Mastery Level of Learning Competencies in Mathematics

Joean A. Geresola
La Consolacion College Bacolod
joeangeresola4@gmail.com

ABSTRACT

The study was conducted to determine the mastery level of the learning competencies in Mathematics of the Bachelor of Science in Education students in one of the State Colleges in Northern Negros. It employed the Descriptive Research Design. The respondents were the 154 Bachelor of Science in Education students of the State College in Northern Negros. Stratified random sampling was employed in the selection of respondents. The study utilized the researcher-made test. The results showed that the Bachelor of Science in Education students had a very low level of mastery of the learning competencies in Mathematics when taken as a whole and when grouped according to sex and high school of origin. It revealed that the mean difference of the mastery level of the learning competencies in Mathematics when grouped according to sex was significant at 0.05 alpha level, therefore the hypothesis was rejected and when grouped according to school of origin was not significant, thus the hypothesis is accepted. Based on the results of the study, an Enhancement of the Remedial Program in Mathematics was made to improve the mastery level of the learning competencies in Mathematics.

Keywords: *Mathematics Education, Learning Competencies, Algebra, Geometry, Trigonometry, Descriptive Research Design, Northern Negros, Philippines*

INTRODUCTION

Mathematics is a science that deals with proportions and figures. When evaluating data in everyday life, this is a valuable tool. Students arrange, evaluate, and synthesize knowledge in this way, and it is even an art form with underlying orderliness and regularity (Turner, 2014). As a result, its importance extends beyond the classroom and the school. As a result, mathematics as a school topic must be studied thoroughly and thoroughly (Capate & Lapinid, 2015). Mastery learning was introduced over 80 years ago (Norazzila, 2016). It stressed that all learners could learn with different periods to achieve a particular subject matter (Carroll,1989).

Mastery learning is beneficial, particularly in achievement, attitudes toward learning, and content retention (Shahdan, 2017) in a subject matter undertaken by students. It can benefit students of various aptitude levels, particularly low aptitude students whose previous failures on the subject have diminished their motivation on the subject (Ironsmith & Eppler, 2007; Liew, 2015). Moreover, according to Nozzarila (2016), it is an innovative method that provides students the opportunity to understand any particular topic in a mathematics course based on the students' ability and capability to learn at a comfortable pace within the realm of the student's aptitude. It is also considered the individual learner's differences such as pace of learning, level of mastery, time. (Saka, 2016).

Mastery of the learner in school and student's ability to learn was revealed after test admission. Thus, testing towards proficiency is defined as a systematic procedure for observing using numerical scales of a category system (Carag & Carag, 2004; Albano, 2014). According to (Wong & Kang, 2012; Saka, 2016), Mastery learning entails a series of distinct phases for selecting content, teaching, and assessing students' progress. The basic assumptions of mastery learning are that all students can learn all-important content to a high level of excellence and that schools' primary functions are to define learning objectives and assist all students in achieving them while keeping in mind that students' cognitive abilities vary.

Philippine education is currently confronted with several challenges and issues. Educators in higher education continue to blame teachers in primary schools for students' poor performance (Buensuceso, 2015). The Filipino students excel in knowledge acquisition but are considerably low in lessons requiring higher-order thinking skills (Dinglasan & Patena, 2013; Ganal & Guiab, 2014; Guinocor, 2016). Even college students are not exempted from the problems in learning and mastering mathematics (Americans, 2009; Presmeg, 2006; Lumayag, 2015).

The researcher, as a Mathematics teacher in one of the state colleges in Northern Negros has encountered some problems on students low mastery in Mathematics, thus, decided to make a study to find out the level of mastery of learning competencies in Mathematics in the areas of a.) Algebra, b.) Geometry, and c.) Trigonometry of Bachelor of Secondary Education students.

Currently, one of the State College in Northern Negros offers a Bachelor of Science in Education Major in Mathematics, General Science and Technology, and Home Economics. For consecutive years, results in the licensure examination for teachers were low in the College of Education. Students have poor mastery and retention in learning mathematics. Thus, the researcher felt a need to conduct a study

determining the mastery level of learning competencies in Mathematics of Bachelor of Science Education students.

Statement of the Problem

The study aimed to determine the mastery level of the learning competencies in Mathematics of Bachelor of Science in Education students in one of the State Colleges in Northern Negros for School Year 2017 – 2018.

