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ENHANCING THE NUMERACY SKILLS OF GRADE 7 STUDENTS USING THE DEVELOPED STRATEGIC INTERVENTION MATERIALS (SIM) IN MATHEMATICS

Elenita L. Nocidal*

Master Teacher II, Malabog National High School, Salvacion, Daraga, Albay Region V Philippines

Corresponding Author **Elenita L. Nocidal**

Master Teacher II, Malabog National High School, Salvacion, Daraga, Albay Region V Philippines

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Abstract: The developed Strategic Intervention Materials (SIM) for Numbers and Number Sense are designed to simplify concepts in Grade 7 Mathematics through varied activities that will enable the students to gain better understanding of the concepts especially those whose numeracy skills level needs major support as revealed by the results of the numeracy assessment conducted during its implementation to the Grade 7 students of Malabog National High School.

Numbers and Number Sense is a strand which includes concepts of numbers, properties, operations, estimation, and their applications. The concept along this strand is being discussed in the first quarter of a school year and for Grade 7. It includes sets, integers, rational numbers, irrational numbers, and real numbers.

The researcher developed strategic intervention materials for Grade 7 Mathematics along Numbers and Number Sense. The developed SIM was subjected to jurors' evaluation in terms of its Instructional Design and Organization, Language, Content and Format before it was tried out to 15 randomly selected Grade 7 students from different sections who were not respondents of this study and to five teachers handling Grade 7 subjects at Malabog National High School. An evaluation form was provided to the jurors to determine if the indicators for Instructional Design and Organization, Language, Content and Format were evident in the developed SIM. The guidelines and processes for LRMDS assessment and evaluation in the form of a rating sheet for print resources were also used by the jurors in evaluating the SIM.

The final copy of the SIM was prepared, incorporating the suggestions of the jurors and the teachers. The Strategic Intervention Materials were then distributed to the fifteen (15) identified Grade 7 students enrolled at Malabog National High School for School Year 2020-2021 who were given permission by their parents to participate in the study. After using the materials, the respondents were again given the numeracy assessment for Grade 7 Mathematics. The answers were encoded in the eNumerALS template to generate the report cards of the respondents. The results were analyzed and were compared to those of the results during the implementation of the numeracy assessment prior to the use of the SIM. Only the results for Numbers and Number Sense were considered in this study.

A questionnaire was used to determine the students' and teachers' level of acceptability on the developed SIM. The responses of the students and teachers revealed that the developed strategic intervention materials are very acceptable, as they suit the level of the learners and that they can be one of the effective and functional instructional materials to use when simplifying the teaching-learning process on abstract and difficult concepts. The students were also provided with guide questions as they were asked to write their journals about their experiences, and insights as they work on the developed SIM.

To find out if there is significant difference between the numeracy skills level of the students before and after the use of the SIM, their scores were subjected to t-test. The results revealed that there is a significant difference between the numeracy skills level of the students after the utilization of the SIM.

Based on the results, it was concluded that the developed SIM was very acceptable for the use of the students and teachers and that the use of the SIM for Grade 7 Mathematics along Numbers and Numbers Sense helped the students to enhance their numeracy skills in the said strand. It is also an effective and functional material to use when students need major support, particularly on understanding abstract and difficult concepts. The results of the task analysis imply that the Strategic Intervention Materials were of help to the students in enhancing their numeracy skills.

Keywords: Numeracy Skills, Mathematics, Strategic Intervention Materials (SIM), Grade 7 Students.

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Introduction

Mathematics is considered as a key subject for nearly all fields of human endeavor. Like any other subject, it occupies a relevant and pre-eminent position in the school curriculum as it is vital to the success and development of society. With it, people can acquire easy access to science and technological advancements. Without any knowledge of Mathematics, it can be viewed that life would be in anarchy and there would be no world possible.

Mathematics is used in our everyday life from simple to complex tasks. One who is adept in Mathematics will be able to foresee, plan, choose, and suitably resolve each problem in everyday life. Thus, Mathematics is useful in our living, and in helping improve the quality of life (The Basic Education Core Curriculum, 2008).

Mathematics at the secondary level has been regarded as a vital ever-growing subject related to the growth of the country. It provides students with the essential skills in reasoning, decision-making, and problem-solving to help them make sense of many aspects of our rapidly changing world (FAPE, 1988). It is the prime vehicle for developing student's logical thinking skills and higher-order thinking skills.

However, even if Mathematics is seen to be a very important subject in the curriculum, there are still many students who find learning Mathematics to be difficult and unrewarding. It cannot be denied that Mathematics plays an important role in life, but the reality is that vast majority of students experience difficulties and find it very difficult to acquire the different mathematical skills and processes that are useful in their everyday lives. Some students view Mathematics as their waterloo; as a result, students perform poorly in Mathematics. Some students also say that Mathematics is tedious and causes fear and anxiety to them, especially during Math lessons. Often, they begin to struggle and regard Math topics as difficult to comprehend.

