

EASY MATH: AN INTERVENTION MATERIAL FOR NUMERACY SKILLS OF GRADE 10

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ABSTRACT

This thesis titled, “EASY MATH: An Intervention material on the Numeracy Skills of Grade 10 Students” intended to find answers to the following questions: 1.) What is the level of acceptability of “EASY MATH”:An intervention material with regards to components that concludes objectives, content, topics, and activities? 2.) What is the level of acceptability of “EASY MATH”:An intervention material in terms of the characteristics such as usability, suitability , and reliability? 3.) What is the level of numeracy skills of the Grade 10 students relative to reading/recognizing numbers, ordering and comparing of numbers, performing operations on numbers, problem solving and number sense, and analyzing patterns and graphs? 4.) What is the performance in using “EASY MATH”: an intervention material of Grade 10 students in terms of pre-test and post-test? 5.) Is there a significant difference between the pre-test and post-test performance in “EASY MATH”: an intervention material of Grade 10 students? Descriptive-quantitative research designed was employed in the study. Respondents were selected using the non-probability sampling specifically purposive sampling. The result of the study showed that EASY MATH: An intervention material was highly acceptable in terms of its components that concludes the objectives, content, topics, and activities as well as in terms of its characteristics such as usability, suitability and reliability. Study showed a remarkable improvement from numerate to highly numerate on the following: Remembering and Recognizing Numbers , Ordering and Comparing of Numbers and Performing Operations on Numbers. However, Analyzing Patterns and Graphs remained to Highly numerate while Problem solving and Number sense remained to Numerate before and after using the intervention material. It is concluded that the EASY MATH; An Intervention material enhanced learning with regards to numeracy skills of the respondents. The result of the pretest stage was verbally interpreted as Numerate; while during the posttest stage, it was verbally interpreted as Highly Numerate. For the difference between the pretest and posttest, it showed an analysis of Significant. The EASY MATH Intervention material was an effective tool in improving the numeracy skills of Grade 10 students. With the positive results of the study, it is hereby recommended for consideration that the EASY MATH intervention material can be used as a reference and additional learning activity to aid students difficulty in numeracy.

Keywords:

Intervention Material, Numeracy skills, Easy Math ,

INTRODUCTION

Intervention material plays a dynamic role in enhancing and improving students’ difficulties. It is a tool used to aid the troubles encountered by the students in learning and understanding concepts. According to Rodrigo (2015), Intervention Materials are created and designed to assist teachers in providing students with the necessary support to improve in their studies. These will improve and enhance

the child's skills, knowledge, and understanding in a variety of subject areas, not just science and math, but also other learning areas in the curriculum. According to Machera (2017), interventions provide benefits if they are done appropriately, including self-direction, cooperation, and teamwork among pupils. This is only one of the numerous reasons why intervention is required. It will allow students to develop their emotional selves while also letting them know that their teachers are involved. This simply goes to show how important it is to select a particular effective and efficient mathematical intervention. Numeracy skills are necessary for the students to cope with high school mathematics subject wherein lessons are advanced and need mastery of lower mathematics. Number sense is an attempt to underline the idea that even with widely varied learners, teachers may aid the learning process in convergence. Every teacher understands the importance of numeracy throughout the curriculum. Numeracy encompasses more than just the ability to handle numbers and perform simple calculations. It is made up of the information, abilities, behaviors, and attitudes that students will need to use mathematics in a variety of contexts. Geiger, et.al (2015) released the definition of numeracy as "Numeracy is a concept used to identify the knowledge and capabilities required to accommodate the mathematical demands of private and public life, and to participate in society as informed, reflective, and contributing citizens." . The PISA study define the term "mathematical literacy" (instead of numeracy) as: The capacity to identify, to understand, and to engage in mathematics and to make well-founded judgements about the role that mathematics plays, as needed for the individual's current and future private life, occupational life, social life with peers and relatives, and life as a constructive, concerned, and reflective citizen. Numeracy as part of integrative learning can also push teachers to be more creative and adaptable in order to cater to the various techniques of effective instruction. Numeracy is vital in dealing with higher mathematics where complex operations and concepts come inculcated with the mathematical problem (Venkat & Winter, 2015). Based from the study of Insorio (2020) if the students have low numeracy skills, they were not able to understand the higher mathematics which may cause frustration on the part of the students. Students may eventually develop a dread of dealing with mathematical concepts or studying mathematics as a topic in school. Despite their teachers' encouragement and tactics, the kids appeared to have lost interest in the subject matter.

