The Research Probe
Volume 5 Issue 2 December 2025
DOI: https://doi.org/10.53378/trp.199

Acceptability of strategic intervention materials in improving numeracy skills

[1]Meinard M. Dato, [2]Jhamvee A. Ilao & [3]Edilberto Pasamba

Abstract

Strategic Intervention Materials (SIM) have emerged as innovative tools designed to bridge learning gaps and enhance student performance, particularly in mathematics where numeracy remains a persistent challenge. This study aimed to determine the acceptability of SIM in improving the numeracy skills of Grade 10 students in one of the public secondary schools in Sariaya East District, Philippines. Specifically, it sought to evaluate the usefulness of SIM in addressing learning gaps of the students and to assess its acceptability in terms of content, clarity, appeal to the target user, and originality. A quasi-experimental design was utilized through pre-test and post-test comparisons, while a descriptive-evaluative method was employed to measure acceptability. A total of 143 students were selected using stratified random sampling. Data were analyzed using Mean Percentage Scores, the Wilcoxon Signed-Rank Test, and Weighted Arithmetic Mean. Results revealed that the majority of the students were initially classified as non-numerate, but after the intervention, there was a significant improvement in numeracy skills as indicated by the statistical test ($p = .001$). Furthermore, the SIM was rated "Highly Acceptable" across all evaluated dimensions, demonstrating its acceptability as a supplementary learning resource. The findings imply that SIM is an effective instructional material for enhancing numeracy skills, particularly in mathematics. However, the study was limited to one district and a single grade level, which suggests that future research should cover wider populations and grade levels for broader generalization. It is recommended to enhance SIM by adding interactive, contextual activities to sustain engagement and strengthen mathematical foundations.

Keywords: *instructional materials, learning Intervention, mathematics education, numeracy skills*

Article History:

***Received**: October 30, 2025* ***Revised**: November 25, 2025*
***Accepted**: November 30, 2025* ***Published online**: December 15, 2025*

Suggested Citation:
Dato, M.M., Ilao, J.A. & Pasamba, E. (2025). Acceptability of strategic intervention materials in improving numeracy skills. *The Research Probe,* 5(2), 154-172. https://doi.org/10.53378/trp.199

About the authors:
[1]Corresponding author. Bachelor of Secondary Education major in Mathematics. Currently affiliated with the College of Sciences, Technology, and Communications, Inc., School of Teacher Education. Corresponding author. Email: meinardmagnaye@gmail.com
[2]Bachelor of Secondary Education major in Mathematics. Currently affiliated with the College of Sciences, Technology, and Communications, Inc., School of Teacher Education. Email: 20220255@cstc.edu.ph
[3]Bachelor of Secondary Education major in Mathematics. College Instructor, CSTC Sariaya Inc. Email: edilbertopasamba1@gmail.com

**This paper is a finalist at the 5th International Research Competition (IRC) 2025*

1. Introduction

Mathematics education plays a vital role in developing logical reasoning, problem-solving skills, and the ability of students to apply concepts in real-life situations. However, national and international assessments reveal that many Filipino students continue to struggle with numeracy. Magas (2023) stated that the 2020 Trends in International Mathematics and Science Study reported that the Philippines ranked among the lowest in mathematics, while the Department of Education (2023) reported that the 2022 National Achievement Test showed that only 37% of Grade 10 students achieved the expected proficiency level. These findings emphasize the urgent need for interventions that strengthen foundational skills in mathematics.

In light of these gaps, Strategic Intervention Materials (SIM) offers a promising approach to support numeracy skills of the students. SIM enhance comprehension and retention, particularly in subjects such as mathematics and science (Hernane et al., 2025; Mutya et al., 2025). In the same line, Limbago-Bastida and Bastida (2022) emphasized that SIM provides engaging, student-centered learning experiences that address gaps in mathematical understanding. These materials simplify difficult topics through interactive exercises and contextualized content, making lessons more accessible to learners. Building on these, the Department of Education (DepEd) Memorandum No. 001, s. 2024 – Implementation of Catch-Up Fridays mandates the institutionalization of dedicated time for learning recovery, including activities focused on strengthening foundational skills such as numeracy every Friday throughout the school year.

