The contents suit the student's level of learning and development	5				4.0	4	O
Themes / Concepts are within the interest of learners.	4	1			3.8	4	O
Contents stimulate the interest of learners	4	1			3.8	4	O
Selections included supplement value formation	3	2			3.6	4	O
The instructional material is bereft of ideological religious, gender, racial and cultural discrimination / biases.	2	2	1		3.2	3	VS
Total Points						**27**	**Passed**

II – Accuracy and Up-to-datedness of Information *(an IM must obtain a score of at least 24 points to pass the*	Not pre-sent 4	Present but very minor and must be fixed 3	Present And re-quires major redevel-op ment 2	Poor Do not eval-uate fur-ther 1	Mean	QnR	QlR
Conceptual errors	3	2			3.6	4	O
Factual errors	4	1			3.8	4	O
Grammatical errors	3	2			3.6	4	O
Computational errors	-	-			-	-	
Obsolete infor-mation	4	1			3.8	4	O
Typographical and other mi-nor errors (e.g., inappropriate or unclear illustrations, missing labels, wrong cap-tions, etc.)		5			3.0	3	VS
Total Points						**19**	**Passed**

III – Organization and Presentation *(an IM must obtain a score of at least 32 points to pass the criterion)*	O 4	VS 3	S 2	NI 1	Mean	QnR	QlR
Ease of Administration	5				4.0	4	O
Sustainability to users (students)	4	1			3.8	4	O
Time-saving effec-tiveness	4	1			3.8	4	O
Engaging and under-standable	4	1			3.8	4	O
Rational and practical presentation of ideas	4	1			3.8	4	O
With diverse learning styles and catering to different ability levels	4	1			3.8	4	O
Appropriate sentence constructions suited to comprehension	4	1			3.8	4	O
Intuitive and interest-ing sentences and	3	2			3.6	4	O
Total Points						**32**	**Passed**

IV – Format *(IM must be able to get a total of 42 out of 56 points)*	O 4	VS 3	S 2	NI 1	Mean	QnR	QlR
A. The format likely appeals to the target Learners as to:							
Font size, which is appropriate to the intended user.	3	2			3.6	4	O
Spaces between let-ters and words, which facilitate easy read-ing.	1	2	1	1	2.6	3	VS
Font Styles, which are complementary	3	1	1		3.4	3	VS
Good Quality Print-ing Material, which attract readers.	4		1		3.6	4	O
B. Graphics and Figures							
Property attributed and captioned	3	2			3.6	4	O
Clear and Minimalist	3	2			3.6	4	O
Good choice of color	1	4			3.2	3	VS
Appealing	2	3			3.4	3	VS
Culturally relevant	4	1			3.8	4	O
C. Packaging							
Simple and eye-catching	3	2			3.6	4	O
Facilities visual search	4	1			3.8	4	O
Durable paper and binding	5				4.0	4	O
Easy to carry	5				4.0	4	O
Relatively light	5				4.0	4	O
Total Points						**48**	**Passed**

Organization and Presentation was the third criterion. It refers to the logical arrangement of concepts and sentence structure. The handbook passed in terms of organization and presentation with the total points of 32 out of 32 maximum points to pass this criterion. The fourth criterion is its format. Format refers to the appearance of the IM which include appeal to user, use of graphics and illustration and packaging. The result shows that the handbook passed this criterion with total points of 48.

Considering the ratings given by the evaluators, the Pre-Service Teachers Handbook developed passed all the criteria set for evaluating the handbook.

CONCLUSIONS

The following conclusions are drawn based on the findings of the study:

1. The design of the content of the handbook was based on the course descriptions as reflected in the CMOs for Teacher Education Programs and from the actual experiences of pre-service teachers which include fostering and limiting factors.
2. The contents of the handbook include Learner's behavior, motivation in education, Teaching Strategies, Managing Classroom Environment and Assessing Learning.
3. The practice teachers handbook passed the evaluation criteria in terms of content, accuracy and up-to-datedness of information, organization and presentation and format.

RECOMMENDATIONS:

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

Based on the conclusions drawn from the study, the following recommendations are forwarded:

1. The identified fostering and limiting factors that affect the pre-service teachers during their practice teaching experiences maybe given emphasis and focus in experiential learning courses of pre-service teachers. Learning opportunities maybe provided to enhance the fostering factors and minimize the limiting factors.
2. The areas where the handbook was rated low may still be enriched.

3. Since the handbook has undergone evaluation procedure with pool of evaluators who are the professionals, the handbook maybe tried out to students who will be the actual users of the handbook.
4. The handbook may be submitted to the Instructional Materials Committee of the university for further evaluation and be submitted for copyright.

