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Assessment of Least Learned Competency in Mathematics Among Grade 12 Students of Monkayo National High School

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***Abstract*—** This study assesses the least learned competencies in Mathematics among Grade 12 students of Monkayo National High School, focusing on Functions, Business Mathematics, and Logic. Using a quasi-experimental research design, a self-learning module was implemented as an intervention to improve students' mathematical competencies. Pretest and posttest results revealed that students initially demonstrated very low mastery in all three areas, with Logic being the most challenging. However, significant improvements were observed after the intervention, particularly in Functions, where students achieved mastery. Business Mathematics and Logic also showed notable progress, although they remained in the near-mastery level. A paired t-test analysis confirmed a statistically significant difference between pretest and posttest scores, validating the effectiveness of the self-learning module. The study highlights the need for continued instructional reinforcement and targeted teaching strategies to address persistent learning gaps and enhance student proficiency in Mathematics. Recommendations for future research and curriculum development are discussed.

***Keywords*—** least learned competencies, quasi-experimental study, self-learning module, t-test analysis.

INTRODUCTION

The Problem and Its Background

Mathematics is a basic subject for developing problem-solving and logical thinking. Although many students find it tough to grasp the essential concepts, particularly in challenging areas like General Mathematics. As students encounter more complex math ideas, their ability to understand and apply these concepts significantly impacts their academic performance. This challenge becomes especially pronounced in senior high school, where a strong math foundation is typically required for success in various career paths. According to Reid O'Connor and Norton (2024), students' difficulties in mastering advanced math skills might stem from the fact that these topics aren't always explored deeply enough in teaching, highlighting a possible gap in how math is taught and learned.

The global arena, the least learned competency in mathematics, somehow relates to an unending decrease in mathematical proficiency, especially in international assessments like the Trends in International Mathematics and Science Study (TIMSS). A study conducted by Chant et al. (2021) focusing on secondary schools in Tavua and Ba within

Western Fiji found that students struggle with math mainly due to their negative feelings about the subject, a curriculum that isn't very effective, and inadequate teaching during their earlier school years. The researchers also pointed out that these math challenges are further complicated by a lack of technology in classrooms and teaching methods that don't effectively show how math applies to real-life situations.

In the Philippines, painfully low levels of numeracy are faced by Filipino students, resulting in diminished capabilities to employ mathematics in any area of their lives. A vast majority of 15-year-olds in the OECD (2019) would not even have level 1 as a minimum mathematical proficiency--thereby severely jeopardizing their future chances of learning and employment opportunities. To add to this, there are several issues arising from the nature of the subject, such as wrong methods employed and an inability to engage the students in any meaningful way, contributing to gaps in the students' prior knowledge. Interventions and open assessments only deal with the least learned competencies; hence, they serve a significant purpose in bridging children across these gaps in proficiency in mathematics that would be useful in their lifetime educational encounters (Arpilleda et al., 2023).

Moreover, most students have problems mainly in solving problems, reasoning, and applying mathematical concepts to real life. Janeo et al. (2024) from the University of the Cordilleras, Baguio City, in the Philippines, on the least learned competencies in

Mathematics. Bad teaching strategies and limitations to remediation aggravate these causes. Hence, the situation calls for urgent development of assessment and intervention programs that will bridge the gaps toward improving learner competency in Mathematics.

This study is designed to identify the competencies that have been less well-learned, particularly those that may involve highly analytical topics, which were divided into three parts in the General Mathematics subject. The difficulty students encounter with these competencies may be due to the complexity of the topics or the possibility that they were not adequately covered in the curriculum. A gap is being highlighted, which indicates that students have not mastered the competencies as stipulated by the Department of Education. This study, therefore, seeks to address this gap by assessing the least learned competencies in mathematics among Grade 12 students of Monkayo NHS, to identify targeted interventions that can improve both teaching methods and student outcomes.

Theoretical Framework

Piaget's Constructivist learning theory from 1964 says that students learn by doing things, and being around other people is what the study is based on. If education passed with some of the least learned competencies of mathematics, a call for meaningful engagement with mathematical concepts arises; this is when students will try to enact their cognitive engagement with mathematics and here where fore they lay their siege from adversities of the lack of prior experiences stopping their construction of these other complex ideas. Formally, once the least learned competencies have been delineated, teachers may start to create interventions for active learning that could allow the student to link the new understanding with prior knowledge. This permits the filling of specific gaps in individual students' understanding while attempting to also contributing to improving deep conceptual understanding in mathematics and thus improving general success for the students.