Given the persistent challenges in mathematics education, this study examines the acceptability of SIM in improving the numeracy skills of Grade 10 students in Sariaya East District in the Philippines. It evaluates SIM in terms of content, clarity, appeal to the target user, and originality, while also determining how students perceive its usefulness in addressing learning gaps. The objectives of this study are: (1) to determine the numeracy skills of students before and after applying SIM, (2) to test the significant difference between numeracy skills pre-test and post-test performance, (3) to assess the acceptability of SIM based on perceptions of the students in terms of content, clarity, appeal to the target user, and originality, and (4) to propose SIM enhancements for improving its application in mathematics instruction.

2. Literature Review

Numeracy is foundational not only for academic success but also for real-life problem-solving and decision-making (Pratiwi et al., 2024; Svane et al., 2023). Furthermore, studies confirm that SIM can significantly help struggling learners understand complex mathematical concepts through personalized and engaging content (Bundang & Parangat, 2022; Sinco & Futalan, 2020). However, despite this consensus, certain gaps and limitations in the cited studies reveal areas where further inquiry is necessary. First, while many investigations confirm the effectiveness of SIM in general, few directly explore its acceptability from the perspective of the learners, specifically how students perceive its content, clarity, appeal, and originality in relation to their learning experience. Much of the existing research is focused on academic performance outcomes, neglecting how students engage with and respond to the design of SIM itself. Second, scholars raise concerns about content alignment and accuracy; limited empirical data exist on how these content issues influence learner acceptability and comprehension (Herrera & Soriano, 2016). Similarly, although clarity and organization are often highlighted as critical (Castillo, 2021; Portana et al., 2021), existing studies rarely quantify or analyze how varying levels of clarity affect student engagement and knowledge retention. Third, prior research mentions the role of appeal and originality in student motivation (Diaz & Dio, 2017; Reis, 2024), but few delve into how perceptions of the students of these elements correlate with actual improvement in numeracy skills. Most acceptability assessments rely on expert opinions or general evaluations rather than capturing learner feedback in a structured, measurable way.

Furthermore, many cited works examine SIM usage at a broad curricular level, or in different subject areas (e.g., science or English), limiting their direct applicability to mathematics and, more specifically, numeracy competencies of Grade 10 students, a group identified by national assessments as significantly underperforming (National Achievement Test, 2023; Programme for International Student Assessment, 2022). Given these limitations, the present study fills a meaningful gap by examining the acceptability of SIM as perceived by Grade 10 students at Pili National High School, using validated tools to assess key dimensions, content, clarity, appeal to the target user, and originality. Moreover, by linking these perceptions to measurable improvements in numeracy skills, the research offers practical insights into the design and implementation of SIM that go beyond performance metrics alone. This contributes to the field by integrating learner-centered evaluation into intervention

assessment, offering a more holistic understanding of what makes SIM not only effective but also engaging and acceptable to its target users.

3. Methodology

3.1. Research Design

The study utilized a quantitative approach, specifically a quasi-experimental design, to examine the significant difference between two data sets: pre-test and post-test scores. The researchers compared the Numeracy Skills Test results before and after applying the SIM to evaluate the direction of change in the numeracy skills levels of Grade 10 students. Capili and Anastasi (2024) highlighted the significance of quasi-experimental designs, especially in educational research, offering a means to evaluate interventions when random assignment is impractical. In addition, the study employed a descriptive-evaluative research approach to examine what Grade 10 students perceived in the acceptability of SIM in terms of content, clarity, appeal to the target user, and originality in enhancing their numeracy skills. This approach is ideal as it enables the researchers to thoroughly describe and evaluate the views of the students on the usefulness of SIM in their math learning process.