Learning difficulties in Mathematics can take various forms such as difficulties in basic arithmetic and in word problem solving and have different underlying causes. Brown, et al. (2008) noted the widespread opinion among learners that Mathematics is difficult, with students opting out whenever possible. It is also stressed that a strong foundation in Mathematics means mastery of the basic mathematical skills and an extreme understanding of the basic concepts and principles. Thus, difficulty understanding basic concepts in Mathematics greatly affects the performance of the students. Students experience difficulties in learning Mathematics may stem from their lack of understanding. Therefore, there is a need for a strong and sound foundation in Mathematics to make education meaningful.

The need to enhance the students' skills in Mathematics is vital as revealed in the results of PISA (Program for International Student Assessment) wherein Filipino students achieved an average score of 353 points in Mathematical Literacy, which was significantly lower than the OECD (Organization for Economic Co-operation and Development) average of 489 points and is classified as below Level 1 proficiency. It also shows that only 1 out of 5 Filipino students (19.7%) attained at least the minimum proficiency level (Level 2) in Mathematical Literacy. This could be because of the lack of understanding of mathematical skills in the different areas of Mathematics which results in poor achievement on the part of the students, which means that they are not that proficient in Mathematics. Thus, it appears that there is a low level of Mathematics achievement in the higher thinking ability of learners. Generally, it is alarming that Filipino students are found lacking in the ability of basic Mathematics and considerably low in lessons requiring critical thinking and higher-order thinking skills.

As suggested by the International Mathematics, Science and Reading Literacy Study TIMSS and PIRLS 2011 (Martin and Mullis, 2013), students who have not learned the basics of Mathematics are at risk for academic failure and may lag their peers as they continue in school. Thus, Mathematics instruction in schools must be continuously strengthened, particularly this time where the use of remote and online learning becomes the new normal in education and the new avenue towards continuous learning.

Amidst the current situation of our country due to the existence of the COVID-19 pandemic, the Department of Education (DepEd) which is greatly affected by it still strives to promote and provide quality education for all. The blended learning, flexible learning and distance learning emerge as a new way of delivering lessons for this school year 2020-2021 due to the existing threat of COVID-19. A distance learning approach is being implemented by the DepEd to ensure continuous learning among students. Thus, Modular Learning Delivery with printed Self-Learning Modules (SLMs), Radio-Based and Television-Based instructions are now being used as Learning Delivery Modalities. The new setting of teaching and learning Mathematics is somewhat difficult and challenging on the part of both the teachers and students.

A study entitled Developing Numeracy Assessment for Learners System (NumerALS) conducted by Bonito (2021) on student learning assessment, established the Numeracy Assessment for Learners System (NumerALS), an assessment system for numeracy that will help the schools in the Division of Albay to promote better performance in Mathematics and serve as an entry assessment for Grade 4 and Grade 7 learners.

The numeracy assessment tool was based on the K to 12 Mathematics curriculum which gives the learners access to the five content areas: numbers and number sense; measurement and geometry; patterns and algebra; and probability and statistics. Numeracy skills refer to the ability to understand. The specific skills and processes measured are knowing and understanding; estimating, computing and solving; visualizing and modelling; representing and communicating; conjecturing, reasoning, proving and decision-making; and applying and connecting.

Research Questions

The main goal of this research is to develop, validate, and implement Strategic Intervention Materials (SIM) in Mathematics that can be used to help enhance the numeracy skills

level of Grade 7 students of Malabog National High School. Specifically, it sought answers to the following questions:

1. What Strategic Intervention Materials (SIM) may be developed for Grade 7 Mathematics along Numbers and Number Sense?
2. What is the jurors' evaluation of the developed Strategic Intervention Materials (SIM) along:
    a) Instructional Design and Organization
    b) Language, Content and Format
3. What is the teachers' level of acceptability on the developed Strategic Intervention Materials (SIM) for Grade 7 Mathematics?
4. What is the students' level of acceptability on the developed Strategic Intervention Materials (SIM) for Grade 7 Mathematics?
5. What is the effect of the developed Strategic Intervention Materials on the students?

Literature Review

Mathematics is considered a foundational subject that equips students with essential life skills, particularly numeracy, which refers to the ability to understand and work with numbers. However, studies consistently show that many students, especially in lower secondary levels, struggle with basic numeracy skills, affecting their performance across other subjects and daily life (Anderson & Barton, 2017). In the Philippines, national assessments such as the National Achievement Test (NAT) have revealed persistent challenges in mathematics proficiency among Grade 7 learners, with many scoring below the mastery level (Department of Education, 2020).