This study is adopting Bandura's Self-Efficacy Theory (1997, which accentuates the importance of self-belief in determining one's academic destiny. Bandura asserts that students who possess high self-efficacy.

Statement of the Problem

The study aims to determine the least learned competency of Grade 12 students in Mathematics of Monkayo National High School- Senior High, Monkayo, Davao De Oro, for the school year 2024 – 2025. Specifically, this study sought to answer the following questions:

1. What are the least learned competencies in General Mathematics among students?
2. What is the academic achievement of students during the pretest scores?
3. What is the academic achievement of students during the posttest scores?
4. Is there a significant difference between the pretest and posttest scores in the least learned competencies of the students in General Mathematics?

RESEARCH METHODOLOGY

Research Design

This research applies the quantitative design for data collection. As defined by Ahmed et al. (2024), quantitative research is a systematic study of phenomena using numerical data intended to describe relationships, test hypotheses, and conclude. This involves the application of a single-group quasi-experiment in the study, where there would be only an experimental group to be granted an intervention, and no control group would be compared. This rationale is reiterated by Karpen (2019), who notes that such an approach would be appropriate in educational research where random assignment is unfeasible. Randomized control trials make stronger claims. This design gives useful insights into the effectiveness of the intervention through comparing pre-and post-test scores within the same group.

Research Locale

This study was conducted in Monkayo, where it was first established as a municipal district in 1917. It became an official municipality on September 4, 1954, by Presidential Executive Order No. 65, signed by President Ramon Magsaysay of the Philippines. The town was primarily agricultural, with large rice and banana plantations. The municipality houses the gold-rich barangay of Mt. Diwata, more popularly known as Diwalwal, a 1,000-meter-high stretch famous for its gold ore deposits. The municipality also includes 21 rural barangays, and within these areas, 15 secondary high schools serve the community.

As an educational center in Monkayo, the research will take place at Monkayo National High School, focusing

on the Senior High School Department. This public school, part of the Davao de Oro Division, is known as the "Breeding Ground of Achievers" and is in Barangay Poblacion, Monkayo, in the northern rural areas of Davao de Oro.

The school had a total population of 1,604 high school students which was among the largest of all the barangay schools in the entire municipality of Monkayo. The faculty was composed of 213 teachers under one school head, the School Principal. The school itself is located at the center of Barangay Poblacion, Monkayo, Davao de Oro, accessible by secondary roads and surrounded mainly by residential houses.

Respondents of the Study

The study used a non-probability sampling in selecting the respondents, specifically, purposive sampling, as the selection of respondents was based on the purpose of targeting Grade 12 students who exhibited learning gaps in Mathematics competencies. The whole grade 12 Aurora class, which consists of 30 students, was chosen as the experimental group that employs the use of the Self-Learning Module as an intervention material. The Aurora class would be subjected to quantitative quasi-experimental research focusing on the least learned competencies in General Mathematics, since they find the topic difficult.

Research Instrument

The primary tool used for data collection in this study is a researcher-made test, designed to assess the least learned competencies in General Mathematics among Grade 12 students of Monkayo National High School. This test was aligned with the Department of Education's K to 12 curriculum standards and focuses on the specific competencies identified within the General Mathematics subject.

The test consists of 40 multiple-choice questions covering key topics such as functions, logic, and business math, which are the focus areas of General Mathematics. It is divided into sections that reflect the three main divisions of the subject to accurately determine the areas where students show the least proficiency.

The test scores would be used to identify the least learned competencies among the students, which would serve as the basis for developing Self-Learning Module. Additionally, another test consists of 30 multiple-choice questions which served as the pretest and postest covering key topics of identified highest – rank competency gap of functions, logic, and business math. It is divided into sections that reflect specific subtopics, difficulty levels, and real-life applications to ensure comprehensive assessment and alignment with the curriculum objectives. The proficiency level of the students was determined based on the norms prescribed by the Department of Education.

Validation of the Research Instruments

The construction of the research instruments was carefully planned which included the presentation of the Table of Specification (TOS) to ensure proper distribution of the items. The drafts of the instruments were presented to the researcher's peers and authorities for comments and suggestions.