This also sought to determine the effectiveness of "Easy Math" an Intervention Material to improve the numeracy skills of Grade 10 learners. Specifically, it sought to answer the following questions:

1. What is the level of acceptability of "EASY MATH":an intervention material with regards to components that concludes:
 - 1.1 Content;
 - 1.2 Objectives;
 - 1.3 Topics; and
 - 1.4 Activities?
2. What is the level of acceptability "EASY MATH":an intervention material in terms of characteristics suchas:
 - 2.1 Usability;
 - 2.2 Suitability;
 - 2.3 Reliability
3. What is the level of numeracy skills of the Grade 10 students relative to:

- a. reading/recognizing numbers;
 - b. ordering and comparing of numbers;
 - c. performing operations on numbers;
 - d. problem solving and number sense; and
 - e. analyzing patterns and graphs?
4. What is the performance in using “EASY MATH” of Grade 10 students in terms of:
- a. pre-test; and
 - b. post-test?
5. Is there a significant difference between the pre-test and post-test performance in using “EASY MATH” of Grade 10 students?

REVIEW OF RELATED LITERATURE

Numeracy skills are necessary for the students to cope with high school mathematics subject wherein lessons are advanced and need mastery of lower mathematics. Number sense is an attempt to underline the idea that even with widely varied learners, teachers may aid the learning process in convergence. Every teacher understands the importance of numeracy throughout the curriculum. Numeracy encompasses more than just the ability to handle numbers and perform simple calculations. It is made up of the information, abilities, behaviors, and attitudes that students will need to use mathematics in a variety of contexts. The PISA study define the term “mathematical literacy” (instead of numeracy) as: The capacity to identify, to understand, and to engage in mathematics and to make well- founded judgements about the role that mathematics plays, as needed for the individual’s current and future private life, occupational life, social life with peers and relatives, and life as a constructive, concerned, and reflective citizen. Based from the study of Insorio (2020) if the students have low numeracy skills, they were not able to understand the higher mathematics which may cause frustration on the part of the students. Students may eventually develop a dread of dealing with mathematical concepts or studying mathematics as a topic in school. Despite their teachers' encouragement and tactics, the kids appeared to have lost interest in the subject matter.

According to Tiedeman (2019), early math and numeracy is the general understanding of numbers and basic mathematical concepts (Harris & Petersen, 2019; Toll & Van Luit, 2014). These are skills such as counting, comparing and contrasting, describing shapes and positions and problem solving (Aunio, Heiskari, Van Luit & Vuorio, 2015; Aubrey & Godfrey, 2003; Harris & Petersen, 2019; Ramani & Eason, 2015). Early math and numeracy skills are the building blocks of all future math classes. Without these skills, students will continue to struggle with higher math concepts. Students need to learn how to solve problems, one of the basic early math skills, for all areas of academics and life outside of school. Early math and numeracy also coincide with language and critical thinking development (Toll & Van Luit, 2014; Vilorio, 2014). More and more, students are entering kindergarten with language deficits and unable to think critically. Students need to be directly taught language skills and critical thinking skills and early math is the perfect way to teach those skills.

Furthermore, nothing is known about the potential indirect effects that literacy and numeracy proficiency may have on science accomplishment. According to research, the basis of interest (a desire for taking on a difficult activity and being motivated by interest and curiosity) and/or self-concept (beliefs about personal competency in learning) may be related to prior cognitive skills (Walgermo, Foldnes, Uppstad, & Solheim, 2018). In an article by Victoria State Government (n.d.), When it comes to using

mathematics in a variety of contexts, students need the knowledge, abilities, attitudes, and behaviors known as numeracy. It entails having the mindset and capacities to employ mathematical knowledge and skills on purpose as well as acknowledging and comprehending the function of mathematics in the world. The majority of people frequently encounter mathematics in daily life, including in their personal, academic, and professional endeavors. The crucial roles that algebra, functions and relations, logic, mathematical structure, and thinking mathematically play in helping people understand the natural and human worlds as well as how they interact with one another are equally significant.