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EFFECTIVENESS OF YOUTH DEVELOPMENT PROGRAMS IN SOYUNG, ECHAGUE, ISABELA

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ABSTRACT

This study was conducted to determine the effectiveness of the youth development programs implemented in Soyung, Echague, Isabela. The data were gathered from the 217 respondents who were officially registered Sangguniang Kabataan members as of April 2018 based on the Commission on Elections (COMELEC) records. Simple random sampling was employed in the identification of the respondents. A validated survey questionnaire that focused on the youth development programs implemented in Soyung, Echague, Isabela was used. Frequency counts and percentages, means, ranking, and Likert scale were used in analyzing the data gathered. Results showed that the most commonly known and effective youth development programs implemented in Soyung, Echague, Isabela was Sports Development Program spearheaded by the Sangguniang Kabataan and Health Related Programs for the Youth organized by the Health Department. While, the least commonly known and fairly effective youth development program was the 4-H Club Membership. The youth were able to gain more knowledge, they become more responsible, they develop their social skills, and they improve their study habits in their participation to various youth programs.

INTRODUCTION

Individuals are born with a purpose in life. As they start their journey from the primordial stage to the present, they still underlie the meaning of their existence. There comes a time that they become youth, the person that they called the future of the next generation.

The youth stage is regarded as the spring of life, the age of discovery and dreams. It can be said that the youth play a significant role in the society because they have the power to transform the nation into a better place. They also have the ability to lead their fellow citizens towards the right direction. This stage is one of the hardest parts of existing here in this world. In this stage, they are tempted by different disastrous things in their surroundings; they merely used their brains and rottenly use their heart. They are being affected by mix emotions making them to make differ-

ent regretful actions. They are deceived by pleasant things seen by their eyes and can't figure out that they again may lost the way to the happiness that they really aimed.

The Republic Act 8044, otherwise known as the "Youth in Nation-Building Act", the State recognizes its responsibility to enable the youth to fulfill their vital role in nation-building and hereby establishes the National Comprehensive and Coordinated Program on Youth Development. This creates the structures to implement the same and appropriates adequate funds to provide support for the program and implementing structures on a continuing sustained basis.

For critical analysis of the bad happenings now such as, teenage pregnancies, drug addictions, being an alcoholic, and trouble makers of youths we can comprehend that there's a reason behind their actions. It is maybe due to hindrances that they think that can't manage. Problems that

make them feel so down. It can be family problems, friendship problems or their relationship to their girlfriend or boyfriends. But no matter what the circumstances are, we should understand that they are still immature peoples who need love, time, and attention.

According to Bar and Eme (2015), emphasized the role of the youth on national development. The wheel of development of any country lies on the shoulders of the productive and creative youth. They are the engine of growth and development in any society because they provide the labor force for production of goods and services. They are also the critical masses of people, whose action and inaction can develop or destroy the hegemonic/fabrics of their society.

Young people are the foundation for effective development, and if engaged in youth development programs they will improve many of the structural development challenges that we are facing today, including enhancing the cohesiveness of families and communities, reducing health risks and advancing livelihood opportunities. They are the bridge between effective development policy and valuable practical action on the ground (DFID 2010:89).

Lerner,et.al. (2013) concluded that participating in developmental activities produced several positive outcomes, including: increased safety, increased academic achievement, greater communication in the family, fewer psychosocial problems, such as loneliness, shyness, and hopelessness, decreased involvement in risky behaviors, such as drug use and juvenile delinquency, increased self-esteem, increased popularity, increased sense of personal control, and enhanced identity development, better development of life skills such as leadership and speaking in public, decision making, dependability, and job responsibility. Lerner (2013), also applied efforts could take the form of public acknowledgment of youth contributions, formal announcements by local leaders that youth are making important differences, and formal invitations for youth of all ages to become involved in a variety of community building efforts. Any actions that could be taken would send the message that the community is responsive and aware of youth contributions which would further help encourage youth involvement.

The role of the youth in nation building is crucial. They are problem solvers, have a positive influence on other young people and the nation, and are extremely ambitious. They have the ability to create an identity for themselves and move the nation forward. However, they will not be able to do this without the support of the government and fellow youths. Hence, the youth can make their beautiful land flourish and shine in success.

Nowadays, the youth are vulnerable to various social problems brought about by their exposure to technology. In order for them to contribute in nation building, it is the government's responsibility to provide the youth with proper facilities for development and be equipped with the knowledge of the modern era. With this, youth development programs are being implemented to ensure that opportunities for growth as an individual will be provided for them.