The preliminary set of pretest questionnaires was tested using a group of 30 students, not part of the experimental group, for item analysis. Reliability and validity were also checked using appropriate statistical formulas using the Kuder–Richardson Formula 20. The result of the reliability of the instrument used in the study has a reliability index of 0.45, interpreted as moderate or substantial reliability. Thus, the researcher's instrument was considered reliable for administration.

Research Procedure

The researcher began by obtaining permission from the Davao de Oro Schools Division and the principal of Monkayo National High School-Senior High to conduct the study. The diagnostic test with 60 multiple-choice questions was given to 263 Grade 12 students to assess the least learned part of competencies under the subjects of functions, business math, and logic. These data were used in the development of a contextualized Self-Learning Module (SLM) that was subjected to expert evaluation on the matters of content, grammar, and relevance. Pre-test then treatment through SLM was given to the experimental group followed by a post-test. Gathered, organized, and processed data from the tests were eventually forwarded to the statistician for analysis which leads to results and recommendations.

Statistical Treatment of Data

To handle the data statistically so as to acquire an authentic and reliable research finding, then came this explosive study with a number of statistical methods being projected for data effective analysis and interpretation. The mean was said to have been

computed to get the overall average academic performance in mathematics of Grade 12 students, which also indicates their overall achievement. The frequency and percentage distribution showed how often each of the least learned competencies came and how many students experienced difficulty with that particular competency, establishing the most common learning problems. The last statistical method used was the t-test, which compared the means of two groups to determine the effectiveness of the Self-Learning Module in addressing the least learned competencies in various topics of the General Mathematics subject.

Ethical Consideration

This quantitative study explored various ethical issues regarding its methodology, mainly.

III. PRESENTATION, ANALYSIS, AND INTERPRETATION OF DATA RESULTS

Table 1. *Least Learned Competency of Grade 12 Students in General Mathematics*

Least Learned Competencies	Number of Items	Frequency of Error	%	Rank
Determines the: (a) intercepts, (b) zeroes; and (c) Asymptotes of rational functions	8	128	49	1
Establishes the validity and falsity of real-life arguments using logical propositions, syllogisms, and fallacies	34	127	48	2.5
Computes interest, maturity value, future value, and present value in a simple interest and compound interest environment	3	127	48	2.5
Calculates the fair market value of a cash flow stream that includes an annuity	9	126	48	4
Analyzes the different market indices for stocks and bonds	34	121	46	5

The table 1 revealed that the least learned competencies in General Mathematics among Grade 12 students are determining the (a) intercepts, (b) zeroes, and (c) asymptotes of rational functions.

This item ranks number 1, which has the highest frequency of errors of 128 out of 263, or 49%. This competency involves analysing the behaviour of rational functions and identifying their critical point pertaining to the protection of participants and

compliance with research ethics. Participation was voluntary, and informed consent included a description of the study's objectives, procedures, risks, and benefits.

The protection of privacy and confidentiality was addressed through anonymized data and secure storage. Recruitment was equitable and targeted Grade 12 students from Monkayo National High School based on objective criteria.

Moreover, although no direct benefits were given to participants, this research was conducted to teach them better ways to improve their academic performance and their teachers' instructional approaches. In order to maintain ethical integrity, appropriate acknowledgment was given, originality was checked, and an explanation regarding possible conflicts of interest was provided.

Previous authorities gave permission before the undertaking of the study, necessarily ensuring compliance with institutional and ethical requirements and appropriately accrediting all contributors.

III. PRESENTATION, ANALYSIS, AND INTERPRETATION OF DATA RESULTS

This is followed by the competency “establishes the validity and falsity of real-life arguments using logical propositions, syllogisms, and fallacies” and “computes interest, maturity value, future value, and present value in simple interest and compound interest environment,” which ranks second with 127 errors, accounting for 48%. In fourth place is “calculates the fair market value of a cash flow stream that includes an annuity”, with 126 errors and a 48% error rate.

The fifth rank is “analyzes the different market indices for stocks and bonds”, with 121 errors and a 46% error rate.

