

Least Learned Competencies in Mathematics 8: Basis in Crafting Strategic Intervention Materials

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A B S T R A C T

This descriptive research study was conducted to determine and analyze the least learned competencies in Mathematics 8 from First Quarter to Fourth Quarter in Naguilian District, Division of La Union as basis for crafting K to 12 aligned Strategic Intervention Materials (SIMs). It also looked into the problems encountered in teaching Mathematics 8. Grade 9 learners and teachers were the respondents; the learners' participants were selected through Slovin's formula. In treating the gathered data mean, percentages, frequencies, and ranking were used. It found that there were eight (8) least learned competencies in all the quarters (first, second, third, and fourth) and the level of performance was fairly satisfactory. It was concluded that the least learned competencies were those that require higher order thinking skills. It was recommended that the crafted K to 12 aligned Strategic Intervention Material should be adopted by high school teachers in Naguilian District and other high school teachers in the province as an additional learning material to address the weaknesses of the learners along the identified least learned competencies in Mathematics 8.

A B S T R A K

Studi penelitian deskriptif ini dilakukan untuk mengetahui dan menganalisis *least learned competencies* dalam Matematika 8 dari Kuartal Pertama hingga Kuartal Keempat di Distrik Naguilian, Divisi La Union sebagai dasar penyusunan K hingga 12 *Strategic Intervention Materials* (SIMs) yang selaras. Hal ini juga melihat permasalahan yang dihadapi dalam pengajaran Matematika 8. Siswa dan guru kelas 9 menjadi responden; peserta pembelajar dipilih melalui rumus Slovin. Dalam menangani rata-rata data yang dikumpulkan, persentase, frekuensi, dan peringkat digunakan. Ditemukan bahwa terdapat delapan (8) *least learned competencies* di seluruh triwulan (pertama, kedua, ketiga, dan keempat) dan tingkat kinerjanya cukup memuaskan. Disimpulkan bahwa *least learned competencies* adalah kompetensi yang memerlukan keterampilan berpikir tingkat tinggi. Direkomendasikan agar *Strategic Intervention Materials* yang disusun K sampai 12 harus diadopsi oleh guru sekolah menengah atas di Distrik Naguilian dan guru sekolah menengah lainnya di provinsi tersebut sebagai bahan pembelajaran tambahan untuk mengatasi kelemahan peserta didik sepanjang *least learned competencies* yang teridentifikasi dalam Matematika 8.

1. Introduction

a. Research Background

Education is a means for man to survive the complexities of this ever-changing world. It is the best thing a person can have to guarantee that he will live a prosperous life; It is indeed essential in preparing for one's bright future. It is one of the basic needs of an individual. It is just like a ladder where one must take the first step before going to succeeding steps. Education also produces well cultured wise man. It is often said that the children of today are the citizens of tomorrow. If children today study hard to become good students, then surely, they will become good citizens in the future.

The 21st century's goal in education is the mastery of information, embedded in knowledge and understanding and the advanced use of technology in

the society. It allows students to master the learning process, to engage with their curriculum, own and direct their own and individual and flexible ways. It provides complex learning environments for students which incorporate authentic learning, assessing, and personal development. It will allow learners to solve the types of the complex problem they will face in real life [1].

In today's world, one of the areas of education that helps people to cope with their different problems is Mathematics. It demands a strong foundation in this core subject since it is considered as one of the gateways for every nation's progress. In the K to 12 curriculums, Mathematics is one subject that pervades life at any age on many circumstances. Thus, its value goes beyond the classroom and the school. Mathematics as a school subject, therefore, must be learned comprehensively and with much depth. The

twin goals in the basic education levels, K-10 are critical thinking and problem solving [2].

Mathematics is one of the major subjects which cannot be taught effectively without the use of appropriate instructional materials. Thus, it is required that teachers must ensure the active participation of all the learners. Learning by doing is emphasized in the curriculum so the students should be able to understand and connect the importance of the subject matter to life and community at large.

Mathematical literacy therefore involves more than executing mathematical procedures and possessions of basic knowledge that would allow a citizen to get by. Mathematical literacy is mathematical knowledge, methods, and processes applied in various contexts in insightful and reflective ways. According to de Lange, mathematical literacy is the overarching literacy that includes numeracy, quantitative literacy, and spatial literacy. Each of this type of literacy empowers the individual in making sense of and understanding aspects of the world and his/her experiences To be able to have mathematical literacy teachers should use appropriate intervention materials.