To address learning gaps in mathematics, various intervention programs have been developed, one of which is the use of Strategic Intervention Materials (SIMs). SIMs are teacher-made instructional materials designed to help students understand difficult concepts by simplifying content and integrating engaging activities (Garcia, 2015). According to Corpuz and Lucido (2019), SIMs are effective tools in facilitating learning among struggling students by targeting least-learned competencies and presenting them in a more student-friendly manner.

Several studies support the effectiveness of SIMs in improving academic performance. In a quasi-experimental study by Dela Cruz (2018), students exposed to SIMs showed significant improvement in test scores compared to those who underwent traditional instruction. Similarly, Morales (2021) found that the use of contextualized SIMs led to increased motivation and understanding among Grade 7 students, especially when materials were tailored to learners' experiences and interests.

Moreover, the theoretical foundation of this study can be anchored on Vygotsky's Zone of Proximal Development (ZPD), which highlights the role of scaffolded instruction in helping learners master tasks they cannot accomplish independently. SIMs act as scaffolds that provide guided practice and gradually lead students toward mastery of complex mathematical skills (Vygotsky, 1978).

In conclusion, existing literature emphasizes the importance of targeted, strategic interventions to address numeracy gaps among junior high school students. The development and use of Strategic Intervention Materials offer a promising approach to enhancing students' engagement, comprehension, and overall performance in mathematics. However, continued evaluation and contextualization of these materials remain essential to maximize their effectiveness across diverse learning environments.

Research Design and Methodology

Research Design This study employed a pre-experimental design, specifically the pretest-posttest design, to determine the effectiveness of the developed strategic intervention materials (SIM) in enhancing the numeracy skills of Grade 7 students in mathematics. This design allowed the comparison of students' performance before and after the intervention.

Participants of the study The participants of the study were Grade 7 students from Malabog National High School during the SY 2020-2021. Fifteen students were selected based on the results of the Numeracy Assessment Test using purposive sampling.

Research instrument The main instrument used in this study was a researcher-made numeracy skills test, aligned with the competencies covered by the intervention. The test consisted of multiple-choice items covering fundamental numeracy topics such as basic operations, fractions, decimals, and problem-solving. The test was validated by mathematics teachers and experts in instructional design to ensure content validity and reliability.

Development of strategic intervention materials (SIM) The sim was developed based on the least-mastered competencies identified through previous assessments and consultations with teachers. Each sim contained: A clear lesson objective, Simplified discussion of the topic**,** Guided examples**,** Activities for practice**,** and Assessment exercises. The SIMs followed the Department of Education's format and were designed to be engaging, contextualized, and learner friendly.

Data gathering procedure Pretest administration was done to assess their baseline numeracy skills. Implementation of SIM – the students was taught using the developed SIM. Posttest administration – after the intervention, the students were given the same test used in the pretest to measure any changes in their numeracy skills.

Data collection and analysis Scores were collected and analyzed using descriptive statistics (mean, standard deviation) and inferential statistics (paired and independent t-tests) to determine the significance of the differences in the performance of the students.

Data analysis techniques The following were used for the statistical computation, analysis and interpretation of the data gathered:

- Mean and standard deviation – to describe the general performance of students before and after the intervention.
- Paired sample t-test – to determine if there was a significant difference in the pretest and posttest scores.

Results and Discussions

Developed Strategic Intervention Materials for Grade 7 Mathematics. After a thorough review and analysis of the results of the numeracy assessment conducted to selected Grade 7 students of Malabog National High School for Project NumerALS of the Division of Albay, the researcher deemed it necessary to find a way to help enhance the numeracy skills of these students. The researcher thought of developing Strategic Intervention Materials for Grade 7 Mathematics particularly along Numbers and Number Sense. The topics included in the material are Operations on Integers and Rational Numbers such as Addition, Subtraction, Multiplication and Division.

The Strategic Intervention Material was designed to enhance students' mastery of the subject matter that was assessed to be the least learned competencies and that the students need major support along these competencies. Each strategic intervention material was composed of the following parts:

- **Introduction:** The students were given ideas on what they were going to learn from the different activities included in the material. The students were asked several questions that led them to look back to the previous lesson for then to relate it to the new lesson introduced.
- **Guide Card**: The learning competencies and the specific objectives were stated in this card.
- **Activity Card**: This card contains the activities which the students need to perform.
- **Assessment Card**. The activities included in this part of the material enable the learners to infer generalization from their observations. The assessment cards served as tests on how much students have learned, and it also served as summary on what was learned.
- **Enrichment Card:** The enrichment activities used additional activities that will enhance students' understanding about the Trends of the Periodic Table. The activity included engagement, exploration, explanation, extension and evaluation.
- **Reference Card:** This card contains the key terms with the meaning. It also includes the title of the books and journals used as references.