Table 2. *Achievement Level of Pretest Scores of the Students*

Topics	**Mean**	**Mean Percentage Score**	**Descriptive Equivalent**
Determines the:(a) intercepts,(b) zeroes; and (c) Asymptotes of rational functions	1.17	19.44%	Low Mastery
Establishes the validity and falsity of real-life arguments using logical propositions, syllogisms, and fallacies.	1.1	18.33%	Low Mastery
Computes interest, maturity value, future value, and present value in a simple interest and compound interest environment	1.13	18.89%	Low Mastery
Calculates the fair market value of a cash flow stream that includes an annuity	1.2	20%	Low Mastery
Analyzes the different market indices for stocks and bonds	1.07	17.78%	Low Mastery
Overall Mean	5.67	18.89%	Low Mastery

The data in the present table 2 indicates the achievement levels of the pretest scores of Grade 12 students in Mathematics concerning the performance shown on different topics. The mean score of 5.67 corresponds to the mean percentage score of 18.89%, which belongs to the Low Mastery category. The highest mean percentage score is 20% in the fair market value calculations of a cash flow stream with an annuity, with a mean score of 1.2. This implies that students have a relatively better familiarity with this topic as compared to the others, though still at a low mastery level. The next highest score is 19.44% in determining intercepts, zeroes, and asymptotes of rational functions; the mean is 1.17, indicating slight competence but still a low mastery level.

Table 3. *Achievement Level of Posttest Scores of the Students*

Topics	**Mean**	**Mean Percentage Score**	**Descriptive Equivalent**
Determines the:(a) intercepts,(b) zeroes; and (c) Asymptotes of rational functions	23.17	77.22%	Moving Towards Mastery
Establishes the validity and falsity of real-life arguments using logical propositions, syllogisms, and fallacies.	23	76.67%	Moving Towards Mastery
Computes interest, maturity value, future value, and present value in a simple interest and compound interest environment	22.17	73.89%	Moving Towards Mastery
Calculates the fair market value of a cash flow stream that includes an annuity	22.83	76.11%	Moving Towards Mastery
Analyzes the different market indices for stocks and bonds	21.83	72.78%	Moving Towards Mastery
Overall Mean	22.60	75.33%	Moving Towards Mastery

Overall, the consistently low scores across all topics reflect a significant need for targeted interventions to improve students' competencies in Mathematics.

The topic on computing interest, maturity value, future value, and present value in simple and compound interest environments, followed by a mean percentage score of 18.89% and a mean of 1.13, showing similar difficulty levels. Meanwhile, establishing the validity and falsity of real-life arguments using logical propositions, syllogisms, and fallacies had a slightly lower score of 18.33% with a mean of 1.1, suggesting students' struggles with logical reasoning and argument evaluation. Lastly, the lowest performance was recorded in analyzing different market indices for stocks and bonds, with a mean percentage score of 17.78% and a mean of 1.07, indicating the most challenging topic for students.

The table 3 shows an overall mean score of 22.60 in their posttest score, with a corresponding mean Percentage Score of 75.33%, which is categorized as Moving towards Mastery. This indicates an improvement in students' understanding of the assessed mathematical competencies.

Among the five least learned competencies in General Mathematics, the competency on analyzing intercepts, zeroes, and asymptotes of rational functions yielded the highest mean score of 23.17 or 77.22%, indicating that students are moving towards mastery in this area. This suggests notable progress in understanding the key features of rational functions. The second highest score was in establishing the validity and falsity of real-life arguments using logical propositions, syllogisms, and fallacies, with a mean score of 23 or 76.67%, reflecting improved critical thinking and reasoning abilities among the students.

The third competency, calculating the fair market value of a cash flow stream that includes an annuity, had a mean score of 22.83 or 76.11%, indicating enhanced comprehension of financial computations. This was followed by computing interest, maturity value, future value, and present value in both simple and compound interest contexts, which had a mean score of 22.17 or 73.89%, showing moderate improvement in financial problem-solving. The lowest score was in analyzing different market indices for stocks and bonds, with a mean score of 21.83 or 72.78%, suggesting that students still struggle with interpreting stock and bond market data, though they are gradually improving.

Overall, the posttest results reflect positive gains in students' mathematical competencies, particularly in rational functions and logic, highlighting the effectiveness of interventions, but further reinforcement is needed in financial literacy and market analysis concepts.

Difference between the mean scores in the pretest and posttest of the students.

	Mean	t-Value	P-Value	Decision
PRETEST	5.66	-27.351	.000	Significant
POSTTEST	22.69			

The table 5 shows the comparison of the achievements of the learners who belong to the experimental group. A paired t-test was used to determine if there is a significant difference between the pretest and posttest of the experimental group. The averages were 5.66 for pretest and increased to 22.69 for posttest, marking the improvement in performance of the respondents. The t-value of -27.351 and the p-value of 0.000 confirm that this improvement is statistically significant.