Intervention materials are important for teachers in the delivery of instruction to ensure that all students succeed in today's high stakes testing environment. Helping students require teachers to choose an appropriate time and strategy for the intervention. Without a systematic approach, this can be a challenge for teachers who have multiple need of help [3].

Some of the great challenges faced by educators today includes the shortage of unequal and insufficient distribution of materials and resources, lack of time for planning lessons, and evaluations, poorly defined learning objectives and lack of training in pedagogical approaches that teach scientific literacy and scientific thinking. In many countries, educational research is producing materials supported by government finance and there is a growing trend for synch materials to be freely available on the internet. This provides some surely that materials have been tried and tested and it is left to the reader to adopt them to their context. This adaption provides challenges for the math teacher education, which must prepare teachers to make such changes concepts are not in existence which results to students' continuous failure in mathematics [4].

In addition, teachers need to provide more effective and efficient learning environments and instructional and educational experiences to their students because there had been reported shortage of instructional materials at all level of education in the country particularly for the teaching and learning of Mathematics [5]. Furthermore, the approach of using improvised materials, like the SIM, in mathematics classrooms assists in proper introduction of new skills,

develop understanding as well as show the appropriate way of doing things [6].

Likewise, students taught with instructional materials performed better than those taught without instructional materials [7]. This shows that students learn and perform better when they are taught with instructional materials because the use of instructional materials gives the opportunity to see, feel, and touch the materials during teaching. Moreover, strategic intervention material (SIM) as those that deepen the students' skills in manipulation, thinking, understanding, and observing. It is a user-friendly instructional material that can be used inside the classroom or it can be given as take-home activity of the students [8].

Additionally, in the recently conducted PISA (Programmed for International Student Assessment 2019) the result where Philippines was placed last among the 79 participating countries and near last in science and mathematics, puts in even sharper focus our need to address quality basic education(sunstarpampangapressreader.com).

Likewise, the NAT (National Achievement Test) performance of the Fourth-Year high schools in Mathematics of the La Union Schools Division is moderately poor based on the results for the following school years were as follows: 2012-2013 (40.71%) and 2013-2014 (48.34%). In addition, the mean percentage scores of the students were likewise relatively low from DepEd Division of La Union Report on 2015.

Result of the National Achievement Test identifies Mathematics as one of the lowest performing subject areas for the past three years. It is apparent that in the secondary schools in La Union Schools Division particularly in Naguilian District the NAT (National Achievement Test) results are alarming especially among the public secondary schools which garnered the following mean in Mathematics: S.Y: 2015-2016, 35.67%: SY 2016-2017, 33.67%: SY 2017-2018, 45.89%, these results mean that they did not even meet the mastery level.

The low achievement rates of secondary schools are indicative of the low quality of basic education and can be attributed, among others, to the lack of proficient teachers who are primary source for secondary students in lieu of books and other learning material. There is a clear evidence that a teacher's ability and proficiency are the most influential determinants of students' performance [9].

In the Schools Division of La Union, the mandate is that after every quarter test examination, the teachers shall identify 3 least mastered learning competencies in each subject as a basis for crafting appropriate instructional material designed to enhance the identified least learned competencies. However, it was observed that teachers experience difficulty in crafting

and producing instructional materials suited for the identified least learned competencies, due to several reasons like lack of funds, lack of time, lack of idea on making instructional materials, and lack of support coming from the school.

Education's new normal will not just be about operating in an environment that secures the health of the students; nor will it be about completely transitioning the online modalities. Instead, it is about using technology to increase efficiency in areas with the capacity to do so, while empowering learners and communities to provide learning environment in which the student can grow. It is not to sacrifice quality but continue to provide equal opportunities, most especially to the marginalized and vulnerable sectors. It is not a one-size-fits-all solution, but one that is dependent on the needs of each learning community. [10]

It is with this situation that the researcher embarked to look into the solution of the Grade 8 learners to improve the identified least learned competencies so that the researcher herself can introduce a strategic intervention material that can help alleviate the different learning competencies in mathematics.

b. Literature Review

1) Least Mastered Competencies

A teacher should know the curriculum, subject and level and has the mastery in spiralizing the materials required for the strategies and proper implementation. A teacher is expected to be knowledgeable in the standards set by the department. There is studies that uses fourteen identified least mastered skills in Mathematics for Grade 7 and develop a Strategic Intervention Material to improve the least mastered competency in Mathematics for Grade 7 students [11]. There is an increase in the performance of students before and after using SIM.