By combining quasi-experimental and descriptive-evaluative research designs, this study takes a well-rounded approach to assessing SIM on the numeracy skills of Grade 10 students. The quasi-experimental method helps measure the direction of change (positive or negative) of the numeracy skills level of Grade 10 students through pre-test and post-test comparisons. At the same time, the descriptive-evaluative approach allows researchers to gather student feedback on the clarity, content, appeal, and originality of the materials, ensuring their acceptability. By using these two methods together, the study not only provides solid data on the usefulness of SIM but also gains valuable insights from students, which in turn leads to the refinement and improvement of the materials.

3.2. Participants of the Study

The respondents of this study were Grade 10 students from one public school in Sariaya, Quezon during the school year 2024-2025. To determine the appropriate sample size, the study utilized Cochran’s formula, a widely recognized method for calculating the necessary number of respondents in a study. Ensuring an optimal sample size is crucial in mathematics research, as it enhances the accuracy and reliability of the findings. For instance,

Sathyanarayana et al. (2024) stated that Cochran's formula is an effective statistical tool that enables researchers to achieve precision while minimizing potential errors in data interpretation. Based on this formula, a total of 143 out of 227 students were selected to participate in the study.

To ensure a representative sample, the study implemented the stratified random sampling method. This approach involves dividing the population into distinct subgroups, or strata, based on shared characteristics. Respondents were randomly selected within each stratum to maintain fairness and inclusivity in the study. The distribution of respondents across the different sections is as follows: Ruby (30), Garnet (28), Diamond (28), Sapphire (29), and Emerald (28). By employing this sampling technique, the study obtained a well-balanced and statistically valid representation of the student population. Tipton (2014) highlights that stratified random sampling helps maintain the correct proportion of each subgroup, allowing the sample to accurately reflect the overall population.

3.3. Instrumentation and Data Gathering Process

The study utilized two primary instruments for data collection. The first instrument was the Grade 10 Division Numeracy Skills Post Test 2024, developed by the Department of Education–Quezon. This standardized tool consists of 50 multiple-choice items that assess numeracy skills of the students across various mathematical topics, including sequences and series, algebra, geometry, statistics and probability, word problems, combinatorics, permutations, and graph analysis. The test classifies student performance into four categories: Above Average (41–50), Average (33–40), Emergent (25–32), and Non-Numerate (0–24). This instrument enabled the researchers to measure changes in the numeracy skills of Grade 10 students before and after the implementation of the SIM.

The second instrument was a survey questionnaire adapted from the Development of English Worktext in English 101 by Reyes and De Guia (2017). To align the tool with the nature and components of SIM, selected statements were paraphrased and modified. The questionnaire included structured items organized into four domains: content, clarity, appeal to the target user, and originality, with five statements per domain. It employed a four-point Likert scale (1 – Not Acceptable to 4 – Highly Acceptable) to determine the level of acceptability of the SIM among Grade 10 students.

For the data gathering process, the school-administered results of the pre-test and post-test from the Grade 10 Division Numeracy Skills assessment were collected with permission. These results allowed the researchers to evaluate numeracy performance of the students before and after their exposure to the SIM. The administration of the standardized test followed a controlled classroom setting to ensure uniform testing conditions.

Lastly, the adapted survey questionnaire was distributed to the Grade 10 students. They were asked to evaluate the acceptability of the SIM according to the four identified domains. The responses were gathered, tabulated, and analyzed to determine the acceptability of the intervention materials in enhancing the numeracy skills of the learners.

3.4. Data Analysis

The researchers systematically organized and analyzed the responses. The researchers carefully interpreted the findings and ensured that the results were presented clearly and accurately. Throughout the study, ethical principles such as confidentiality and informed consent were strictly observed to uphold research integrity. The insights gained from this study will help refine and improve the development and implementation of SIM, leading to better numeracy skills among Grade 10 students.

3.5. Research Ethics

The researchers implemented a structured process to ensure the accuracy, reliability, and ethical integrity of data collection. First, formal permission was obtained from the principal at one public secondary school in Sariaya East District and the Grade 10 mathematics teacher to conduct the study. Once approval was granted, the researchers distributed informed consent forms to the selected student respondents, clearly explaining the purpose of the study, ensuring the confidentiality of all scores and responses, including pre-test and post-test scores, and emphasizing the voluntary nature of participation.