According to Pittman and Fleming (1991), in the early twenty-first century, youth development programs take a more positive or strengths-based approach to prevention. Rather than trying to keep teens from engaging in risky behaviors, youth development programs focus on helping them grow into happy, healthy adults. This approach mandates a conceptual shift from thinking that "youth problems are the principal barrier to youth development to thinking that youth development serves as the most effective strategy for the prevention of youth problems".

The studies above show that youths are born to be true not to be perfect. They lost their way, but what matters is on how they create progress in our society. Some of them have failed or fallen but they learned how to stand again and continue to fight in this game called life. It is not too late to create a positive change for everyone.

From the observations and viewpoint of the researchers as educators, although there are different programs and activities that are conducted for the welfare of the youth in the community, the impact and the realization of the objectives of these programs could be hardly seen or noticed. Hence, this study was conceptualized to evaluate the effectiveness of the youth development programs implemented in the society particularly in Soyung, Echague, Isabela.

RELATED LITERATURE

According to Saskia (2010), the entire success of the nation depends on the youths. However, in order to continue success, the government is responsible in providing the youth the proper facilities to get equipped with the knowledge of the modern era.

According to Tisdall (2008) children and youth's participation in development programs has been used to help them realize their vital role in establishing a place for young people in participating at the different scales of decision-making, from micro-scale within communities to the macro-scales of national or even international politics.

Youth typically spend a substantial amount of time in extra-curricular activities, including involvement in community-based organizations, school and local sports teams, and school-based clubs. All of these, and the interaction with individuals around them, directly influence youth involvement in their communities.

According to Clement, et.al (2014), engagement at the local governance level, known as the barangay in the Philippines, is very rich. Youth organizations have the opportunity to engage directly with the local government to express concerns and advocate for issues of interest. However, while structures exist that allow for this type of youth engagement, it is also important to note that corruption is of serious concern at every level of government in the Philippines, which can inhibit youth from effectively participating.

Brennan (2007) stated that efficacy was directly related to involvement. Youth were more active when their community is receptive to their actions and contributions and seen them as worthwhile in their community. Similar to the suggestions for recognition presented by Lerner (2013), making efforts, public acknowledgment, formal announcements by local leaders that they are making and playing important differences, and formal invitations to become involved in various community building efforts. Any actions that could be taken would send the message that the community is responsive and aware of youth contributions which would further help encourage youth involvement.

The four basic assumptions of positive youth development models are as follows: helping youth to achieve their full potential is the most effective way to prevent them from experiencing problems; giving them the opportunities and supports to succeed; the mobilization of the community and building capacity to support youth developments, and viewed they are part of the solutions of the emerging youth problems; and partners to be actively engaged and encouraged (Small & Memmo, 2004).

Influencing the need of the youth for and willingness to be a part of a greater good through involvement is another factor. These include: feelings of efficacy (Sherrod, Flanagan, & Youniss,

2002), the need to give value, importance and taken seriously by others in the community (Flanagan & Van Horn, 2001), increasing their own self-esteem, and having a responsibility in transforming the society by performing their public duty. Recognition by the community at large is part of feeling valued (Scales & Leffert, 1999).

In a 2001, Flanagan & Van Horn studied the impact of a 4-H teen leadership program in Fort Worth, Texas, which engaged youth in weekly sessions on different concepts related to leadership followed by experiential learning activities. Through the course of the program, youth applied their unique potentials and their newly acquired skills and concepts, while finishing service projects in the community. They described experiential learning as "when a person is involved in an activity, looks back at it critically, determines what was useful or important to remember, and utilizes this information to accomplish another activity." The combination of experiential learning and service learning significantly improved and increased youth participants' knowledge of leadership skills, such as making wiser decisions, setting goals, dealing and working with others, and community service were found out.

Youth who take part in positive youth development programs are given the opportunities in developing their skills and competencies constructively within a supportive ambiance. They are offered opportunities to develop new roles and responsibilities (Pruett, et al., 2000). These skills and competencies are viewed to prevent negative outcomes by increasing the abilities and capabilities of the youth to make better and positive choices and demonstrate improved resistance skills (Catalano, et al., 2004).

Participation in community activities is associated with behavioral well-being among adolescents. Influences on youth becoming involved, such as improving academic performance during high school, increasing the likelihood of college attendance (Eccles & Barber, 1999), greater school engagement and reinforcing positive social values or setting an example (Youniss & Yates, 1997), have been found to affect involvement.

Eccles and Barber (1999) pointed out in their study that community programs can be effective in enabling youth to achieve physical health, help others, succeed in school, exercise leadership, overcome adversity, and achieve a successful adulthood.