Likewise with the study of Feliciano determine the effect of Strategic Intervention Materials as learning support for academically challenge learners. It showed that there was an increase in their academic performance. On the other the hand Salvejo, explored the learning approach adopted and investigate the effect of Strategic Intervention Material Based Instruction on the performance of students in High School Chemistry and utilized pretest and posttest design. Result of the study showed that the SIM BI was effective in terms of improving students' performance and learning approach. In addition to Torio, conducted a study about developing instructional, materials using Algebra as tool in problem solving with the main objective of determining its effectiveness. Results revealed that the instructional materials are effective in improving the performance of the students.

2) Level of Performance

All subjects are essential for learners and educators, but mathematics education serves a general purpose of school to develop human beings mentally, healthy and physically. It makes people creative and responsible [12]. Mathematics education enables learners to meet society demands for adequately qualified and flexible or pliable work force.

In a study where they found out that Grade 8 students have low performance in their achievement test particularly along algebra, which they claimed to be caused by poor retention of their lessons [13]. In addition, there is also study stating that the students have good performance in geometry because they recognize figures not only based on their appearance but also their properties [14]. They reason, analyze, and the use their critical thinking skills in given geometric tasks. Also, the study of another where she noted that students can easily solve problems in geometry when they understand the concepts involved when they are involved in activities provided [15]. They verify what are asked using the specific tools in Geometry by measuring and describing the relationships among the given angles.

c. Research Objective

This study determined the least mastered competencies of Grade 8 students in the Public Secondary National Schools of Naguilian Districtas basis in crafting SIMs in Mathematics 8. Specifically, it sought to answer the following questions:

- 1) What are the least mastered competencies of school year 2018- 2019in all quarter examination of Grade 8 students?
- 2) What is the level of performance of Grade 8 learners based on the identified least learned competencies?
- 3) What validated K to 12 aligned strategic intervention materials Mathematics 8 can be proposed?

2. Research Method

The researcher utilized the descriptive research method. According to another study, descriptive research is defined as collections of quantitative information that can be tabulated in numerical form such as scores on a test [16]. Also, descriptive research involves gathering, organizing, tabulating, depicting and analyzing data that describe events about present conditions, processes or trends. This method is appropriate in this study because the researcher wants to assess the least learned competencies of the Grade 8 learners in Naguilian District.

The study utilized quantitative approach. Quantitative approach emphasizes objective measurements and the statistical, mathematical, or numerical analysis of data collected through poles, questionnaires, and surveys or

by manipulating pre-existing statistical data using computational techniques. It focuses on gathering numerical data and generalizing it across groups to explain particular phenomena [16]. This approach was used for the study because numerical data such as number of students with correct answers were counted and considered in the data analysis. Further, the result of the quarter examination was analyzed to determine the least learned competencies in every quarter test.

The study was conducted in the Public Secondary Schools of Naguilian District, Division of La Union during the School Year 2019-2020. The respondents of the study were 280 grade 9 students enrolled for the School Year 2019-2020. They were the respondents because they were the ones who took up and finished all the lessons in Mathematics 8. Slovin’s Formula was used to identify the number of respondents. To obtain the necessary data for the study, the researcher used assessment test consisting of 50 items. The tests items were lifted from the different least learned competencies in Mathematics 8 from first to fourth quarters of School Year 2018 - 2019. The least learned competencies were consolidated and identified for each quarter. The identified Least Learned Competencies (LLC) were the basis of the researcher in the construction of the assessment test for the grade 9 learners. The data gathered, collated, and tabulated were subjected to analysis and interpretation using the appropriate statistical tools. The raw data were tallied and presented in tables for easier understanding.

To determine the least learned competencies the researcher treated the data using frequency of errors, percentages and ranking. The performance level was determined based on the range of the frequency of error committed. For the level of performance of the Grade 9 students in mathematics 8, was categorized into 5 rating scales following the norms prescribed by Department of Education as shown on Table 1 below.