4. Findings and Discussion

Table 1 presents the distribution of respondents based on their level of numeracy skills before the application of SIM.

Table 1

Level of numeracy skills of the respondents before applying strategic intervention materials

Numeracy Test Score	Frequency	Percentage	Descriptors
25 - 32	1	0.70	Emergent
0 - 24	142	99.30	Non-Numerate
Total	**143**	**100**	

***Note**:* Mean percentage score is 67 described as "non-numerate"

Although one of the students demonstrates an emergent level of numeracy skills, it can be reflected that an overwhelming percentage of 99.30% falls under the non-numerate level, similar to the calculated mean percentage score of 67, described as non-numerate. These findings indicate that prior to the intervention, students generally exhibited extremely low levels of numeracy. The majority of Grade 10 students struggled to demonstrate even the most basic mathematical skills, showing a critical need for instructional support and remediation to improve their foundational knowledge. This concern is echoed by Hebres (2023), who noted that many Grade 10 students struggle with basic math skills, which adversely affects their academic performance and confidence in handling numerical tasks, despite ongoing efforts to address these learning gaps.

The mean percentage score of 67 indicates that the group falls into the lowest classification of numeracy, signifying a partial understanding which is insufficient to be functionally numerate. This emphasizes the necessity for instructional strategies that reteach content and engage learners in meaningful math experiences to enhance confidence and comprehension. Additionally, it highlights the importance of using SIM to address numeracy skill gaps and provide scaffolded instruction for at-risk learners.

The study of Pratiwi et al. (2024) emphasized that early numeracy competence plays a significant role in the future academic achievement of children, especially in mathematics. Students who start school with limited numeracy skills often remain behind without targeted intervention. Similarly, Svane et al. (2023) highlighted that numeracy development is strongly linked to both classroom practices and teacher effectiveness. If students are not given ample opportunity to explore numbers and apply their understanding in different contexts, they are less likely to retain or develop these essential skills.

Table 2

Level of numeracy skills of the respondents after applying strategic intervention materials

Numeracy Test Score	Frequency	Percentage	Descriptors
33 - 40	6	4.20	Average
25 - 32	20	13.99	Emergent
0 - 24	117	81.82	Non-Numerate
Total	**143**	**100**	

***Note**:* Mean percentage score is 69 described as "non-numerate*"*

Table 2 presents the level of numeracy skills of the students after the application of SIM. Table 2 shows that 117 out of 143 students, or 81.82%, fall under the non-numerate level. This indicates that a large majority of the respondents still possess limited or minimal proficiency in fundamental mathematical skills. Students at this level likely struggle with basic operations, problem-solving, and applying numerical understanding in real-life situations. This suggests that, even after the intervention, the students still require intensive support and remediation to build foundational numeracy skills. The dominance of this level in the results may reflect persistent learning gaps that cannot be addressed by a single intervention alone. This finding aligns with the claim of Mangarin and Caballes (2024), who emphasized that ineffective teaching methods and a lack of motivation further contribute to difficulties in learning numeracy.

In contrast, the lowest frequency is observed in the average level, with only 6 students, or 4.20%, reaching this classification. Students in the average category demonstrate functional mathematical competence, they are capable of performing basic computations and understanding essential math concepts. Although this group is small, their performance indicates that some learners have begun to acquire and apply numeracy skills more effectively. The presence of students in both the emergent (13.99%) and average levels suggests that the SIM contributed to the progress of certain learners. Features such as visuals, contextualized problems, and guided practice activities may have played a role in helping these students understand foundational mathematical concepts. This observation is supported by the study of Dumigsi and Cabrella (2019), who found that students who used SIM achieved higher post-assessment scores, particularly in problem-solving tasks, highlighting the effectiveness of SIM in enhancing mathematical skills.