Specifically, this study sought to answer the following questions:
1. What is the mastery level of the learning competencies in Mathematics of Bachelor of Science in Education students when taken as a whole and grouped according to sex and school of origin in Algebra, Geometry, and Trigonometry?
2. Is there a significant difference in the mastery levels of the learning competencies in Mathematics of Bachelor of Science in Education students when grouped according to the aforementioned variables?

Hypothesis

The stated hypothesis was advanced in this study:
1. There is no significant difference in the mastery levels of the learning competencies in Mathematics of Bachelor of Science in Education students when grouped according to the aforementioned variables.

Framework

This study anchored on the Law of Readiness (Edward Thorndike, 1898) implies a degree of concentration and eagerness. Individuals learn best when they are physical, mental, and emotionally active to gain and do not absorb well if they see no reason for learning.

Law of Readiness or law of action tendency states that learning occurs when an action tendency is aroused through preparatory adjustment, set, or attitude. Learning can only take place when a student is ready to learn. (Facilitating 2016). Cuy, N. A.Salinas, E. M. (2018) stated the factors contributing to lack of readiness in college and career: academic readiness and preparedness, expected behavior and attitudes, and college and career knowledge.

Mathematics is a subject that is present in everyone's life, regardless of age or circumstance. As a result, its importance extends beyond the classroom and the school. (Department of Education, 2013). Before moving on to the following learning material, students must achieve a level of mastery in prerequisite knowledge, according to mastery learning. If a student does not achieve a level of mastery, he or she will be introduced to remediation lessons in which information will be reviewed and learning support will be provided before being tested again. The cycle is repeated until the students demonstrate or achieve a mastery level of 80% or higher (Anderson, 2000; Saka, 2016).

According to studies, mastery learning has been shown to improve student performance. A meta-analysis of 108 studies on the effectiveness of mastery learning conducted by (Kulik et al., 2013; Saka, 2016) revealed that mastery learning has positive effects on students' academic performance in schools. Our Institution, specifically Mathematics Area, is trying its best to improve the quality of instruction to overcome the deficiencies observed, such as lack of mastery of the basic facts, inability to solve word problems, and lack of comprehension of math theories associated with the strategy of instruction used by the teacher in teaching.

Mathematics is an art associated with figures and proportions. A tool to be used in daily life when interpreting data. A way of communicating; a way of thinking as students organize, analyze, and synthesize information; and even an art form with underlying orderliness .and consistency (Reyes, Suydam, & Lindguist, 1995; Turner, 2014) Some veteran teachers still believe that the role of the teacher, especially at the Tertiary level, is to give information to their students and hope they retain it for future use (White-Clark, DiCarlo & Gilchriest, 2008; Buensuceso, 2015).

This study utilized a teacher-made test to determine the mastery level of the learning competencies in Mathematics of Bachelor of Science in Education students of northern Negros State College of Science and Technology.

In measurement, a test is an essential tool for determining the success of teaching and learning activities, and the test's outcome can provide helpful information to both the teacher and the pupils (Lebagi, Sumardi, Sudjoko, 2017). Again, according to Gronlund & Linn (1990), a test is an instrument or a systematic technique for assessing a sample of behavior.

Furthermore, according to Schritchfeld in Yusuf (2015), assessment is the systematic gathering, review, and use of data concerning educational programs to improve students' learning and development. Furthermore, Remmer in Arifin (2016) states that test results can help students better understand themselves, explain pupil growth and development to their parents, and assist teachers in lesson planning. According to Arifin (2016), test items must be constructed using appropriate principles and procedures so that after administering the test, it can be determined whether or not it has good quality. According to (Kapunan 2000; Campion & Odman, 2013), a Test is an examination or trial to prove the value of a thing. It was the best measure of the student's capacity to succeed. One purpose of a test was to determine the level of ability or standard in a group, in a class, or in school.

Mastery learning, according to (Wong & Kang, 2012; Saka, Ameen, Dambatta, & Orilonise 2016), entails a set of distinct steps for selecting content, teaching, and assessing students' progress. The effectiveness of mastery learning revealed that mastery learning positively affects students' academic performance in school. The effect, however, is more noticeable on the weaker students (Saka, Ameen, Dambatta & Orilonise 2016)

Likewise, this study attempted to find out whether there is a significant difference in the mastery level of learning competencies in Mathematics when students are grouped according to sex and school of

origin in the area of Algebra, Geometry, and Trigonometry. The result of this study served as the basis for establishing enhancement for the remedial program in mathematics class to improve the students' mastery level in Mathematics in the area of Algebra, Geometry, and Trigonometry.