Range of Frequency of Errors	Level of Performance
0 – 56	Outstanding
57 – 112	Very Satisfactory
113 – 168	Satisfactory
169 – 224	Fairly Satisfactory
225 - 280	Did not meet expectations

Table 1. Rating scales by Department of Education

The assessment test underwent different processes such as construction of a table of specifications, construction of test items, face validation by the researcher’s adviser and panelists, content validation by 5 external validators who are experts in the field of Mathematics, pilot testing /trial run, and evaluation of the test to determine its validity and reliability.

3. Result and Discussion

a. Least Learned Competencies in Mathematics 8 S.Y 2018-2019

Table 2 to Table 5 reflects the least learned competencies in Mathematics 8 of the Grade 8 learners’ School Year 2019-2020 from First to Fourth Quarter.

LC	IN	FoE	%	Rank
Simplifies rational algebraic expressions.	1	90	32.14	9
	16	149	53.21	4
	36	184	65.71	2
Solves problems in involving systems of linear equation.	2	105	37.50	8
	17	147	52.50	5
	26	174	62.40	3
Performs operations on rational algebraic expressions.	3	113	40.36	7
	18	140	50.00	6
	27	194	69.29	1

Table 2. Least Learned Competencies – First Quarter

LC	IN	FoE	%	Rank
	4	112	40.00	10.5
	5	112	40.00	10.5
Graphs linear function (a) domain (b) range (c) table of values (d) intercept of slope.	19	136	48.57	8
	20	131	46.79	9
	28	139	49.64	7
	37	179	63.93	3
	38	163	58.21	5
	46	192	68.57	2
	6	107	38.21	12
Writes proof (both direct and indirect).	21	140	50.00	6
	39	166	59.29	4
Performs operations on rational algebraic expressions.	7	104	37.14	13
	29	198	70.71	1
Writes proof (both direct and indirect).				

Table 3. Least Learned Competencies – Second Quarter

LC	IN	FoE	%	Rank	
Solves corresponding parts of congruent triangles	8	111	39.64	12	
	30	151	53.93	9	
	40	167	59.64	4	
Illustrates the SAS, ASA and SSS Congruence postulates	9	109	38.93	13	
	10	108	38.57	14	
	22	149	53.21	10	
	31	161	57.50	7	
	32	163	58.21	6	
	41	182	65.00	2	
	42	174	62.14	3	
Applies triangle congruence to construct perpendicular lines and angle bisectors	47	206	73.57	1	
	11	114	40.71	11	
	23	158	56.43	8	
		43	165	58.93	5

Table 4. Least Learned Competencies – Third Quarter

LC	IN	FoE	%	Rank
Proves inequalities in a triangle.	12	114	40.71	13
	24	144	51.43	8
	33	149	53.21	7
	44	168	60.00	5
Counts the number of occurrences of an outcome in an experiment (a) table, (b) tree diagram (c) systematic listing and (d) fundamental counting principle	48	191	68.21	3
	13	120	42.86	12
	14	131	46.79	10
	34	167	59.64	6
Illustrate theorem on triangle inequalities (Exterior Angle Inequality Theorem, Triangle Inequality Theorem, Hinge Theorem)	45	185	66.07	4
	49	203	72.50	2
Illustrate theorem on triangle inequalities (Exterior Angle Inequality Theorem, Triangle Inequality Theorem, Hinge Theorem)	50	207	73.93	1
	15	126	45.00	11
Illustrate theorem on triangle inequalities (Exterior Angle Inequality Theorem, Triangle Inequality Theorem, Hinge Theorem)	35	145	51.79	9

Table 5. Least Learned Competencies – Fourth Quarter

Where LC is Learning Competency, IN is Item Number and FoE is Frequency of Error with n = 280. The Table reveals that least learned competency for the First Quarter among the Grade 8 learners is performs operations on rational algebraic expressions. This item ranks number 1 which has the highest frequency of errors of 194 out of 280 with a rate of 69.29%.

This means that most of the learners experienced difficulty in performing operations on rational algebraic expression. This further implies that learners have deficient mastery along that learning competency. The learners have minimal understanding on the concept of simplifying or in performing algebraic expressions. A scrutiny of the assessment tests revealed that the learners can recognize and identify what a rational algebraic expression is. But they can no longer simplify the algebraic expression. This can be attributed to the lack of instructional materials to be used by teachers in the delivery of instruction of the said learning competency.