This indicates that the intervention implemented has a positive and significant effect on the performance of students. The very low p-value gives very strong evidence that the observed differences between pretest and posttest scores are unlikely to be due to mere chance and attest to the fact that the intervention was, indeed, effective in bringing about improved learning outcomes. Therefore, the null hypothesis is rejected and proves that there is a significant difference between the achievements of the students in the experimental group on the use Self-Learning Module in teaching Mathematics. The data suggests that the intervention or treatment administered has a positive effect on their performance.

IV. DISCUSSIONS, CONCLUSION AND RECOMMENDATION

Discussions

Least Learned Competency of the Students. The results revealed that the least learned competencies in General Mathematics are determining the (a) intercepts, (b) zeroes; and (c) asymptotes of rational functions; representing the logarithmic function through its: (a) table, (b) graph, and (c) equation; computing simple interest and compound interest on interest, maturity value, future value and present values; calculating the fair market value for a cash flow stream involving an annuity; and analyzing various indices of the stock market and bond. This means students appear to be struggling significantly in understanding and applying very crucial concepts in mathematics, especially in the areas of rational functions, logarithmic representation, and financial computations. Such difficulties indicate that there is a need for specific instructional strategies and intervention programs designed to improve their understanding and application skills in those areas.

Students have great difficulty in learning rational functions because, in their study, Sebsibe et al. (2019) argue that they are complicated since they require both algebraic manipulation and graphical interpretation. Furthermore, some studies suggest that logarithmic functions are also tough due to the necessity for students to comprehend exponential relationships and inverse functions (Campo-Meneses & García-García, 2023). On the other hand, studies appeared to take the point of view that financial mathematics was a challenging subject for students, particularly because of their abstract formula applications needing real-world contextualizations (Yang, 2024). Therefore, considering some of these difficulties, it is possible to remedy the gaps in learning and strengthen students' mathematical competencies through visual aids related to life, interactive teaching, and a combination of approaches.

Achievement Level of Pretest Scores of the Students. Even the results of this study showed that students have a generally low degree of mastery in key areas of mathematics, which implies that they are not adequately prepared beforehand with an initial understanding. Slightly better performance was displayed by students in tasks dealing with fair market value and rational functions; this could be attributed to the previous intervention in lower grades or the more concrete manner in which the concepts were taught in class. Conversely, students were challenged in more abstract or less familiar areas like market analysis and logical argument evaluation. This finding corroborates previous studies that have established that students tend to perform poorly in mathematics when less contextualized or introduced without sufficient scaffolding (Dy & Lapinid, 2023).

The results show that the performance was poor, signifying a need for targeted and specific interventions that could foster the teaching-learning process in mathematics. Such interventions to bridge these gaps would entail students applying strategies aimed at promoting understanding through real-life applications in conjunction with cooperative learning of some abstract concepts. Teaching strategies should facilitate active student engagement to assist with the understanding of more complex topics. Rojas and Benakli (2020) further remark that this involves reinforcing mathematical literacy within learnt-to-teach processes and shedding light on it through rationale and problem solving. Therefore, the "outcomes" of this study are a very sound basis for designing better-suited imparting aids and strategies toward achieving meaningful outcomes for the learners according to their learning of mathematics.

Proficiency Level of Posttest Scores of the Students. It was observed that post-treatment had a significant improvement among the Grade 12 students in developing their mathematical skills due to exposure to the intervention module. Although improvement was noticed in almost all areas of assessment, the students almost achieved mastery and needed to be reinforced through instruction. Among the measured skills, the greatest improvement gained by students was that of finding the intercepts, zeros, and asymptotes of rational functions. This may indicate that the strategies used in the intervention were able to sharpen the analytical as well as identification skills in critical attributes related to rational functions. Overall, it reflects that the intervention has positively affected it, though it needs reinforcement to close any possible gap. This report contains posttest findings that Grade 12 acquired very significantly enhanced mathematical skills after they had undergone a particular intervention module. Although most of the results indicated a good development across most areas of assessment, students are almost at mastery level but still require instructional reinforcement. Of the skills measured, the maximum increase attained by students was in finding the intercepts, zeros, and asymptotes of rational functions.