As stated by Yilmaz (2017), children begin to develop a sense of numbers even before they enter school. Gaining number sense is a steppingstone to understanding the traditional mathematics that is taught in schools. There are three main components to this number sense: number knowledge, counting, and arithmetic procedures. The purpose of this study was to investigate the complexity of number sense development in young children between the ages of four and seven in relation to two main domains: number knowledge and counting. Clinical interviews with semi-structured tasks were used to investigate the development of number sense. Three kids were given five distinct evaluation tasks to complete. To determine the level of number sense comprehension and developmental challenges among the students, the responses were analyzed. The results were divided into two categories: first, children's comprehension of number concepts and their capacity for completing number word sequences; and second, counting.

Schindler (2019) explained that children must develop a key skill called quantity recognition in whole number representations as part of their mathematical development. Although there is an association between the capacity to detect quantities in structured whole number representations and arithmetic achievement, this topic has not received much research. In this work, we examine how amount recognition in structured whole number representations differs between children with mathematical difficulties (MD) and students who are normally developing (TD). An important mathematical skill required to develop a number sense is quantity recognition in whole number representations, which is to understand sets of elements in whole number representations and to say how many there are appears to be essential for students' progress in mathematics (see, for instance, Clements, 1999; Scherer et al., 2016).

In the study conducted by Layug, et.al. (2021), he stated that instead than assuming mastery of many disciplines of mathematics or intricate mathematical formulas, mathematics literacy is a broad range of knowledge, comprehension, and appreciation of what mathematics can do. Mathematics literacy is defined by the Journal of Physics: Conference of Series as "the ability to understand and apply basic knowledge of mathematics in everyday life," which calls for understanding and fusing mathematical core concepts, terminologies, facts, and skills in response to the external situation's requirement of the real-world.

Recent research has shown how crucial number-ordering abilities are for both children's and adults' numeracy ability. In the present study, we showed that number comparison and ordering abilities were both strongly connected to adults' arithmetic performance, with the ordering skills impact size being larger. Also, participants showed comparable (canonical or reverse) distance effects on comparison and sorting tasks involving months as they did when the activities used numbers. Performance on these tasks also showed a substantial correlation with arithmetic abilities. This shows that the mechanisms underlying the relationship between comparison and ordering abilities and mathematical proficiency are not exclusive to the study of numbers (Morsanyi, 2016).

As cited by Kuehn (2017), the pretest and posttest can be a valuable diagnostic tool for more effective teaching. It should be designed to measure the amount of learning a student has acquired in a

specific subject. To do this, questions concerning all the topics covered during the quarter must appear on the test. To demonstrate the student progress has been made during the given quarter, the posttest score should be higher than the pretest score. Goldman (2014) emphasizes that the pretest and posttest are the quantifying of the knowledge attained in the class from a group of students with diverse learning styles and educational backgrounds.

Mouly (2015) emphasizes the connotation of pre-test as a test given to measure the outcome of variable before the experimental manipulation is implemented. A pre-test is followed by a post-test, which is the same test as a pre-test, after the experimental manipulation has been implemented. This pre-test and post-test design allowed the experimenter to test what effect if any, the experimental manipulation had been assessing the differences in the pretest and posttest. If there are any differences, it is likely to be due to manipulation by the researcher either action or experimental mental of investigation. A parallel idea has been drawn by Dreeben (2014) that a pre-test must aim at determining students' baseline knowledge or preparedness for an educational experience most particularly when an organized small group discussion method is deployed in the classroom by a Science teacher. Most likely with this trending, maximum active student involvement is encouraged as well as interest in well-chosen topic for class discussion. Before a pre-test is given, time must be observed for a greater preparation of arguments when topics are specially challenging or require scientific technology information. This method is most valuable for teaching topics requiring series and thorough discussion which by all means call for a critical thinking and balanced arguments among students' participants. More than ever as rectified by Stabler (2014), a posttest is basically a most viable measure to determine the outcome after laboratory method has been deployed in learning science. With the end results, learning by doing is within the sphere of teacher's direction by providing learning situations at first hand for students to translate theory into practice, to develop, to test and apply principles, and to learn methods of procedure with greater reliance on their own power, and with extensive restrictions which group work often imposes on the individual learner with the end in view that at the end of the day, the teacher has the chance to observe the students in action, assess their work, correct their mistakes, and give ample time to guide them in the correct direction in avoiding wastages of the human and material resources.