The finding is parallel to the study revealing that most students lack the needed skill in performing fundamentals of operations on rational expressions [14]. They cannot solve problems involving rational equations because they lack the skill in simplifying rational algebraic expressions.

The table also reveals that least learned competency for the Second Quarter among the Grade 8 learners School Year 2018-2019 is along illustrating the equivalences of (a) the statement and (b) the converse and inverse statement. This item ranks number 1 which has the highest frequency of errors of 198 out of 280 with a rate of 70.71%. This means that the students have not gained a reasonable amount of knowledge and skills in geometry. It denotes that they are not familiar with the different theorems and postulates that can be used to prove statements. It signifies that they do not have an average grasp and satisfactory level of understanding

of the parts of the conditional statements, the proper conjecture for a given situation, the conditions that can be led to conditional statement, formulating conditional statements, identifying whether an argument used as inductive or deductive reasoning to arrive at a conclusion, and measurement of angles formed by lines and parallel. This could also mean that the question is under the lowest level of thinking in the Bloom's Taxonomy which is remembering, that learners are able to understand the concept but having difficulty in application of the concept.

Still considering the figures in the table, it discloses another least learned competencies in Mathematics 8 in the third quarter along illustrating the SAS, ASA, and SSS congruence postulates rank 1 as least learned competency with a frequency of errors of 206 out 280 with a rate of 73.57%. This means that the learners have a little background on the topic. This also denotes that the students cannot understand questions that require higher order thinking skills based on the table of specifications. This result indicates that almost 50% of the students were aware of but have minimum comprehension of the theorems and postulates related to Triangle Inequalities such as ASA Triangle Inequality, the SSS triangle inequality theorem which can be used to determine whether the given sides are possible sides of a triangle, and to arrange angles of a triangle given only the measurement of sides.

The table also reveals the least learned competencies for the fourth quarter of Grade 8 learners along counts the number of occurrences of an outcome in an experiment (a) table, (b) tree diagram (c) systematic listing and (d) fundamental counting principal rank 1 as the least learned competency in the fourth quarter with a frequency of errors of 207 out of 280 equivalents to 73.93%.

This means that most of the learners lack the necessary knowledge in understanding the concepts on probability and statistics. It can also be deduced from the table that the students fail to master the important skills along this content area.

b. Level of Performance of the Grade 8 students

Table 6 to Table 9 manifests the level of performance of the Grade 8 students from first quarter to fourth quarter.

LC	IN	FoE	LoP
Simplifies rational algebraic expressions.	1	90	VS
	16	149	S
	36	184	FS
Solves problems in involving systems of linear equation.	2	105	VS
	17	147	S
	26	174	FS
Performs operations on rational algebraic expressions.	3	113	S
	18	140	S
	27	194	FS

Table 6. Level of Performance – First Quarter

LC	IN	FoE	LoP
	4	112	VS
	5	112	VS
Graphs linear function	19	136	S
(a) domain	20	131	S
(b) range	28	139	S
(c) table of values	37	179	FS
(d) intercept of slope.	38	163	S
	46	192	FS
	6	107	VS
Writes proof (both direct and indirect).	21	140	S
	39	166	S
Performs operations on rational algebraic expressions.	7	104	VS
Writes proof (both direct and indirect).	29	198	FS

Table 7. Level of Performance – Second Quarter

LC	IN	FoE	LoP
	8	111	VS
Solves corresponding parts of congruent triangles	30	151	S
	40	167	S
	9	109	S
	10	108	S
	22	149	S
Illustrates the SAS, ASA and SSS Congruence postulates	31	161	S
	32	163	S
	41	182	FS
	42	174	FS
	47	206	FS
Applies triangle congruence to construct perpendicular lines and angle bisectors	11	114	S
	23	158	S
	43	165	S

Table 8. Level of Performance – Third Quarter

LC	IN	FoE	LoP
	12	114	S
	24	144	S
Proves inequalities in a triangle.	33	149	S
	44	168	FS
	48	191	FS
	13	120	S
Counts the number of occurrences of an outcome in an experiment (a) table, (b) tree diagram (c) systematic listing and (d) fundamental counting principle	14	131	S
	34	167	S
	45	185	FS
	49	203	FS
	50	207	S
Illustrate theorem on triangle inequalities (Exterior Angle Inequality Theorem, Triangle Inequality Theorem, Hinge Theorem)	15	126	S
	35	145	S

Table 9. Level of Performance – Fourth Quarter

Where LC is Learning Competency, IN is Item Number, FoE is Frequency of Error with $n = 280$ and LoP is Level of Performance. It can be observed that during the first quarter the level of performance of the Grade 8 learners along the learning competencies in simplifying rational algebraic expressions and solving problems in involving systems of linear equation falls under fairly satisfactory. This means that students cannot simplify rational algebraic.