In the study conducted by Tierney, et.al. (1995), results showed that the youth who participated in the Big Brothers & Big Sisters of Ameri-

ca program were less likely to start using illegal drugs or to initiate alcohol use; were less likely to report hitting someone; earned moderately higher grades; skipped fewer classes; felt more competent about doing their schoolwork; and reported better relationships with peers and parents.

According to Piha (2001), the youth development programs can be effective if there is: an equal ratio of youth to staff/volunteers; safe, reliable, and accessible activities and spaces; flexibility in allocating available resources; continuity and consistency of care.

Pittman (2000) pointed out the primary barriers to the success of implementing the positive youth development programs are: ignorance that such strategies exist and are effective, institutional or cultural resistance to empowering youth, and the challenges of translating the youth development programs into practice.

OBJECTIVES OF THE STUDY

This study was conducted to determine the effectiveness of the youth development programs implemented in Soyung, Echague, Isabela.

Specifically, the study aimed to:

1. Identify the youth development programs implemented in Soyung, Echague, Isabela.
2. Identify the effects/benefits derived by the respondents from the youth programs implemented.
3. Determine the level of effectiveness of the youth development programs implemented in Soyung, Echague, Isabela.
4. Determine the problems encountered by the respondents in the implementation of youth development programs in Soyung, Echague, Isabela

METHODOLOGY

Mixed method of research was used in this study to determine the effectiveness of the youth development programs in Soyung, Echague, Isabela. The quantitative method using descriptive survey method of research was used to determine the effectiveness of the youth development programs. Qualitative survey method through an interview was likewise employed to get a deeper understanding on the extent of implementation of the youth development programs in the said municipality.

The study was conducted in Soyung, Echague, Isabela. The data were gathered from the 217 respondents who were officially registered Sangguniang Kabataan members as of April 2018 based on the Commission on Elections (COMELEC) records.

Simple random sampling was employed in the identification of the respondents from the registered Sangguniang Kabataan members of Soyung, Echague, Isabela.

Almost three fourths are in the age bracket of 18-20, almost 20 percent are 21-26 years old, and 7.78 percent are 15-17 years old. One hundred eight or 49.77% are males; 103 or 47.47% are females; and there were 6 or 2.76 percent respondents who belong to the third sex. Most of them are living with complete parents while there are 6 living with their guardians and 7 living with solo parents.

A validated survey questionnaire was developed by the researchers for the purpose of this study and it focused on the youth development programs implemented in Soyung, Echague, Isabela.

In order to analyze the obtained data, frequency counts, percentages, means, and ranking were used. To determine the effectiveness of the youth development programs in Soyung, Echague, Isabela, a Likert scale was used

FINDINGS

Table 1. Youth Development Programs Implemented at Soyung, Echague, Isabela Commonly Known to the Respondents

Youth Development Programs	Frequency (n=217)	Ranking
TESDA Programs for the Youth	124	7
Alternative Learning System for Out of School Youth	146	5
Sports Development Programs	209	1
DOLE Special Program for Employment of Students (SPES)	121	8
Livelihood Programs for Out of School Youth	115	9
Pantawid Pamilya Pilipino Program (4 Ps)	204	2
DSWD Guidance Program for the Youth	169	4
Rehabilitation program for the juvenile delinquents	128	6
Health Related Programs for the Youth	180	3
4-H Club Membership	73	10

Table 1 reveals the ranking of commonly known youth development programs implemented at Soyung, Echague, Isabela. As gleaned from the table, the top three (3) most commonly known youth development programs implemented among Sangguniang Kabataan members are: Sports Development Program, with a percentage of 96.31, Pantawid Pamilya Pilipino Program (4 Ps), with a percentage of 94.01 and Health Related Programs for the Youth, with a percentage of 82.95. Meanwhile, the top three least commonly known youth development programs implemented among Sangguniang Kabataan members are: 4-H Club Membership, with a percentage of 33.64, Livelihood Programs for Out of School Youth, with a percentage of 53.00, and DOLE Special Program for Employment of Students (SPES) with a percentage of 55.76.

This means that youth respondents are of mostly aware on the implementation of sports development program usually spearheaded by the Sangguniang Kabataan officials while they are not well cognizant on exclusive youth club such as 4-H which is only for the members of boy scout.

Table 2. Benefits Derived by the Respondents from their Participation in Youth Development Programs

Benefits Derived by the Respondents	Frequency	Percentage
I gain more knowledge	160	73.73
I become more responsible	138	63.59
I develop my social skills	137	63.13
My study habits have improved	114	52.53

It is revealed in the table that the benefits derived by the respondents in participating in the youth development programs are the following: they gain more knowledge, they become more responsible, they develop their social skills, and they improve their study habits.