METHODOLOGY

The research design used in this study was the descriptive-quantitative research design. It is descriptive in nature in which Siedlecki (2020) explain that "the purpose of descriptive studies is to describe individuals, events, or conditions by studying them as they are in nature". Non-probability sampling specifically purposive sampling was used in choosing the participants in this study. The purposive sampling technique, also called judgment sampling, is the deliberate choice of a participant due to the qualities the participant possesses (Etikan, et. al, 2016). This study was conducted to Grade 10 students of Sampaguita Village National High School Main Campus. Grade 10 of the said school consisted of 14 sections with an average of 55 students per section. There are five Grade 10 Mathematics teacher of the said school. The researcher wishes to use cluster sampling. Among the 14 sections, the participants of the study will be the 2 sections handled by the researcher. The total number of participants is in average of 110 students. The participants of the study vary from above average level, average and below average level. The research used a validated test on numeracy as pre-test which was aligned from the Numeracy Inventory Tool for Laguna Learners (NIT2L) which consists of the basic topics that require mastery of skills in (1) Reading and Recognizing Numbers; (2) Ordering and Comparing of Numbers; (3) Performing

Operations on Numbers; (4) Problem Solving & Number Sense; and (5) Analyzing Patterns & Graphs & Handling Data. The forty (40) – item test comprises the combined and selected questions from Level 1 and Level 2 of the tool whose topics coverage are Whole Numbers, Integers, Rational Numbers and Decimals. The participants' level of numeracy was determined accordingly, based on the given scale of the tool: 35 - 40 - Advance; 30 - 34 - Highly Numerate; 20 - 29 - Numerate; 10 – 19 – Low-numerate and 0

- 9 - Non-numerate. Upon determining the numeracy level, an intervention material called EASY MATH will be use for intervention. The EASY MATH intervention material was checked and validated by the Head Teacher and Master Teachers to ensure the validity and reliability of the material. Series of remediation sessions using the Easy Math is conducted to the participants of this research. After the intervention sessions, the researcher will still use the standardized test on numeracy as post - test to grasp the improvement of the learners' numeracy skills. Analysis of the result is important to determining the effectiveness of the Easy Math intervention material. The background of the participants of the study and the result of the gathered data will remain confidential to the researcher. The responses were tabulated as basis for statistical treatment of the data. The data gathered were analyzed and interpreted using statistical tools in the study. Mean and standard deviation were used to determine the level of acceptability of EASY MATH intervention material in terms of its components and characteristics as well as the numeracy level of the respondents during the pre-test and post-test stages. Mean difference, and paired t-test were used to determine the effectiveness of EASY MATH Intervention material on the numeracy level/skills of the Grade 10 Students.

RESULT AND DISCUSSION

Table 1. Level of Acceptability of EASY Math Intervention Material in terms of Components as to Objectives.

| The objectives... | Mean | SD | Remarks |
|--|-------------------|------|----------------|
| Are clearly stated and can easily be understood by the students. | 4.49 | 0.63 | Strongly Agree |
| Express the knowledge and skills to be developed. | 4.46 | 0.57 | Strongly Agree |
| Are specific and attainable. | 4.19 | 0.70 | Agree |
| Are based on the learning competencies needed in numeracy. | 4.50 | 0.65 | Strongly Agree |
| Are related to the discussion and activities in the worktext/ worksheet. | 4.57 | 0.61 | Strongly Agree |
| Overall Mean: SD | 4.44: 0.46 | | |
| Verbal Interpretation | Highly Acceptable | | |

As shown in table 1, the respondents strongly agree that the EASY MATH intervention material contains objectives which are related to the discussion and activities in the worksheet ($M = 4.57$, $SD = 0.61$). The objectives in each topic are based on the learning competencies needed in numeracy ($M = 4.50$, $SD = 0.65$). On the other hand, the respondents agree that specific and attainable objectives are observed ($M = 4.19$, $SD = 0.70$). The overall mean of 4.44 and standard deviation of 0.46 indicated that the level of acceptability of EASY MATH intervention material in terms of the components as to objectives was highly acceptable. This meant that the objectives of every lesson in the EASY MATH intervention material is suitable for the learners' level of learning and focus on the skills to be develop.