Figure 1*. Schematic Diagram of the Framework on the Mastery Level of Learning Competencies in Mathematics*
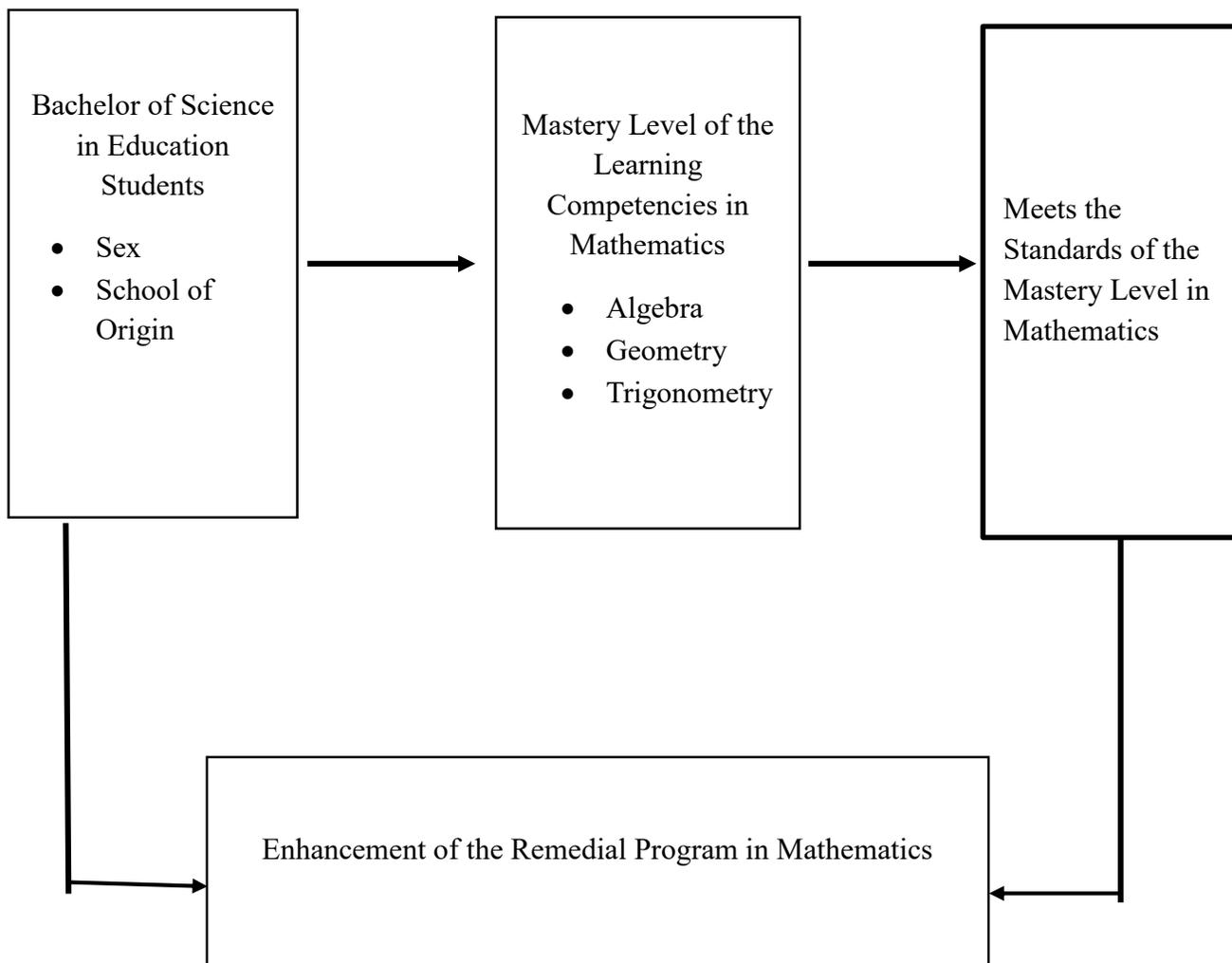
Scope and Limitations

This study is focused on the mastery level of the learning competencies in Mathematics taught from the First to Second Semester of School Year 2017-2018. The study respondents were 250 Bachelor of Science in Education students in one of the State Colleges in Northern Negros who will take Mathematics as their field of specialization. The study was conducted towards the end of the Second Semester.