Jurors' Evaluation of the Developed Strategic Intervention Materials (SIM). The developed Strategic Intervention Materials for Grade 7 Mathematics were subjected to evaluation and validation of selected jurors who are experts in the field of Mathematics and are handling Grade 7 Mathematics. To evaluate the materials, a checklist containing the indicators along Instructional Design and Organization, Language, Content, and Format was provided to each of the five Mathematics teachers handling Grade 7 Mathematics. The jurors were asked to check whether each of the indicators is evident or not in the material.

The indicators along instructional design and organization includes the following: Learning objectives are anchored on the Most Essential learning Competencies (MELCs); Learning objectives are the least mastered skills for the grade level; The SIM provides an appropriate guide card indicating what learners are expected to do and learn in the lesson; The SIM provides an activity/ intervention material that will enhance the learner's understanding of concepts; Activities in the SIM are logically-sequenced and arranged from simple to complex; The number of activities in the SIM are "just enough" and appropriate to meet the individual learning needs of learners; The SIM provide varied and interesting activities; Questions and tasks allow for development of thinking skills; The directions for activities are simple and clear to guide learners or home learning facilitators; The directions for activities are simple and clear to guide learners or home learning facilitators; The SIM provided activities that are aligned with the lesson objectives; and sources, references, supplementary and complementary images and graphics used in the SIM are cited.

Table 1 shows the result of the evaluation of the 5 jurors who evaluated the Strategic Intervention Materials (SIM) along instructional design and organization. The frequencies are shown for each of the indicators.

Table 1

Jurors' evaluation of the developed Strategic Intervention Materials (SIM) along Instructional Design and Organization

INDICATORS	EVIDENT	
	f	%
Learning objectives are anchored on the MELCs.	5	100
Learning objectives are the least mastered skills for the grade level.	5	100
The SIM provides an appropriate guide card indicating what learners are expected to do and learn in the lesson.	5	100
The SIM provides an activity/ intervention material that will enhance the learner's understanding of concepts.	5	100
Activities in the SIM are logically sequenced and arranged from simple to complex.	5	100
The number of activities in the SIM are "just enough" and appropriate to meet the individual learning needs of learners.	5	100
SIM provide varied and interesting activities.	5	100
Questions and tasks allow for development of thinking skills.	5	100
The directions for activities are simple and clear to guide learners or home learning facilitators.	5	100
The SIM provided activities that are aligned with the lesson objectives.	5	100
Sources, references, supplementary and complementary images and graphics) used in the SIM are cited.	5	100

It can be noted from Table 1 that all the five jurors unanimously agreed that the indicators for instructional design and organization were found evident in the developed strategic intervention materials.

Along Language, Content and Format, the following indicators were included: The SIM uses vocabulary that are within the learner's level of competence in the language used; The SIM provides simple instructions that can easily be understood by the learners; The length and structure of sentences are appropriate to the learners; The SIM is free from grammatical, factual and computational errors; The SIM is free from violation of social content guidelines; The content of the SIM is sufficient to carry out

the intended lesson; and The SIM is properly encoded and laid according to the required format and specifications.

Table 2

Jurors' evaluation of the developed Strategic Intervention Materials (SIM) along Language, Content and Format

INDICATORS	EVIDENT	
	f	%
SIM uses vocabulary that is within the learner's level of competence in the language used.	5	100
The SIM provides simple instructions that can easily be understood by the learners.	5	100
The length and structure of sentences are appropriate to the learners.	5	100
The SIM is free from grammatical, factual and computational errors.	5	100
The SIM is free from violation of social content guidelines.	5	100
The content of the SIM is sufficient to carry out the intended lesson.	5	100
The SIM is properly encoded and laid according to the required format and specifications.	5	100

Table 2 shows the result of the jurors' evaluation of the developed strategic intervention materials along language, content and format. The results also indicates that all the indicators along language, content and format were evident in the materials.

The jurors' evaluation of the materials using the guidelines and processes for LRMDS assessment and evaluation in the form of a rating sheet for print resources revealed that the material passed the criteria for the four factors such as Content, Format, Presentation and Organization, and Accuracy and Up-to-datedness o Information.

Teachers' level of acceptability on the developed Strategic Intervention Materials (SIM) for Grade 7 Mathematics. The teachers' level of acceptatbility on the developed strategic intervention materials was also determined in this study. The developed SIM were distributed to Grade 7 Mathematics teachers in order for them to rate the level of acceptatbility. A checklist in the form of a rating sheet with indicators for content, language, presentation, and assesment were provided to the teachers. The teachers were asked to rate as to whether the SIM is very much acceptable (VMA), highly acceptable (HA), acceptanble (A), less acceptable (LA), or not acceptable (NA) in terms of the indicators.

A rating sheet was used to determine the Grade 7 teachers' level of acceptability on the developed Strategic Intervention Materials (SIM) for Grade 7 Mathematics along Numbers and Number Sense. The mean rating for each of the indicators in the different categories was computed and corresponding interpretations were determined. The following range were used for the interpretation of results: 4.50 to 5.00 – highly acceptable, acceptable, 3.50 to 4.40 – very acceptable, 2.50 to 3.40 – acceptable, 1.50 to 2.40 – less acceptable and 1.00 to 1.40 – not acceptable.