Table 2. Level of Acceptability of EASY Math Intervention Material in terms of Components as to Content.

| The content... | Mean | SD | Remarks |
|---|-------------------|------|----------------|
| All pictures, definition is congruent to the competencies provided for numeracy skills. | 4.42 | 0.68 | Strongly Agree |
| Contains topics that are practically related to each other. | 4.54 | 0.62 | Strongly Agree |
| States objectives, discussions and activities that are attainable. | 4.54 | 0.65 | Strongly Agree |
| Focuses on the main goal which is development of numeracy skills. | 4.62 | 0.62 | Strongly Agree |
| Are clearly stated and can easily be understood by the students. | 4.63 | 0.56 | Strongly Agree |
| Overall Mean: SD | 4.55: 0.48 | | |
| Verbal Interpretation | Highly Acceptable | | |

Based from the result on table 2, respondents strongly agree that the contents of EASY MATH intervention material are clearly stated and can be easily understood by the students who will use the materials ($M = 4.63$, $SD = 0.56$). The contents of the intervention material are focus on the main goal which is the development of numeracy skills of the learners ($M = 4.62$, $SD = 0.62$). However, the respondents strongly agree that the pictures and definitions in the material are congruent to the competencies provided for numeracy skills ($M = 4.42$, $SD = 0.68$). Achieving the over-all mean score of 4.55 and standard deviation of 0.48 indicated that the level of acceptability of the EASY MATH intervention material in terms of content was highly acceptable. This meant that the intervention materials contained significance in the study of the students. The variety of necessary materials included in the intervention materials was obviously useful.

As reflected in table 3, it reveals that The respondents strongly agree that the topics in the intervention material can contribute to the acquisition of concepts, understand physical activities, knowledge, wellness and skills ($M = 4.48$, $SD = 0.65$). The intervention material have topics that are sufficient to allow the students to learn independently. On the other hand, the respondents strongly agree that the topics in EASY MATH intervention material are parallel with the objectives and activities ($M = 4.28$, $SD = 0.69$). The overall mean of 4.36 and standard deviation of 0.51 indicated the level of acceptability of EASY MATH intervention material in terms of the components as to topic was highly acceptable. As a result, the topics covered in the intervention material were very timely. Its instructional objectives in three domain classifications were met.

Table 3. Level of Acceptability of EASY Math Intervention Material in terms of Components as to Topics.

| The topic... | Mean | SD | Remarks |
|---|-------------------|------|----------------|
| Are appropriate to the students' comprehension level; | 4.33 | 0.73 | Strongly Agree |
| Are parallel with the objectives and activities; | 4.28 | 0.69 | Strongly Agree |
| Contribute to the acquisition of concepts, understanding physical activities, knowledge, wellness and skills; | 4.48 | 0.65 | Strongly Agree |
| Provide a range of learners' interests and preferences; | 4.31 | 0.70 | Strongly Agree |
| Are sufficient to allow the students to learn independently. | 4.38 | 0.69 | Strongly Agree |
| Overall Mean: SD | 4.36: 0.51 | | |
| Verbal Interpretation | Highly Acceptable | | |

Table 4. Level of Acceptability of EASY Math Intervention Material in terms of Components as to Activities

| The activity... | Mean | SD | Remarks |
|---|-------------------|------|----------------|
| Are in order to maintain the students' interest in each topic of the learning material; | 4.51 | 0.60 | Strongly Agree |
| Provide a variety of activities and opportunities for the improvement of students' concept in optimized wellness; | 4.45 | 0.63 | Strongly Agree |
| The examples and exercises stimulate students' comprehension and learning ability; | 4.48 | 0.65 | Strongly Agree |
| Give direction in simple and comprehensible manner; | 4.54 | 0.63 | Strongly Agree |
| Are relevant to the expected outcomes of objectives. | 4.35 | 0.66 | Strongly Agree |
| Overall Mean: SD | 4.47: 0.46 | | |
| Verbal Interpretation | Highly Acceptable | | |

As seen in Table 4, the respondents of the study strongly agree that the activities in the intervention material give direction in simple and comprehensive manner that easily understood by the learners ($M = 4.54$, $SD = 0.64$). The given activities are in systematic order that helps maintain the interest of the students in each topic of the learning material. Moreover, the respondents strongly agree that the activities are relevant to the expected outcome or objective of the material ($M = 4.35$, $SD = 0.66$). Achieving the over-all mean score of 4.47 and standard deviation of 0.46 indicated that the level of acceptability of the EASY MATH intervention material in terms of activity was highly acceptable. This meant that the activities included in the intervention materials were effective in diverse categories of learners in the New Normal Education.