This shows that the programs implemented have been of great help to the youth in improving their studies, social skills, and their behavior. This is also congruent to the study conducted by Scales and Leffert (1999) which cited that those youth who participated in youth development programs have increased self-esteem, developed leadership skills and public speaking, increased dependability and became more responsible.

Table 3. Assessment on the Effectiveness of the Youth Development Programs Implemented in Soyung, Echague, Isabela

Youth Development Programs	Mean	Description
TESDA Programs for the Youth	3.89	Effective
Alternative Learning System for Out	3.89	Effective
Sports Development Programs	4.26	Effective
DOLE Special Program for Employ-	3.85	Effective
Livelihood Programs for Out of	3.73	Effective
Pantawid Pamilya Pilipino Program (4 Ps)	3.78	Effective
DSWD Guidance Program for the	3.69	Effective
Rehabilitation program for the juve-	3.50	Effective
Health Related Programs for the	4.10	Effective
4-H Club Membership	3.27	Fairly
Grand Mean	**3.80**	**Effective**

2.50-3.49 – Fairly Effective   3.50-4.49 – Effective

Table 3 reflects the assessment of youth-respondents on the effectiveness of implemented youth development programs. It shows that nine (9) out of ten (10) youth development programs are perceived to be effective and only one (1) is assessed as fairly effective. Among all the perceived effective youth development programs, sport development program got the highest mean which is 4.26 followed by Health Related Programs for the Youth with a mean of 4.10. Meanwhile, 4-H Club Membership is the sole youth program rated to be fairly effective with a mean of 3.27.

Looking further on the results, the two highest youth programs (sports development program and health related programs for the youth) assessed to be effective are also the two most commonly known youth programs perceived by the Sangguniang Kabataan members. On the other hand, the least commonly known youth program (4-H Club Membership) is also found to be fairly effective. This means that there is a seemingly relationship between the awareness of Sangguniang Kabataan members on the youth development programs and their effectiveness - that is the more the programs are commonly known, the more they are found to be effective.

Table 4. Problems Encountered in the Implementation of Youth Development Programs

Problems Encountered	Frequency	Percentage
Inability to effectively manage time	108	49.77
Irregular attendance of the partici-	106	48.85
Misbehavior of the participants	102	47.00
Inadequate funding of the programs	74	34.10
Inadequacy of resources	51	23.50
Unsustainability of the programs	48	22.12

Almost fifty percent of the respondents mentioned that they encountered problems on poor time management, irregular attendance of participants and misbehavior of participants. The other problems encountered are related to the sustainability on the implementation of the programs, funding, and availability of resources.

With the interviews conducted, two respondents said that poor time management is really a problem in the realization of the youth development programs implemented in Soyung, Echague, Isabela.

Respondents No. 2 & 3 stated that: "*Ang mga problemang naranasan ko bilang miyembro ng 4Ps ay ang pagkaantala sa pagbibigay ng allowance sa amin at minsan kulang pa ang perang ibinibigay.*" (The problems we encountered as 4Ps members are the delayed issuance of the funds intended for the beneficiaries and sometimes the fund allocated for each member does not coincide with what we are supposed to receive.)

Respondent No. 4 mentioned that the problem he encountered was the behavior of the participants as he stated "Ang mga manlalaro sa liga ay walang disiplina kaya magulo ang paligsahan." (The players and participants in the sports activity lack discipline which resulted to disorder in the management of the sports events.)

CONCLUSION AND RECOMMENDATION

It is concluded that the most commonly known and effective youth development programs implemented in Soyung, Echague, Isabela was Sports Development Program spearheaded by the Sangguniang Kabataan and Health Related Programs for the Youth organized by the Health De-partment. While, the least commonly known and fairly effective youth development program was the 4-H Club Membership. The effectiveness of the youth development programs implemented and participated by the youths, they were able they gain more knowledge, they become more responsible, they develop their social skills, and they improve their study habits. Despite of the effectiveness of the programs implemented problems on its implementation were encountered such as poor time management, irregular attendance and misbehavior of participants, unsustainability on the implementation of the programs, funding, and unavailability of resources.

It is therefore recommended that the local government unit and the implementing agencies should evaluate the implemented youth development programs and the problems encountered for further improvement. Specifically, the agencies should look into the following: the regular conduct of the youth programs, the observation of equality and fairness in the selection of beneficiaries for the financial assistance programs, and appropriate use of funds allocated for these programs

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