It suggests that although progress was gradual, strategic interventions like SIM play a vital role in addressing numeracy deficiencies and supporting struggling learners toward better academic outcomes. Moreover, the findings align with the studies of Dumigsi and Cabrella (2019), who concluded that SIM significantly enhanced mathematical performance among Grade 9 students, and Rosal et al. (2022), who emphasized that SIM boost engagement and comprehension of difficult topics. Likewise, Balogun and Olalekan (2024) noted that students taught using SIM achieved higher mean percentage scores than those using traditional methods.

Table 3 reflects a statistically significant difference in the numeracy skill levels of the respondents before and after the implementation of the SIM. The computed z-value of -7.289 and p-value of .001 indicate that this result is highly significant at the .05 level. As a result, the null hypothesis, stating that there is no difference in performance, is rejected.

Table 3

Difference between the level of numeracy skills before and after applying strategic intervention materials

Ranks	*N*	*z*-value	*p*-value	Statistical Decision	Interpretation
Negative	30				
Positive	96	-7.289	.001	Reject H*o*	Significant
Equal	17				
Total	**143**				

***Note**: The rank results showed that thirty (n=30) students had negative ranks, indicating that these students scored higher on the pre-test than on the post-test. In contrast, ninety-six (n = 96) students had positive ranks, demonstrating that the majority of students scored higher on the post-test than on the pre-test. Additionally, seventeen (n=17) students had equal ranks, meaning there were no changes in their scores between the pre-test and post-test.*

This statistical outcome indicates a positive change in the numeracy skills of Grade 10 students post-intervention, with 96 out of 143 participants showing gains. Despite these improvements, a significant number of students remained at the non-numerate level, suggesting the need for enhanced instructional materials and support to aid more learners in achieving higher proficiency. Additionally, 30 students experienced a decrease in scores, while 17 showed no change. The findings emphasize the necessity to improve the SIM to better address foundational learning gaps and promote further advancements in numeracy skills.

The study highlights the positive impact of SIM on the numeracy skills of Grade 10 students, confirming their effectiveness in enhancing learner performance. It emphasizes that

SIM is not just a supplemental tool but a significant aid in overcoming educational challenges, particularly in mathematics, thus empowering both students and teachers. To support this, according to Sinco (2020), there was a significant difference in the performance of students before and after the implementation of SIM, highlighting its effectiveness as a learning tool. Furthermore, Rosal et al. (2022) emphasized that SIM enhances student engagement and understanding, especially in challenging subjects. Similarly, Dumigsi and Cabrella (2019) concluded that SIM significantly enhanced mathematical performance among learners. These findings affirm that SIM can significantly improve student outcomes by providing interactive, customized learning experiences that target specific academic deficiencies.

Table 4 shows that SIM received a "Highly Acceptable" rating from students, with an average Weighted Arithmetic Mean (WAM) of 3.54 in terms of content. Students found the materials clear, logical, and aligned with their learning needs, noting their organization and the inclusion of relevant examples and exercises that facilitated comprehension. This supports the findings of Romero (2021), who emphasized that SIM content plays a vital role in bridging learning gaps by offering alternative explanations and sufficient practice opportunities. Likewise, Estremera (2023) affirmed that high-quality learning modules significantly contribute to student engagement and mathematics improvement, reinforcing the importance of well-structured instructional content.

Table 4

Level of acceptability of strategic intervention materials in terms of content

Indicators	WAM	Interpretation
In the Strategic Intervention Materials, …		
1. topics are well arranged to provide a clear sequence for understanding.	3.62	Highly Acceptable
3. provide proficient reception of learning through examples to easily understand the concept.	3.62	Highly Acceptable
5. topics are straightforward and directly addresses learning needs of students.	3.57	Highly Acceptable
4. provide a variety of exercises from simple to complex manipulation for mastery of concepts.	3.46	Acceptable
2. cards aid the students in grasping lesson concepts in a systematic way.	3.41	Acceptable
Average Weighted Arithmetic Mean	**3.54**	**Highly Acceptable**

Legend: 1.00-1.50 Not Acceptable; 1.51-2.50 Fairly Acceptable; 2.51-3.50 Acceptable; 3.51-4.00 Highly Acceptable