The study was limited to the mastery level of the respondents in Mathematics in the areas of Algebra, Geometry, and Trigonometry. The questionnaire was focused mainly on the following topics: Four Fundamental Operations of Algebraic expression, Quadratic Equation, Linear Equation, Angle and Angle Measurements, Radian Measures, Finding the Area, Perimeter, and Volume of Plane Figures.

Significance of the Study

The findings of the study may be significant to the following:

Students. The actual idea of this study was to determine the mastery level of the learning competencies of students in Mathematics. The result of this study may give feedback to students on their Mathematics mastery, more specifically on their strengths and weaknesses in the areas covered.

Mathematics Teacher. The result of this study may give valuable information and feedback as to the student's performance on the level of mastery of the competencies of students in Mathematics, specifically Algebra, Geometry, and Trigonometry. This may become the basis of their innovative teaching in enabling students to reach higher mastery levels.

School Administrators. This study may give the school administrator a rich source of information on the mastery level of the learning competencies in Mathematics of the students. Such information may be used for an intervention to enhance student's mastery levels.

Researcher. This study may further hone the interest of the researcher to strengthen and improve the quality of instruction for students to obtain a higher mastery level of the subject.

Future Researcher. The conduct of this study may provide a new basis for pursuing research perspectives for future researchers. This provides reference or benchmark to researchers who are interested in conducting studies of a similar nature.

Definition of Terms

The following are the terms used in the study defined conceptually and operationally.

Competencies. Conceptually defined as the specific skills or abilities that have been developed (Wong, 2018). It is something complex and hard to define, which requires students to master not only knowledge and skills, but at least some measurable abilities. In this study, this term refers to mathematics such as Algebra, Geometry, and Trigonometry, which were covered and discussed from First to Second Semester of School Year 2017-2018.

Bachelor of Science in Education. In this study, this term refers to a program in the College of Education in the State College.

Mastery Level. Conceptually, this term refers to the degree of attainment that corresponds with one's status and abilities through knowledge and skill in a specified field (Kazu, 2015). Mastery Level is defined as the aid to each student to attain mastery when he can give at least 80 percent correct response on a formative or summative test that has been constructed based on instructional objectives concerning that unit in which each pupil is expected to achieve" (Varughese, 2002; Arhin, 2016)

In this study, it refers to the level of mastery of students in Mathematics, which is categorized as mastered, average mastery, low mastery, very low mastery, and absolutely no mastery.

Mathematics. Mathematics has been defined as the study of assumptions, properties, and applications (Yadav, 2017). This is concerned with everyday problems and using imagination, intuition, and reasoning to find new ideas and solve puzzling problems (Antakov, 2015).

In this study, it refers to the subject area, which includes Algebra, Geometry, and Trigonometry.

School of Origin. In this study, this term refers to a public or private school where the freshmen students came from as their school last attended.

Sex. Conceptually defined as a state of being male or female (Collins, 2006; Buensuceso, 2015).

In this study, this term refers to the male and female groups of BS Education students.

METHODOLOGY

Design

The researcher utilized the Comparative-Descriptive Research Design. Descriptive research is most appropriate for this study because it designs for the researcher to gather information about the present condition, status, or trends and deal with prevailing (Atmowardoyo, 2018).

A Descriptive Research Design is the procedure for collecting, analyzing, interpreting, and reporting data in research studies (Creswell & Plano Clark 2007; Boru, Canada & Wen 2018). It is the plan for connecting the conceptual research problems with the pertinent (and achievable) empirical research. In other words, the descriptive research design sets the procedure on the required data, the methods to be applied to collect and analyze this data, and how all of this is going to answer the research question (Grey, 2014; Boru, Canada & Wen, 2018).

Locale

This study was conducted in one of the State Colleges in Northern Negros. The school offers the following programs: Bachelor of Science in Business Administration (BSBA), Bachelor of Science in Hotel and Restaurant Management (BSHRM), Bachelor of Science in Education (BSED & BEED), Bachelor of Science in Criminology (BSC), Bachelor of Science in Fisheries (BSF), Bachelor of Science in (BSN)

Nursing and Bachelor of Science in Information Technology (BSIT). This school is a former Iloilo State College of Fisheries (ISCOF).