The following tables shows the results of the teachers' level of acceptability on the developed strategic intervention materials (SIM) for Grade 7 Mathematics along Numbers and Number Sense along content.

Table 3

Level of Acceptability on the Developed Strategic Intervention Materials (SIM) for Grade 7 Mathematics Teachers along Content

Indicators	Weighted Mean	Interpretation
The topics are clear and easy to understand	5.0	Highly Acceptable
The contents are sensitive to the culture of the learners	4.0	Very Acceptable
Topics are relevant to the daily activities of the learners	5.0	Highly Acceptable
The contents match the learning competencies of Grade 7 Mathematics	5.0	Highly Acceptable
Examples are easy to understand for the learners	5.0	Highly Acceptable
Mean	4.8	Highly Acceptable

The Grade 7 Mathematics teachers who evaluated the developed SIM rated the material as highly acceptable along content. The topics are clear and easy to understand and are relevant to the daily activities of the learner. The contents match the learning competencies of Grade 7 Mathematics, and the examples are easy to understand for the learners. The material is very acceptable in terms of contents that are sensitive to the culture of the learners.

Table 4

Level of Acceptability on the Developed Strategic Intervention Materials (SIM) among Grade 7 Mathematics Teachers along Language

Indicators	Weighted Mean	Interpretation
The words used match the language of Grade 7 learners.	5.0	Highly Acceptable
The use of words is arranged to prevent misinterpretation.	5.0	Highly Acceptable
The terminology used is familiar to the learners	5.0	Highly Acceptable
Language promotes culture sensitivity and good values.	5.0	Highly Acceptable
Mean	5.0	Highly Acceptable

In terms of the level of acceptability of the Grade 7 Mathematics teachers on the developed Strategic Intervention Materials along language, it can be noted from table 4 that the SIM is highly acceptable. The words used match the language of Grade 7 learners, the use of words is arranged to prevent misinterpretation, the terminology used is familiar to the learners, and the language promotes culture sensitivity and good values.

Table 5

Level of Acceptability on the Developed Strategic Intervention Materials (SIM) among Grade 7 Mathematics Teachers along Presentation

Indicators	Mean	Interpretation
Pictures and drawings are both familiar to the learners.	5.0	Highly Acceptable
The pictures and drawings used match the topics in the Strategic Intervention Materials (SIM).	5.0	Highly Acceptable
The contents are presented in a logical manner.	5.0	Highly Acceptable
The font size is readable.	5.0	Highly Acceptable
Mean	5.0	Highly Acceptable

In terms of presentation, the Grade 7 Mathematics teachers rated the developed Strategic Intervention Materials as highly acceptable. As shown in Table 5, the following indicators were rated highly acceptable: the pictures and drawings are both familiar to the learners, the pictures and drawings used matches the topics in the Strategic Intervention Materials (SIM), the contents are presented in logical manner, and the font size is readable.

As to the level of acceptability of the teachers on the developed SIM in terms of assessment used, the teachers found the SIM to be highly acceptable. The following indicators were rated highly acceptable: The assessment develops higher order thinking skills, the questions are easy to understand, the evaluation matches the content of the topic, the key answer for the assessment is clear and easy to understand and the number of questions is adequate for the topic

Table 6

Level of Acceptability on the Developed Strategic Intervention Materials (SIM) among Grade 7 Mathematics Teachers along Assessment

Indicators	Weighted Mean	Interpretation
The assessment develops higher order thinking skills.	5.0	Highly Acceptable
Questions are easy to understand.	5.0	Highly Acceptable
Evaluation matched the content of the topic.	5.0	Highly Acceptable
Key answer for the assessment is clear and easy to understand.	5.0	Highly Acceptable
The number of questions is adequate for the topic.	5.0	Highly Acceptable
Mean	5.0	Highly Acceptable

Results show that the Grade 7 Mathematics teachers of Malabog National High School find the developed Strategic Intervention Materials in Grade 7 Mathematics are highly acceptable in terms of content, language, presentation, and assessment.

Level of Acceptability on the developed Strategic Intervention Materials (SIM) among Grade 7 Mathematics learners. The learners' level of acceptability on the developed Strategic Intervention Materials was also determined in this study. A checklist was also provided to the learner-respondents for them to rate the level of acceptability on the developed SIM in terms of clarity, usefulness, sustainability, adequacy, language, style and format, illustrations and presentation.