Table 5 Level of Acceptability of EASY Math Intervention Material in terms of Characteristics as to Usability

| The intervention material... | Mean | SD | Remarks |
|--|-------------------|------|----------------|
| is useful in the field of Mathematics. | 4.57 | 0.63 | Strongly Agree |
| helps improve the numeracy skills of the student. | 4.66 | 0.56 | Strongly Agree |
| can be used by the school as reference and remediation material. | 4.65 | 0.55 | Strongly Agree |
| is useful as a guide for independent learning. | 4.59 | 0.53 | Strongly Agree |
| is useful for both students and teachers. | 4.65 | 0.55 | Strongly Agree |
| Overall Mean: SD | 4.63: 0.42 | | |
| Verbal Interpretation | Highly Acceptable | | |

It is seen in table that the respondents strongly agree that the intervention material is helpful in improving the numeracy skills of the students ($M = 4.66$, $SD = 0.56$). In addition, the intervention material can be used by the school as their reference and remediation material for the learners. However, the respondents strongly agree that the intervention material is useful in the field of mathematics in general ($M = 4.57$, $SD = 0.63$).

With the over-all mean score of 4.63 and standard deviation of 0.42 indicated that the level of acceptability of the EASY MATH intervention material in terms of usability was highly acceptable. This meant that the intervention material is useful in the enhancement of the learners academic skills.

Table 6 Level of Acceptability of EASY Math Intervention Material in terms of Characteristics as to Suitability

| The intervention material... | Mean | SD | Remarks |
|---|-------------------|------|----------------|
| is appropriate in the field of specialization. | 4.40 | 0.68 | Strongly Agree |
| is appropriate in enhancing students' difficulties. | 4.52 | 0.69 | Strongly Agree |
| is appropriate in the needs of the student. | 4.55 | 0.55 | Strongly Agree |
| is appropriate in the needs of the school. | 4.50 | 0.66 | Strongly Agree |
| reflects the intent of the study. | 4.52 | 0.63 | Strongly Agree |
| Overall Mean: SD | 4.50: 0.49 | | |
| Verbal Interpretation | Highly Acceptable | | |

As reflected in the table 6, The respondents strongly agree that the EASY MATH intervention material is appropriate in the needs of the learners ($M = 4.55$, $SD = 0.55$). The interventio material is also appropriate in enhaancing and improving the learner's difficulties. Moreover, the respondents strongly agree that the EASY MATH intervention material is appropriate in the field of specialization ($M = 4.40$, $SD = 0.68$). With the over-all mean score of 4.50 and standard deviation of 0.49 indicated that the level of acceptability of the EASY MATH intervention material in terms of suitability was highly acceptable. This concluded that the EASY MATH Intervention material is suited and appropriate to various type of learners. It meant that the crafting of the material is non-objective.

Table 7 Level of Acceptability of EASY Math Intervention Material in terms of Characteristics as to Reliability

| The intervention material... | Mean | SD | Remarks |
|---|-------------------|------|----------------|
| is accurate and precise based on the Most Essential Learning Competencies. | 4.51 | 0.62 | Strongly Agree |
| is free from bias. | 4.38 | 0.75 | Strongly Agree |
| The questions and discussions given in the intervention material are suited to the comprehension level of the students. | 4.45 | 0.63 | Strongly Agree |
| is align to the objective of the study. | 4.45 | 0.66 | Strongly Agree |
| is assess and validated. | 4.54 | 0.57 | Strongly Agree |
| Overall Mean: SD | 4.46: 0.50 | | |
| Verbal Interpretation | Highly Acceptable | | |

As evidenced by the results on table 7, The respondents strongly agree that the intervention material is assess and well validated ($M = 4.54$, $SD = 0.57$). The EASY MATH intervention material is inaccurate and precise based on the Most Essential Learning Competencies in Mathematics. On the otherhand, the respondents strongly agree that the intervention material is free from bias ($M = 4.38$, $SD = 0.75$).The overall mean of 4.46, standard deviation of 0.50 indicated the level of acceptability of EASY MATH intervention material in terms of reliability was highly acceptable. This concluded that the intervention material was relevant in assesing and validating the learners numearcy level based on the Most Essential Learning Competencies.