The findings of the study conform to the finding of a study where revealing the students have dynamic way of interpreting an algebraic expression [17]. Mathematical conceptions obstruct the students' understanding. This indicates that learning mathematics is about learning specific communicative

in addition to learning about mathematical objects and relationships which show that a critical part of appropriating introductory algebra is being aware of “what is the example” and “what is general” in different for students’ comprehension.

The table also discloses that during the second quarter students have fairly satisfactory level of performance on Graphs linear function (a) domain (b) range (c) table of values (d) intercept of slope and illustrates the equivalences of (a)statement (b) converse (c) inverse statement. This means that students lack mastery on this content area especially along solving the domain and range. It also shows that students are weak along this topic and confused along inverse, converse, and contrapositive. It indicates that students cannot construct sentences based on the given. This is an indicative that many of the students cannot identify correctly the graph showing linear equations and inequalities in two variables and translate mathematical sentences with algebraic inequalities.

The table also shows that level of performance of Grade 8 learners in third quarter is fairly satisfactory on Illustrates the SAS, ASA and SSS Congruence postulates. This means that students lack mastery on the basic of geometry. This shows that students are confused in solving problems regarding triangles specifically when it is a mixed problem on SAS, ASA and SSS on triangle congruence and postulates.

The findings run parallel to the study of [15] where she noted that students can easily solve problems in geometry when they understand the concepts involved when they are involved in activities provided. They verify what are asked using the specific tools in Geometry by measuring and describing the relationships among the given angles.

Finally, the table elucidates the level of performance of Grade 8 learners during the fourth quarter on Counts the number of occurrences of an outcome in an experiment (a) table, (b) tree diagram (c) systematic listing and (d) fundamental counting principle and proves inequalities of triangle is fairly satisfactory. This shows that students lack mastery under theorem which is the basic concept to understand this learning competency. This also indicates that the time frame allotted in this learning competency is quite too short for the students to gain mastery in this learning competency because they are under the last part of the curriculum. This implies that students are confuse in terms of proving because the students will be the one to provide and construct statement and reason.

4. Conclusion

Based on the findings obtained by the researcher, the following conclusions were made: there are eight (8) least learned competencies in all the quarter examinations in Mathematics 8 most of it requires higher order thinking skills. The students must master

the four fundamental operations in Mathematics. Activities and strategies should be developed and incorporated into instructional materials to assist teachers in helping all students become proficient in Mathematics. The Strategic Intervention Materials (SIMs) materials that can be effectively used to improve the level of performance and least learned competencies of the Grade 8 learners in Mathematics.

In the light of the findings and conclusions, the following recommendations were offered: The validated K to 12 aligned Strategic Intervention Materials (SIMs) should be adopted by high school mathematics teachers in Naguilian District and other high schools in the province as an additional learning material for Grade 8 learners. Each SIMs enhances learner's competencies in the identified least learned competencies from first quarter to fourth quarter. Lessons should be contextualized using real-life problems that are appropriate to their level of experience. School administrators should send their teachers to seminar-workshops that will enhance their teaching strategies in Mathematics 8. Mathematics teachers should use intervention materials in the delivery of instruction. Learners should use the Strategic Intervention Materials (SIMs) so that their mathematical skills would be improved. Teachers should look for means for their students to acquire the needed competencies for every lesson they teach all the lessons covered in the Curriculum Guide. The (SIM) Strategic Intervention Material must undergo quality assurance from the LRMDS. The mathematics teacher should intensify the utilization of technology in teaching and create their own programmed instructional materials which are relevant and suited to the needs and interest of their students. Students should maximize the utilization of the Strategic Intervention to greatly improve their level of performance and competence in Mathematics 8. Future researchers should conduct a study focusing on the use of E-Learning book in remedial classes.

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