Among the five indicators in the table, two items obtained the highest weighted arithmetic mean of 3.62, both interpreted as "Highly Acceptable." These indicators stated that the topics in the SIM were well arranged to provide a clear sequence for understanding and that the materials provided a proficient reception of learning through examples to easily understand the concept. These findings imply that students highly appreciated the logical arrangement of topics and the use of relevant examples, which supported their understanding of mathematical concepts. This aligns with Luzano (2020), who highlighted that SIM content fosters better understanding by presenting complex topics in an accessible manner customized to diverse learners. Similarly, Romero (2021) asserted that clearly structured and example-driven materials promote greater engagement and comprehension in mathematics.

The indicator with the lowest weighted mean of 3.41 was the statement "cards aid the students in grasping lesson concepts in a systematic way," rated as "Acceptable." Despite a positive reception, this rating indicates potential improvements in the design and implementation of visual support tools like cards within the SIM, as they may not fully meet the diverse needs of all learners. Aranda et al. (2019) emphasized the importance of selecting appropriate formats based on learner needs, as content effective for one group may not be as impactful for another. Therefore, enhancements in the design and application of learning tools like cards could further improve the systematic understanding of lesson concepts among students.

Table 5

Level of acceptability of strategic intervention materials in terms of clarity

Indicators	WAM	Interpretation
In the Strategic Intervention Materials, …		
1. lessons are organized and clear.	3.68	Highly Acceptable
2. directions are understandable and easy to follow.	3.65	Highly Acceptable
3. lessons are well explained and become the preparatory stage for exercises.	3.65	Highly Acceptable
4. ideas and concepts are well expressed.	3.59	Highly Acceptable
5. flow of activities is coherent and non-confusing.	3.50	Acceptable
Average Weighted Arithmetic Mean	**3.61**	**Highly Acceptable**

Legend: 1.00-1.50 Not Acceptable; 1.51-2.50 Fairly Acceptable; 2.51-3.50 Acceptable; 3.51-4.00 Highly Acceptable

Table 5 indicates that the SIM received a weighted arithmetic mean of 3.61 in clarity, categorized as “Highly Acceptable” by students. This suggests that the materials are perceived

as clear and easy to understand, enhancing engagement and comprehension in mathematics. The high clarity rating reflects the materials' effective structure and coherence, essential for supporting students' understanding of mathematical concepts. This finding supports the study of Castillo (2021), who emphasized that MELC-based supplementary learning materials were rated highly in terms of clarity due to their ease of understanding and well-organized format, underscoring the importance of clearly designed instructional resources in supporting effective student learning.

Among the five indicators, the highest weighted arithmetic mean of 3.68 was recorded for the statement “lessons are organized and clear,” which also received a verbal interpretation of “Highly Acceptable.” This suggests that students highly valued the logical sequencing and structure of the SIM, which enabled them to follow the lessons with ease and coherence, an essential aspect in mathematics where a step-by-step understanding is crucial for building foundational skills. This is in line with the findings of Lituañas and Dela Cruz (2024), who reported a mean clarity rating of 3.71 for SIM evaluated by expert panels, concluding that well-organized and properly validated instructional materials significantly support the understanding of complex topics of the students.

The indicator “flow of activities is coherent and non-confusing” received the lowest weighted arithmetic mean of 3.50, interpreted as “Acceptable.” This suggests a favorable perception but indicates some students faced minor challenges with the smoothness of activities, necessitating improvements in transitions or scaffolds in the SIM. The result aligns with the study of Portana et al. (2021), which found that instructional materials scored 3.46 in terms of clarity and were described as “Very Satisfactory.” Their findings emphasized the importance of designing activities that maintain logical flow and reduce ambiguity in learning materials.

These results affirm that the SIM used in this study were generally regarded as a highly acceptable instructional resource in terms of clarity, with only slight room for enhancement in the coherence of activities. The alignment with prior studies further validates the credibility and effectiveness of the materials in supporting numeracy development among students.