Respondents

The total population of students in BS Education was 250. The program was composed of five (5) sections, namely Section A, B, C, D, and E, consisting of 150 female students and 100 male students. Using Yamane's formula with a 5% margin of error, the study's sample size was 154 students. A stratified proportional sampling technique was used to gather the respondents of the study.

Stratified sampling is where the population is divided into strata (or subgroups), and a random sample is taken from each subgroup. A subgroup is a natural set of items. Subgroups might be based on company size, gender, or occupation. It is often used where there is a great deal of variation within a population. Its purpose is to ensure that every stratum is adequately represented (Ackoff, 1953; Taherdoost, 2016).

Table 1 shows the total number of Bachelor of Science in Education Students, the number of respondents in each section, and the number of samples used in the study.

Table 1
Distribution of Respondents

Group	N	n	Percentage
Sex			
Male	100	80	52%
Female	150	74	48%
School of Origin			
Private`	90	76	49%
Public	160	78	51%
Total	**250**	**154**	**100%**

Instrument

The instrument used in this study was a researcher-made test to determine the mastery level of Bachelor of Science in Education students in Mathematics. It is composed of an eighty -item researcher-made test in Algebra, Geometry, and Trigonometry. A table of the specification was prepared to ensure the proper distribution of test items.

Validity

Validity refers to how accurately a method measures what it is intended to measure (Middleton, 2016). If research has high validity, it results corresponding to fundamental properties, characteristics, and variations in the physical or social world.

The researcher-made test in Mathematics was subjected to construct and content-related evidence of validity. To realize the type of validity, the researcher asks ten (10) jurors in the field to evaluate the questionnaire.

To determine the validity of the mastery test, the jurors used the Lawshe as a basis for Content Validity Ratio (CVR) to validate the test-questionnaire

The result of the validity was interpreted as essential, as exemplified by the average rating of 10, thus making the mastery test valid. The validity result is 0.98; thus, the questionnaire is valid (See Appendix H).

Reliability

Reliability refers to whether one gets the same answer by using an instrument to measure something more than once (Dudovskiy, 2018). It estimates internal consistency reliability by determining how the items on a test related to the total test (Kuder and Richardson, 1937). This formula is based on the assumption that all the items of the test are of equal or nearly equal difficulty and intercorrelations (Sarmah, Bora Hazarika, 2012).

To establish the reliability of the instrument, the validated 73 items researcher-made test was subjected to item analysis. Thirteen were rejected, and 60 items were retained (see Appendix I). When computed using the Kuder Richardson 21(KR 21) for internal consistency, it resulted in 0.767, which is reliable. To ascertain the reliability, the researcher administered the researcher-made questionnaire to 30 Bachelor of Science in Education students who were not included in the sample in the same school.

Data Gathering Procedure

The researcher sent letters to the Dean of the College of Education and Math Coordinator asking permission to conduct the study to the Bachelor of Science in Education students.

After verifying the legality and authenticity of the research instrument and getting the approval to start administering the said questionnaire, the researcher prepared sufficient copies of the test questionnaire and administered them to the students.

The test was conducted on five sections of Bachelor of Science in Education students at the State College. After the survey, the researcher collected, organized, collated, encoded, tabulated, analyzed, and interpreted the data.

Statistical Treatment

The data on this study were processed and analyzed using the Statistical Package for the Social Sciences (SPSS).

To answer the specific objectives of the study, the following statistical tools were utilized. To answer problem 1, which measures the mastery level of the learning competencies in Mathematics of Bachelor of Science in Education students when taken as a whole and grouped according to sex and school of origin in Algebra, Geometry, and Trigonometry, the mean and standard deviation were used. The guide was used to obtain the mean interpretation of the result on students' level of mastery in mathematics.

Mean Score	Interpretation	Verbal Description
54 and above	Fully Mastered	Students performance at this level demonstrated very high performance.
45 – 53	Closely Approximated Mastery	Students performance at this level have exceeded the standards and demonstrate advanced progress.
36 – 44	Moving Towards Mastery	Students having this Score has meet above the standard of mastery and is advised to engage in more enrichment activities.
27 – 35	Average Mastery	Students performance at this level has meet the standards and demonstrate progress toward mastery of the knowledge and skills in Mathematics
18 – 26	Low Mastery	Students performance at this level did not meet the standards toward mastery of the knowledge and skills in Mathematics. Students need remediation.
9 – 17	Very Low Mastery	Students performance at

		this level did not meet the standards toward mastery of the knowledge and skills in Mathematics. The students need intensive remediation.
8 and below	Absolutely No Mastery	Students performance at this level did not meet the standards and need to get a refresher subjects.