Based from the result, the respondents level of numeracy were Numerate in Reading and Recognizing Numbers during the pre-test stage ($M = 4.61$, $SD = 1.62$) and improved to High Numerate in post-test stage ($M = 6.35$, $SD = 1.52$). In terms of Ordering and Comparing of Numbers, the respondent

were Numerate ($M= 6.35$, $SD = 1.52$) in pre-test stage and developed to High Numerate ($M= 5.61$, $SD = 1.49$) in post-test stage. Furthermore, the respondents level of numeracy were Numerate during the pre-test stage in Performing Operations on Numbers ($M = 5.17$, $SD = 1.88$) and enhanced to Highly Numerate in post-test stage ($M = 6.08$, $SD = 1.42$). On the other hand, the respondents were Numerate ($M= 4.68$, $SD = 1.78$) in Problem Solving and Number Sense before using the EASY MATH intervention material and remained Numerate ($M= 5.43$, $SD = 1.54$) after using the intervention material. Moreover, in Analyzing Patterns and Graphs the respondents were Highly Numerate ($M = 5.91$, $SD = 2.04$) in the pre-test stage and remained Highly Numerate ($M = 6.62$, $SD = 1.65$) in the post-test stage. It implied that the level of numeracy skills of Grade 10 students improved from Numerate to Highly Numerate after using the EASY MATH intervention material.

Table 8 Level of Numeracy Skills of Grade 10 Students on the Pre-Test and Post-Test per Category

| | | Lowest Score | Highest Score | Mean | SD | Remarks |
|-----------------------------------|-----------|--------------|---------------|------|------|-----------------|
| Reading/recognizing numbers | Pre-test | 1 | 8 | 4.61 | 1.62 | Numerate |
| | Post-test | 3 | 8 | 6.35 | 1.52 | Highly Numerate |
| Ordering and comparing of numbers | Pre-test | 0 | 8 | 4.62 | 1.73 | Numerate |
| | Post-test | 2 | 8 | 5.61 | 1.49 | Highly Numerate |
| Performing operations on numbers. | Pre-test | 0 | 8 | 5.17 | 1.88 | Numerate |
| | Post-test | 2 | 8 | 6.08 | 1.42 | Highly Numerate |
| Problem solving and number sense | Pre-test | 0 | 8 | 4.68 | 1.78 | Numerate |
| | Post-test | 2 | 8 | 5.43 | 1.54 | Numerate |
| Analyzing patterns and graphs | Pre-test | 0 | 8 | 5.91 | 2.04 | Highly Numerate |
| | Post-test | 0 | 8 | 6.62 | 1.65 | Highly Numerate |

Legend:

| Range | Remarks |
|-----------|-----------------|
| 7.50-8.00 | Advanced |
| 5.50-7.49 | Highly Numerate |
| 3.50-5.49 | Numerate |
| 1.50-3.49 | Low Numerate |
| 0.00-1.49 | Non-Numerate |

Table 9 illustrates the comparison of the pre-test and post-test results using the EASY MATH Intervention Material. From the table, the pre-test result had the mean percentage score (Lowest Score = 11, Highest Score = 38) of 24.99 and standard deviation 6.43 had the descriptive equivalent of Numerate. The post-test result had the mean percentage score (Lowest Score = 14, Highest Score = 40) of 30.10 and standard deviation 5.55 had the descriptive equivalent of Highly Numerate. It meant that the learners result increased after using the EASY MATH Intervention material.

Table 9 Level of Numeracy Skills of Grade 10 Students on the Pre-Test and Post-Test

| | Lowest Score | Highest Score | Mean | SD | Remarks |
|-----------|--------------|---------------|-------|------|-----------------|
| Pre-Test | 11 | 38 | 24.99 | 6.43 | Numerate |
| Post-Test | 14 | 40 | 30.10 | 5.55 | Highly Numerate |

Legend:**Range****34.50-40.00****29.50-34.49****19.50-29.49****9.50-19.49****0.00-9.49****Remarks****Advanced****Highly Numerate****Numerate****Low Numerate****Non-Numerate****Table 10 Difference between Pre-test and Post-test Mean scores of Students using EASY MATH Intervention Material by Category**