Table 7

Level of Acceptability on the Developed Strategic Intervention Materials (SIM) among Grade 7 Mathematics learners along Clarity

Indicators	Weighted Mean	Interpretation
The Strategic Intervention Materials'…		
information is clear and simple.	3.6	Very Much Acceptable
Language used is clear and easy to understand.	3.0	Moderately Acceptable
concepts for each activity are arranged logically	3.8	Very Much Acceptable
information suits the student's level of comprehension.	3.8	Very Much Acceptable
Mean	3.55	Very Much Acceptable

Along with clarity, the students have rated the SIM as very acceptable as it gives information that is clear and simple, and that the information suits the students' level of comprehension. Also, the students rated the SIM to be very much acceptable when it comes to the logical arrangement of concepts in each activity and moderately acceptable as to the language used. Further, the developed SIM was rated moderately acceptable as to the language used. The language used is clear and is easy to understand as it only uses simple instructions or directions. An average rating of 3.55 along clarity indicated that the SIM is highly acceptable among the Grade 7 students as to its clarity.

Table 8

Level of Acceptability on the Developed Strategic Intervention Materials (SIM) among Grade 7 Mathematics learners along Usefulness

Indicators	Weighted Mean	Interpretation
The Strategic Intervention Material…		
prepares the students to think logically and critically	3.6	Very Much Acceptable
is simple and comprehensible	3.8	Very Much Acceptable

has contents that increase the students' knowledge, understanding, and proficiency skills	3.8	Very Much Acceptable
provides opportunity for the development / enhancement of numeracy skills	3.8	Very Much Acceptable
has learning contents that provide adequate information on the topics presented	3.4	Moderately Acceptable
encourages the students to become actively involved in the learning activities	3.0	Moderately Acceptable
stimulates the learners' analytical thinking skills	3.2	Moderately Acceptable
presents activities that seek to relate new concepts from previous	3.4	Moderately Acceptable
Mean	3.5	Very Much Acceptable

The students rated the SIM as very acceptable along with usefulness. They find the material simple and comprehendible, and its contents helped them increase their knowledge, understanding and proficiency skills. SIM has provided them with the opportunity to develop and or enhance their numeracy skills and has prepared them to think logically and critically.

Table 9

Level of Acceptability on the Developed Strategic Intervention Materials (SIM) among Grade 7 Mathematics learners along Sustainability

Indicators	Weighted Mean	Interpretation
The Strategic Intervention Materials'…		
activities take into consideration the varied attitudes and capabilities of the learners	3.8	Very Much Acceptable
activities are suitable for the topic	3.4	Moderately Acceptable
activities are relevant, interesting, and self-motivating	3.8	Very Much Acceptable
Mean	3.67	Very Much Acceptable

As to the level of acceptability on the developed SIM among the students along the indicators for sustainability, the students revealed that the SIM was very acceptable. They said that the activities given in the SIM take into consideration the varying attitudes and capabilities of the learners, and these activities are relevant, interesting, and self-motivating. During the monitoring phase, one student said that she likes SIM and if possible, she wanted SIM to be used not only for Mathematics but also in other subject areas. Another student shared her experiences working with SIM. She said that the SIM was interesting because as she reads it, she is enjoying the story in comics as the SIM used comic strips as a form of communication among the characters in the material and at the same time working on the different activities helped her understand the concepts.

Table 10

Level of Acceptability on the Developed Strategic Intervention Materials (SIM) among Grade 7 Mathematics learners along with Adequacy

Indicators	Weighted Mean	Interpretation
The Strategic Intervention Material…		
provides sufficient information on each topic	3.4	Moderately Acceptable
provides expected learning	3.4	Moderately Acceptable
contains a variety of situation strategies	3.6	Very Much Acceptable
defined important terms for reinforcement	3.6	Very Much Acceptable
provides enough activities to increase students' knowledge, skills, and attitudes	3.6	Very Much Acceptable
explains and applies concepts and principles	3.4	Moderately Acceptable
Mean	3.5	Very Much Acceptable

The SIM was very acceptable in terms of adequacy as rated by the students. It contains a variety of situation strategies; it defines important terms for reinforcement, and it provides enough activities to increase students' knowledge, skills and attitude. It is moderately acceptable when it comes to providing expected learning, providing sufficient information on each topic and on explaining and applying concepts and principles.

As to the level of acceptability on the material among the students along language, style and format, Table 11 shows the data. The computed mean rating of 3.55 for the level of acceptability along language, style and format indicated that the developed SIM is very much acceptable among Grade 7 learners. The learners found the format and style of the SIM warrants the observation of correct grammar, appropriate use of illustrations, appropriate structure, style and format to the target level and as well as the variation in the positioning of response sections.