Table 6 presents the overall average weighted arithmetic mean of 3.53 for the acceptability of SIM in enhancing students' numeracy skills, categorized as “Highly Acceptable.” The results indicate that the materials effectively attracted students' attention, maintained their interest, and aligned with their learning preferences, confirming both their

academic relevance and engaging nature. This supports the study of Diaz and Dio (2017), who noted that appealing learning materials significantly enhance student motivation and performance in mathematics, as students are more likely to participate and perform well when the content is engaging and aligned with their interests.

Table 6

Level of acceptability of strategic intervention materials in terms of appeal to the target user

Indicators	WAM	Interpretation
In the Strategic Intervention Materials, …		
3. enables learners to develop their critical thinking and numeracy skills.	3.57	Highly Acceptable
5. creates various experiences for individual learning.	3.54	Highly Acceptable
4. strengthens the positive attitude of the students.	3.52	Highly Acceptable
1. captivates the interest of learners.	3.51	Highly Acceptable
2. stimulates the interest of learners in answering the different activities.	3.49	Acceptable
Average Weighted Arithmetic Mean	**3.53**	**Highly Acceptable**

Legend: 1.00-1.50 Not Acceptable; 1.51-2.50 Fairly Acceptable; 2.51-3.50 Acceptable; 3.51-4.00 Highly Acceptable

Students rated the statement “enables learners to develop their critical thinking and numeracy skills” with the highest arithmetic mean of 3.57, indicating it as “Highly Acceptable.” This suggests that the SIM are viewed as effective in fostering higher-order thinking and problem-solving skills essential for numeracy development, promoting independent thinking and practical application of mathematical concepts. This result aligns with the findings of Kabilito (2024), who observed that when students find materials appealing, their comprehension and retention are significantly improved, as appealing resources foster deeper engagement with the content.

Conversely, the indicator “stimulates the interest of learners in answering the different activities” received the lowest weighted arithmetic mean of 3.49, categorized as “Acceptable.” This suggests a slight deficiency in sustaining student enthusiasm during the SIM activities, potentially due to insufficient interactivity or contextual relevance in some tasks. As suggested by Sabayton et al. (2023), students are more likely to remain engaged and perform better when instructional materials are designed with stimulating, relatable, and dynamic elements. Therefore, while the SIM is generally effective in appealing to the learners, further enhancements, such as incorporating more interactive tasks or gamified components, could further elevate its acceptability in sustaining student interest.

The findings reflect that the SIM were perceived as appealing and acceptable tools that support the critical thinking of the learners and foster active engagement in numeracy. These results affirm the importance of designing instructional materials that are not only informative but also visually and contextually engaging. As reiterated by Diaz and Dio (2017) and Kabilito (2024), the appeal of instructional materials plays a vital role in improving learner participation and academic performance, especially in a subject as challenging as mathematics.

Table 7

Level of acceptability of strategic intervention materials in terms of originality

Indicators	WAM	Interpretation
In the Strategic Intervention Materials, …		
4. enhances numeracy skills through authentic learning activities.	3.59	Highly Acceptable
2. serve as the new approach in teaching numeracy skills topics.	3.57	Highly Acceptable
1. design and appearance are exceptionally different from traditional materials.	3.52	Highly Acceptable
5. are customized based on the learning gaps of the students	3.52	Highly Acceptable
3. provides a variety of relevant evaluation measures.	3.45	Acceptable
Average Weighted Arithmetic Mean	**3.53**	**Highly Acceptable**

Legend: 1.00-1.50 Not Acceptable; 1.51-2.50 Fairly Acceptable; 2.51-3.50 Acceptable; 3.51-4.00 Highly Acceptable

Table 7 summarizes the WAM of the acceptability of SIM for improving Grade 10 students' numeracy skills, with an average WAM of 3.53, classified as "Highly Acceptable." This reflects students' acknowledgment of the innovative presentation of numeracy concepts, suggesting that the originality of these materials, characterized by unique structure, engaging activities, and differentiated content, enhances their learning experience. This finding aligns with Reis (2024), who emphasized that originality in instructional tools involves presenting content in a fresh and challenging manner that fosters critical thinking. Similarly, Essoe et al. (2022) noted that original and distinctive materials are more memorable and effective in helping students retain concepts. These insights affirm that originality played a significant role in the high acceptability rating of the SIM.