The results now stress that the instruction needs to be fortified by other techniques, as also observed by Wedastuti et al. (2022) with intervention programs like Learning modules that call for immediate short-term outcome results; however, ongoing practice and real-field scenario tasks with scaffolding would further uphold the development toward competency in these skills. They much more emphasized the individual approach with well-defined assessment and adaptive learning methods targeting diverse levels of the comprehension of students to render a meaningful learning experience.

Achievement of the Students between Pretest and Posttest scores of the Experimental Group. Statistical pair t-test analysis showed that the performance of the experimental group from pre- post-test was significantly boosted due to the increase of mean scores. The computed t-value and the computed p-value show that the difference between the two tests is statistically significant affirming the efficacy of the intervention. This leads to the rejection of the null hypothesis and acceptance of the postulate that there is a significant difference existing between the achievements of students in the experimental group under Self-Learning Module teaching of Mathematics. This finding supports Cabral-Gouveia et al. (2023) in concluding that well-targeted interventions and evidence-based strategies significantly affect student learning. Similarly, Cañeda et al. (2024) would show that instructional materials intending at addressing specific learning gaps enhance students' understanding and retention.

In addition, the result added evidence for the fact that interventions aimed at a particular target may greatly enhance student performance in an educational context. Self-Learning Module is greatly effective in promoting academic achievement. Gano et al. (2023) presented that students instructed using the Self-Learning Module gained a considerable advantage in their performance in learning to solve complex mathematical problems. Furthermore, students exposed to the Self-Learning Module performed moderately well, indicating an advantage in their learning, particularly in understanding and solving mathematical problems (Edig, 2023).

Conclusion

The study results state that the areas where learners scored the least are determining intercepts, zeroes, and asymptotes of rational functions; representing logarithmic functions through tables, graphs, and equations; computing simple and compound interest, including maturity, future, and present values; fair market value of annuities; and analysis of stock and bond market indices. These were some of the most difficult areas for students, which would indicate their lack of mastery of the essential mathematical concepts that require both abstract reasoning and a real-life situation.

In conclusion, the Self-Learning Module (SLM) played a significant role in the enhancement of the students' performance in General Mathematics. The increased scoring from the pretest to the posttest for the experimental group was found to be statistically significant, thus confirming that the SLM positively impacted students' understanding and problem-solving abilities. Hence, it can be said that student-centered, modular-type instruction that is aligned with the students' learning necessities would yield much better results, especially for the more complex and abstract topic areas of mathematics.

Recommendations

In light of the findings and conclusions, the following recommendations were offered:

1. Mathematics teachers adopt the validated K to 12-aligned Self-Learning Module as supplementary learning materials for Grade 11 students. These materials should focus on enhancing learners' competencies in the least learned areas, specifically Functions, Business Mathematics, and Logic. Teachers should contextualize lessons using real-life problems that align with students' experiences and understanding. By all means, teachers should be motivated to integrate technology into their instruction and to create individualized instructional materials suited to their students' needs and interests. Instructional means of intervention should also be creatively employed to bridge the gaps in learning.
2. To allow for the successful acquisition of all the competencies embedded therein, the teachers must plan their lessons by the competencies as outlined in the Curriculum Guide. Further, it is incumbent upon them to encourage their learners to use Self-Learning materials geared toward developing mathematical skills and overall competency. When students are put in an environment where they feel

at ease and comfortable, the realization of Mathematics may be better facilitated.

3. The school administrations should provide the Mathematics teachers with opportunities for professional growth through seminar/workshops that are geared toward the improvement of strategies for teaching Mathematics 11. Such actions would consolidate the qualitative stack-free assurance that all self-learning materials provided through the Learning Resource Management and Development System (LRMDS) are of an acceptable quality. The use of academic support will also augment student performance in Mathematics.
4. In support of the development and quality assurance of Self-Learning Materials per K to 12 curriculum standards, DepEd must further assist in the development and quality assurance. The DepEd should support further studies on the E-Learning books' usefulness in remedial classes to determine their effectiveness in enhancing Mathematics skills.
5. As a way of innovating future research directions, it would be good to start looking into other methods of teaching and instructional materials for addressing least learned competencies in Mathematics. For example, technology-based paradigms with real-life applications would be excellent lessons for improving student learning outcomes.

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