| | | Mean | Mean Difference | T | P value | Analysis |
|-----------------------------------|-----------|--------|-----------------|--------|---------|-------------|
| Reading/recognizing numbers | Pre-test | 6.3545 | 1.74545 | 12.579 | 0.000 | Significant |
| | Post-test | 4.6091 | | | | |
| Ordering and comparing of numbers | Pre-test | 5.6182 | 1.00000 | 7.782 | 0.000 | Significant |
| | Post-test | 4.6182 | | | | |
| Performing operations on numbers. | Pre-test | 6.0818 | 0.90909 | 6.548 | 0.000 | Significant |
| | Post-test | 5.1727 | | | | |
| Problem solving and number sense | Pre-test | 5.4273 | 0.74545 | 4.997 | 0.000 | Significant |
| | Post-test | 4.6818 | | | | |
| Analyzing patterns and graphs | Pre-test | 6.6182 | 0.70909 | 4.827 | 0.000 | Significant |
| | Post-test | 5.9091 | | | | |

*at 0.5 level of significance

Table 10 shows the computed t-value of 12.579 in Reading /Recognizing Numbers was greater than the critical t-value of 1.6557 and supported with p-value of 0.000. This could be inferred that there was an increase in the performance and the analysis was Significant. In relation with Ordering and Comparing of Numbers, the computed t-value of 7.782 was greater than the critical t-value of 1.6557 and supported with p-value of 0.000. It implied that there was an improvement in the performance and the analysis was Significant. Performing Operations on Numbers got the computed t-value of 6.548 which was greater than the critical t-value of 1.6557 and supported with p-value of 0.000 and the analysis was Significant. The computed t-value 4.997 in Problem Solving and Number Sense was greater than the critical t-value of 1.6557 and supported with p-value of 0.000. It inferred that there was an improvement in the performance and the analysis was Significant. In relation with Analyzing Patterns and Graphs, the computed t-value of 4.827 was greater than the critical t-value of 1.6557 and supported with p-value of 0.00. It implied that there was an increase in performance and the analysis was Significant.

Table 11 Difference between Pre-test and Post-test Mean scores of Students using EASY MATH Intervention Material

| | | Mean | Mean Difference | T | P value | Analysis |
|---------------------------------|-----------|-------|-----------------|--------|---------|-------------|
| EASY MATH Intervention Material | Pre-Test | 24.99 | 5.11 | 18.049 | 0.000 | Significant |
| | Post-Test | 30.10 | | | | |

As reflected in table 11, the computed t-value of 18.049 was greater than the critical t-value of 1.6557 and supported with p-value of 0.0000. it could be inferred that there was an increase in the performance and the analysis was Significant.

Based on the data, it was shown that there was a significant difference between pre-test and post-test mean scores of students using EASY MATH Intervention material at 0.05 level of significance. It showed that the null hypothesis stating that “There is no significant difference between pre-test and post-test mean scores of students using EASY MATH Intervention material” was rejected, it can be inferred that there is “significant” difference between them.

CONCLUSION

The following were conclusions derived from the data and results of the study presented, analyzed, and interpreted: The EASY MATH Intervention Material had very effective contents, objectives, topics, and activities; the EASY MATH Intervention Material had very useful, suited and reliable. The level of numeracy skills of the Grade 10 students improved from Numerate to Highly Numerate. The students showed improved achievement after using EASY MATH Intervention Material; and the EASY MATH Intervention material was an effective tool in improving the numeracy skills of Grade 10 students. The null hypothesis stating that “There is no significant difference between pre-test and post-test mean scores of students using EASY MATH Intervention material” was rejected, it can be inferred that there is “significant” difference between them.

RECOMMENDATIONS

There may be a lot of changes when it comes in teaching Mathematics specifically in dealing with the numeracy skills of the students that they needed to understand higher level of Mathematics lesson. Based on the conclusions above, it is recommended that:

1. For the School Administrators, they may provide allotted budget to produce this EASY MATH Intervention material.
2. School Administrators may conduct seminars to assist teachers in making this kind of intervention materials suited for each type of learners.
3. Teachers may adopt this EASY MATH intervention material in their remedial and enhancement classes. However, in relation with the result, they may focus or emphasize the problem solving and number sense.
4. For students' better academic performance, EASY MATH Intervention material can be used as a reference and additional learning activity for those who are having difficulty with basic math. By using this, students could able to review and master the basic concepts and skills in mathematics that are pre-requisite of the higher level mathematics lesson.

5. For the Future Researcher, this study may help to improve the production of learning materials focused on the numeracy skills of students. Moreover, for the next researcher who will study this kind of research, it is necessary to schedule separate session to fully monitor the answers and responses of the learners.

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