To answer problem 2, which seeks to determine the significant difference in the mastery level of the learning competencies in Mathematics of Bachelor of Science in Education students when grouped according to the aforementioned variables in the areas of Algebra, Geometry, and Trigonometry, two types of statistical tools were employed.

As to the differences in the mastery level of the learning competencies in Mathematics regarding sex, a two-tailed test (independent) was used.

Whereas a *t-test* was employed on the differences of the mastery level of the learning competencies regarding the school of origin.

Ethical Considerations

The principles of ethical conduct below represent an overview gleaned from many sources were strictly observed:

Informed Consent. Informed consent was given to the respondents to affirm that their inclusion is part of the investigation.

Vulnerability of respondents. Information on students' mastery level in Mathematics was held confidential, and data analysis results were used for research and educational purposes.

Risk and Benefits. The researcher should make sure that the respondents were placed in a conducive and safe classroom to conduct and retrieve the survey questionnaire. The respondents benefited from the study result, as the results may serve as the basis for their entry-level Mathematics major.

Privacy and confidentiality. In compliance with the Data Privacy Act of 2012, personal data that might compromise the respondent's identity was not divulged to the public nor any information without consent. Passcodes protected spreadsheets that were shared with the researcher to protect the confidentiality of the data.

Justice. Stratified random sampling was used to provide equal opportunity for the Bachelor of Science in Education students to be selected. The results of the study were given to school administrators and teachers.

Transparency. The purpose of the study was adequately communicated with the school administrators and respondents. All relevant information related to the conduct of the study was laid down properly.

Qualification of the Researcher. The researcher had taught Tertiary Mathematics for six years in one of the State Colleges in Northern Negros and has completed the academic requirements leading to the Master of Arts in Education Major in Mathematics.

RESULTS AND DISCUSSION

Table 2

Mastery Level of the Learning Competencies in Mathematics of Bachelor of Science in Education Students at the State College When Taken as a Whole in the Areas of Algebra, Geometry, and Trigonometry where (n=154).

Area	Mean	SD	Verbal Interpretation
Algebra	16.16	1.10	Very Low Mastery
Geometry	19.69	0.50	Low Mastery
Trigonometry	9.82	2.03	Very Low Mastery
As a whole	15.22	1.21	Very Low Mastery

Table 2 presents the mastery level of the learning competencies in Mathematics of Bachelor of Science in Education students of the State College when taken as a whole. The mean score of Bachelor of Science in Education students in the State College was 16.16 in Algebra; 19.69 in Geometry; 9.82 in Trigonometry with a corresponding SD of 1.10 in Algebra; 0.50 in Geometry; and 2.03 in Trigonometry. Based on the result, the mastery of learning competencies of Education students of one of the State College in North Negros has a very poor or low mastery.

According to (Wong & Kang, 2012; Saka, 2016), mastery learning involves a set of clear steps for selecting content, teaching, and determining students' progress. The basic assumptions of mastery learning are that all students can learn all-important content to a level of excellence and the primary functions of schools are to define learning objectives and help all students achieve them, putting in mind that students have varying capabilities in terms of cognitive development.

Trigonometry is one of the branches of mathematics that are taught in the curricula. The students need to comprehend and master this subject because of its application in real-life situations. Just like other

math subjects, some students find this subject complex and challenging to understand. (Aplaon, 2016). Thus, the average of the students' scores was poor. Each of the students could only do the task correctly, less than 50% of the overall task. This happens if the student has no proper prior knowledge, particularly in algebra operation and its properties. And the students have very little understanding of trigonometry, particularly in trigonometry properties (Maknun, Rosjanuardi, Ikhwanudin, 2018).

Research has shown that poor teaching stands out as one of the reasons for poor academic performance in Mathematics. Stuart (2000) concurs with the above assertion and states that poor academic performance in Mathematics is traceable to poor or ineffective teaching (Varaidzaimakondo, Makondo, 2015).