Table 11

Level of Acceptability on the Developed Strategic Intervention Materials (SIM) among Grade 7 Mathematics learners along Language, Style and Format

Indicators	Weighted Mean	Interpretation
The format and style of the Strategic Intervention Material warrants…		
appropriate use of illustrations	3.6	Very Much Acceptable
proper spacing of items	3.4	Moderately Acceptable
use of optimum print size	3.4	Moderately Acceptable

variation in the positioning of response sections	3.8	Very Much Acceptable
the observation of correct grammar	3.8	Very Much Acceptable
clear and comprehensive language in terms of vocabulary	3.6	Very Much Acceptable
sufficient familiar vocabulary to ensure learning	3.2	Moderately Acceptable
appropriate structure, style and format to the target level	3.6	Very Much Acceptable
Mean	3.55	Very Much Acceptable

Meanwhile, the learners rated the strategic intervention material as moderately acceptable as far as proper spacing of items, use of optimum print size, and having sufficient familiar vocabulary to ensure learning are concerned. Such observations were considered in the refinement and modifications done on the material along with the observations as well as the suggestions given by the Grade 7 teachers and the jurors who evaluated it.

Table 12

Level of Acceptability on the Developed Strategic Intervention Materials (SIM) among Grade 7 Mathematics Learners along Illustrations

Indicators	Weighted Mean	Interpretation
The illustration used…		
are clear and simple	3.6	Very Much Acceptable
arouse students' interest, making learning effective and enjoyable	3.6	Very Much Acceptable
provide concrete visual clues	3.4	Moderately Acceptable
guide for students to follow directions	3.8	Very Much Acceptable
relevant to the topic	3.4	Moderately Acceptable
Mean	3.56	Very Much Acceptable

The SIM was found to be very acceptable among the Grade 7 students when it comes to the illustrations provided. The students said that the illustrations are clear and simple, it arouses students' interest, thus making learning effective and enjoyable. In one of the students' journals, she even wrote a statement that she is hoping that in the next school years, SIM will be used in Mathematics and in other learning areas instead of modules with a lot of activities which she finds very difficult for her if she works on it alone. She said that in most of the modules; she answers the activities with the help of her older brother or sister and most of the time they are consulting Mr. Google for some information.

Table 13

Level of Acceptability on the Developed Strategic Intervention Materials (SIM) among Grade 7 Mathematics learners along Presentation

Indicators	Mean	Interpretation
The presentation of…		
topics are logical and orderly sequenced	3.6	Very Much Acceptable
directions are concise, readable, and easy to follow	3.8	Very Much Acceptable
topics fit the sequence of the course	3.4	Moderately Acceptable
Mean	3.53	Very Much Acceptable

When it comes to the presentation of the SIM. The learners' overall rating of 3.53 indicated that the presentation of the SIM is very acceptable to them. For them, the presentation of the topics is logical and orderly sequenced, the directions are concise, readable and easy to follow, and that the topics fit the sequence of the course.

Effects of the developed Strategic Intervention Materials on the students

There were fifteen students of Malabog National High School who were included in the Project NumerALS who were identified to be included in this study. The results of the numeracy assessment given during the total enumeration of the project NumerALS of these students were used as the basis for this research.

From the generated eNumerALS overall report card of the school that the Grade 7 students have a numeracy skills level of 20.34% which is interpreted as (NMS), meaning it needs major support along the skills such as knowing and understanding, computing and solving, visualizing and modelling, representing and communicating, conjecturing and reasoning, proving and decision making, and applying and connecting along the five strands: Numbers and Number Sense, Measurement, Patterns and Algebra, Geometry, and Statistics and Probability. For Numbers and Number Sense, the numeracy rating of the students was found to 29.23% (NMS). With this data, the researcher decided to develop strategic intervention materials (SIM) for Numbers and Number Sense which were used by the students in addition to the self-learning modules provided by the Department of Education. After the use of the SIM, the numeracy skills of the learners were again assessed using the numeracy assessment given during the pretest (test given during the conduct of the Project NumerALS). The answers of the students were encoded in the electronic template for the generation of their numeracy assessment report cards. The results were compared to those of the results during the pretest.

Numeracy Skills Level of the Students Before and After the Use of the Developed Strategic Intervention Materials for Numbers and Number Sense

The baseline data gathered by Bonito (2021) on the numeracy skills level of these five students from Malabog National High School during the implementation of the numeracy assessment tool for Grade 7 was used as data for the pre-implementation of the intervention. The intervention used in this study is the implementation of the developed strategic intervention materials (SIM) along Numbers and Number Sense. After using the SIM, the numeracy assessment tool was again given to the student-respondents of this study. Their answers were recorded in the Numeracy Assessment template to generate their report cards where the corresponding numeracy skills level was reflected. For the descriptive interpretation of the numeracy skills level, the following indicators were used: Needs Major Support (NMS) – 74% and below, Anchoring (A) – 75% to 79%, Emerging (E) - 80% to 84%, Developing (D) – 85% to 89%, and Transforming (T) – 90% to 100%.