Students rated the effectiveness of the SIM in enhancing numeracy skills through real-life learning activities with a high mean score of 3.59, indicating that these authentic activities successfully made learning more relevant and meaningful, enabling practical application of mathematical skills and improving understanding and retention. This supports the findings of Agustin and Amelia (2025), who concluded that interactive and real-world-based activities

help learners grasp numeracy concepts more effectively and make the learning process more enjoyable. Thus, the high rating for this statement demonstrates the value of authenticity in instructional design as a tool to strengthen numeracy skills.

On the other hand, the lowest weighted arithmetic mean was 3.45, corresponding to the statement "provides a variety of relevant evaluation measures," which received the interpretation of "Acceptable." While this rating still reflects a positive perception, it suggests that students saw opportunities for improvement in the diversity and design of assessment tools included in the SIM. Although the materials included evaluation components, learners may have found them limited in scope or lacking alignment with varied learning styles. This is supported by Ramos (2024), who highlighted the importance of crafting well-structured Assessment Cards in SIM to ensure accurate measurement of student understanding and mastery. Ramos emphasized that assessments must be diverse and responsive to the needs of the students to be fully acceptable. Therefore, this indicator comparatively lower score may reflect the call for more customized and engaging evaluation strategies of the students within the materials.

The findings affirm that originality, expressed through authentic tasks, innovative structure, and creative presentation, is a notable strength of the SIM. The highly favorable perception of originality of the students indicates that SIM helped make numeracy learning more engaging, effective, and relevant to real-world contexts. These insights further support the value of designing instructional tools that are not only educationally sound but also original and learner-centered to maximize their acceptability and impact in the classroom.

5. Conclusion

This study concludes that Strategic Intervention Materials (SIM) play a significant role in improving the numeracy skills of Grade 10 students by addressing learning gaps through clear and engaging instructional tools. Findings showed that before the intervention, the majority of the students were classified as non-numerate, but after the use of SIM, measurable progress was observed, with statistical analysis confirming a significant difference between pre-test and post-test scores. The SIM was rated “Highly Acceptable” in terms of content, clarity, appeal to the target user, and originality, demonstrating that it acceptably simplified mathematical concepts and enhanced student comprehension. Its structured activities,

contextualized examples, and creative presentation promoted learner participation, persistence, and confidence in solving mathematical tasks.

Beyond improving performance, SIM functioned as a practical instructional resource that fostered engagement and independent learning among students, while supporting teachers in addressing the least mastered skills. Nevertheless, the persistence of many students at the non-numerate level suggests the need for further enhancement of SIM, particularly by integrating more interactive, contextualized, organized, and technology-based features to maximize its acceptability and effectiveness. In conclusion, the study establishes SIM as an effective and acceptable educational tool that strengthens foundational numeracy, enhances teaching strategies, and provides a valuable pathway for improving mathematics instruction and academic success.

Disclosure statement

No potential conflict of interest was reported by the authors.

Funding

This work was not supported by any funding.

Institutional Review Board Statement

This study was conducted in accordance with the ethical guidelines set by College of Sciences, Technology, and Communication Inc. The conduct of this study has been approved and given relative clearances by College of Sciences, Technology, and Communication Inc.

AI Declaration

The author declares the use of Artificial Intelligence (AI) in writing this paper. In particular, the author used ChatGPT in checking the grammar and summarizing the key points. The author takes full responsibility in ensuring proper review and editing of contents generated using AI.

ORCID

Meinard M. Dato – https://orcid.org/0009-0006-5798-206X

Jhamvee A. Ilao – https://orcid.org/0009-0007-0048-9503

Edilberto Pasamba – https://orcid.org/0009-0007-0915-3512

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