Table 3

Mastery level of the Learning Competencies in Mathematics of Bachelor of Science in Education students at the State College when grouped according to sex

Sex	n	Area	Mean	SD	Verbal Interpretation
Male	80	Algebra	16.08	1.21	Very Low Mastery
		Geometry	19.69	0.47	Low Mastery
		Trigonometry	9.76	1.92	Very Low Mastery
Female	74	Algebra	16.24	1.19	Very Low Mastery
		Geometry	19.71	0.45	Low Mastery
		Trigonometry	9.82	2.17	Very Low Mastery
As a Whole			15.22	1.24	Very Low Mastery

Table 3 shows the mastery level of the learning competencies in Mathematics of Bachelor of Science in Education students at the State College when grouped according to sex. It was revealed that male students had a mean score of 16.08 in Algebra; 19.69 in Geometry; 9.76 in Trigonometry; with an SD of 1.21 in Algebra; 0.47 in Geometry and 1.92 in Trigonometry respectively and interpreted as Very Low Mastery in Algebra and Trigonometry and Low mastery in Geometry. The female students had a mean score of 16.24 in Algebra; 19.71 in Geometry and 9.82 in Trigonometry with an SD of 1.19 in Algebra; 0.45 in Geometry and 2.17 in Trigonometry and construed as Very Low Mastery in Algebra, Trigonometry, and low mastery in Geometry. It was found out that when taken as a whole, the mean is 15.22 and an SD of 1.24 which was interpreted as very low mastery.

The results implied that the Bachelor of Science in Education students' performance did not meet the standards toward mastery of the knowledge and skills in Mathematics. Thus, the students need intensive remediation.

This result agrees with the findings of Dania (2014) that students' performance is not determined by gender in terms of the interaction of gender and treatment on students' academic achievement. Gloria (2015) confirms that regardless of sex as a variable, mathematical skill of students in state college is the same.

Table 4

Mastery Level of the Learning Competencies in Mathematics of Bachelor of Science in Education Students at the State College when Grouped according to School of Origin

School of Origin	n	Mean	SD	Verbal Interpretation
Private	76	16.18	4.17	Very Low Mastery
Public	78	16.17	3.75	Very Low Mastery
As a Whole	154	16.18	3.96	Very Low Mastery

Table 4 presents the mastery level of the learning competencies in Mathematics of Bachelor of Science in Education students at the State College when grouped according to the school of origin. It showed that students from private schools had a mean score of 16.18 with an SD of 4.17, which was interpreted as very low mastery, and students from public schools had a mean score of 16.17 with an SD = 3.75, which was construed as very low mastery. It was found out that the mastery level of students when taken as a whole interpreted as very low.

The result implied that the students' performance did not meet the standards toward mastery of the knowledge and skills in Mathematics. Thus, the students need intensive remediation.

The school serves as the primary setting for the cultivation of cognitive capacities. Students mature cognitive competencies and obtain problem-solving skills to participate effectively in society. Students' knowledge and skills are evaluated and compared socially in schools (Contay, 2018). Center on Education Policy (2011) affirmed that the school of origin does not affect the performance of the student in Mathematics.

Table 5

Significant Difference in the Mastery Level of the Learning Competencies in Mathematics of BS Education Students at the State College when Grouped According to the Aforementioned Variables

Variables	Categories	p-value	Significance @ 0.05	Status of H_0
Sex	Male	0.00	Significant	Rejected
	Female			

School of	Private	0.39	Not Significant	Accepted
Origin	Public			

Table 5 presents the significant difference in mastery level of the learning competencies in Mathematics of Bachelor of Science in Education students at the State College.

Based on the findings, there was a significant difference in the mastery level in learning competencies in Mathematics when students were grouped according to sex with a p-value of 0.00, which was less than 5% level of significance. This showed that the hypothesis was accepted. When the students were grouped according to the school of origin, no significant difference was found in the mastery level in learning competencies in Mathematics. This means that the hypothesis was rejected.

This implied that sex was a contributing factor in determining the mastery level in the learning competencies in Mathematics in Algebra, Geometry, and Trigonometry, while the school of origin was not a significant factor.

These findings are supported by the study of Awofala & Anyikwa (2014) that exhibit significant effect of gender on the academic performance. Likewise, Barr & Wessel (2018) found out that there was no significant effect of gender on each of the dimension of mathematical proficiency.

The result of the survey supported by Ghanizadeh (2016), the empirical studies have established that there are some factors started to the school which could not affect students' performance in mathematics in tertiary education. Kapur (2014) stated that the school of origin did not significantly differ or influence the result of the study.