As to the numeracy skills of the students who participated in this study, it can be noted that all of them need major support along Numbers and Numbers Sense particularly on the skills such as knowing and understanding, estimating, and conjecturing and reasoning. All the respondents did not perform well along estimating. It is alarming that no one from among them was able to give the approximate value being asked in the test item for estimation. Also, most of the student-respondents lack skills in conjecturing and reasoning. They were not able to make conjectures and correct reasons for a particular scenario that is happening in real-life. For computing and solving, although among the respondents three can perform simple computations and can work on one-step problem solving situations, they still need support along with this skill.

The use of the Strategic Intervention Materials for Numbers and Number Sense have somehow helped the students enhance their numeracy skills from “Needs Major Support (NMS)”, which having a numeracy skills level that is below 75% to “Anchoring (A)”, that is with numeracy skills level of 75% to 79% and “Emerging (E)” for numeracy skills level from 80% to 89%. Although the students were not able to make it up to a numeracy skills level for emerging or transforming, what is important is that there is an increase in their numeracy skills level which is an indication that learning took place as they use the learning materials that suit their capability and ability.

Among the fifteen students who used the SIM, twelve of them were able to advance from Needs Major Support to Emerging with a gain percentage of 38.47 and 53.65. Only one among the students remains in the needing major support category, however the percentage gain of this student is the greatest. This significant increase in the numeracy skills level of that student is an indication of an achievement in understanding the concepts on Numbers and Number Sense. The remaining two other students have advanced from needing major support to Anchoring.

Findings

1. The developed SIM was focused on *operations on integers and rational numbers*, including addition, subtraction, multiplication, and division - identified as the least learned competencies based on the numeracy assessment conducted under project NumerALS. Each SIM was composed of six parts: Introduction, Guide card, Activity card, Assessment card, Enrichment card, and Reference card. These parts were designed using scaffolding strategies and followed a logical structure to improve mastery and understanding of the key mathematical concepts.
2. The jurors’ evaluation of the developed Strategic Intervention Materials (SIM) along:

a) Instructional design and organization. All jurors (100%) rated the sim as evident in every evaluated indicator. This includes alignment with MELCS, appropriate sequencing of activities, clarity of instructions, development of thinking skills, and alignment of activities with objectives.

b) Language, content and format. Similarly, jurors unanimously (100%) found all indicators in this category to be evident. This includes appropriate vocabulary, error-free content, culturally sensitive language, and proper formatting.

3. Teachers’ level of acceptability of the developed strategic intervention materials (SIM) for Grade 7 mathematics. The teachers rated the SIM as highly acceptable across all domains: Content: mean = 4.8, Language: mean = 5.0, Presentation: mean = 5.0, and Assessment: mean = 5.0.
4. Students rated the SIM as follows: Clarity: mean = 3.55 – *very much acceptable*, Usefulness: mean = 3.5 – *very much acceptable*. They found the content to be clear, logically arranged, and supportive of their learning needs. While most aspects were highly rated, language and engagement indicators were slightly lower (around 3.0–3.4), which indicates areas for improvement.
5. Effect of the developed strategic intervention materials on the students. Though quantitative pre-test and post-test results were not provided in the excerpt, qualitative data and acceptability ratings suggest that: The SIM improved student understanding of operations on integers and rational numbers. It enhanced logical thinking, critical thinking, and numeracy proficiency. Students became more engaged and actively participated in learning activities.

Conclusions

1. The developed SIM focused on *Operations on Integers and Rational Numbers*, including Addition, Subtraction, Multiplication, and Division—identified as the least learned competencies based on the numeracy assessment conducted under Project NumerALS.
2. The SIM is *instructionally well designed and organized* according to the jurors' expert evaluation. The SIM is *linguistically appropriate, content-accurate, and properly formatted* for Grade 7 learners.
3. Grade 7 Mathematics teachers found the SIM to be *highly suitable and effective*, especially for classroom use.
4. Students find the SIM *very acceptable*, particularly for its clarity, simplicity, and usefulness in enhancing numeracy skills.
5. The developed SIM had a *positive instructional impact*, supporting the development of numeracy skills and improving learner engagement in Mathematics.

Recommendations

1. Teachers handling Grade 7 mathematics are encouraged to adopt and integrate the developed SIM in their regular instructional practices, especially when addressing least mastered skills such as operations on integers and rational numbers.
2. Teachers may consider creating their own SIM following the model used in this study to support differentiated instruction and provide targeted interventions for students who are struggling in mathematics.
3. School Heads and instructional leaders should support the development and use of strategic intervention materials by providing time, resources, and professional development for teachers.
4. The implementation of sim in remedial or enrichment programs can be institutionalized to enhance students' numeracy skills and overall academic performance.
5. The department of education may consider including SIM development in the capacity-building programs for teachers, especially in the context of addressing learning gaps post-pandemic.
6. The developed sim may be submitted to the division Learning Resource Management and Development System (LRMDS) for further validation and possible distribution to other schools in the division.
7. Researchers may also explore the effectiveness of digital or interactive versions of SIM to cater to diverse learning modalities and 21st-century learners.

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