SUMMARY

The study employed the Descriptive Comparative Research Design to determine the mastery level of learning competencies in Mathematics of Bachelor of Science in Education students during the Academic Year 2017 -2018.

Based on the results of the study, the researcher found out that students have a very low level of mastery in the areas of Algebra and Trigonometry and Low level of mastery in Geometry. When taken as a whole, students have a very low level of mastery in the three areas of Mathematics. When students were grouped according to sex and school of origin, the results were very low level of mastery of learning competencies in Mathematics. It showed that sex was a determining factor that affects the mastery level of the students and the school of origin was not a factor that contributed to the level of performance of students in Mathematics.

Students at the tertiary level were very particular on the knowledge base or basic mindset in understanding mathematics. They have very poor performance in the analytical aspect of mathematics which caters to the higher-ordered thinking skills. Student's grey matters in dealing with problem-solving in mathematics have their low level.

CONCLUSIONS

Based on the results of this study, the Bachelor of Science in Education students' performance at this level did not meet the standards toward mastery of the knowledge and skills in Mathematics. The students need intensive remediation and thorough follow-up. They must be exposed more to problem-solving to overcome their weaknesses and develop their higher ordered thinking skills. Further concluded that in the 21st century, the teacher must develop their students holistically to become globally competitive individuals. The development of grey matters among college students plays a vital role in the success of every individual.

RECOMMENDATIONS

In the light of the initial findings and conclusions, the researcher must develop an enhancement of the Remedial Program in Mathematics to support the improvement of the level of mastery of Bachelor of Science in Education students in Mathematics from very low mastery to fully mastered. Students will be monitored extensively in the needed skills to improve the mastery level of the learning competencies in Mathematics.

Teachers may continue to explore more strategies and techniques in teaching Mathematics to enhance and motivate students in learning.

ENHANCEMENT OF THE REMEDIAL PROGRAM IN MATHEMATICS

Rationale

Mathematics is a dynamic science which empowers individuals to become effective members of society. The nature of mathematical experiences that undertaken enable students to see its relevance in many aspects of their everyday life. The study of the subject enables students to develop a positive self-concept as learners of mathematics, obtain enjoyment from mathematics, and become self-motivated learners through inquiry and active participation in challenging and engaging experience. After thorough deliberation and study based on the results of this research, the researcher is looking forward for the implementation of this enhancement program that will help in the improvement of skills and knowledge in the Mathematics performance of the students.

Condition

Based on the result of the level of mastery of Bachelor of Science in Education students in Mathematics, there is a need to come up with Enhancement of the Remedial Program in Mathematics to support and strengthen one of the school's endeavors to help increase the level of performance of students from very low to fully mastered.

Obiectives

1. To increase the mastery level of the learning competencies in Mathematics of Bachelor of Science in Education students.
2. To supplement the program with challenging techniques and activities in Mathematics focused on the weak competencies of the students.
3. To evaluate the usefulness of the materials and learning activities provided to the students.
4. To have a close monitoring in the implementation of the Enhancement of the Remedial Program in Mathematics.

Goal

To increase the mastery level of Bachelor of Science in Education students in Mathematics from very low level to fully mastered.

Key Success Measure

Reach Mastery Level in the areas of Algebra, Geometry, and Trigonometry

Core Strategy

Intensive monitoring on their weekly and monthly formative and term summative assessment result

Areas of Concentration	Objectives	Activities	Person Involved	Program Duration	Key Result Area
1. Very Low Mastery Level in Algebra	To improve the level of mastery of students in Algebra.	Daily 5-minute check Peer Teaching	Math Coordinator Math Teacher	Before the lesson Proper During Class Hour	Students improved their performance in Algebra

		Remedial Session	Students	End of the Week	
2. Low Mastery Level in Geometry	To make progress in the mastery level and maintain the interest of students in Geometry	Mastery Test Mental Games Work Sheets			Students exhibited positive attitude and increased knowledge and skills in Mathematics
3. Very Low Mastery Level in Trigonome-try	To increase the knowledge and skills of students in Geometry To use effective strategies in dealing with worded problems	Individual/ Collabora-tive Work			Students showed improvement in their performance in Trigonome-try using effective strategies in answering Mathematicsp roblems. Students developed their analytical and critical thinking skills in problem solving.

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