



Structured Math Activities for Late-Developing Learners

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ABSTRACT

Mathematics is an important subject that helps learners develop problem-solving and thinking skills. However, some Grade 2 learners have difficulty understanding basic operations such as addition and subtraction. These learners, often described as late-developing learners, need more support and practice to improve their numeracy skills. Because of this, teachers need to provide structured and meaningful activities that help learners understand mathematical concepts step by step. This study aimed to develop and evaluate structured math activities under Project MathPath to help late-developing Grade 2 learners improve their addition and subtraction skills. The study also examined the acceptability of the developed activities and determined whether there was a significant difference in learners' performance before and after using the activities. This study used a developmental research design with a one-group pretest–posttest design. Thirteen Grade 2 learners who showed low numeracy performance in the Enhanced Regional Unified Numeracy Test (E-RUNT) participated in the study. The structured math activities were implemented for three weeks and included worksheets, game-based activities, and manipulatives. The activities followed the Concrete–Pictorial–Abstract (CPA) approach and each activity had a time limit to help learners practice solving problems efficiently. The materials were evaluated by experts using the Learning Resources Management and Development System (LRMDS) evaluation tool. Mean and standard deviation were used to analyze the data, while the Wilcoxon Signed Rank Test determine if there was a significant improvement in the learners' scores. Results showed that the developed structured math activities were Highly Acceptable, with an overall mean score of 3.89. Learners' numeracy performance improved from Low Proficient in the pretest to Proficient in the posttest. Statistical analysis also showed a significant improvement in the learners' scores after using the activities. The findings suggest that structured math activities can help late-developing learners improve their basic mathematics skills.

Keywords: Late-Developing Learners, Numeracy Skills, Structured Math Activities

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INTRODUCTION

Mathematics is fundamental in early grades for developing problem-solving and logical thinking skills. Grade 2 learners who struggle with basic operations like addition and subtraction often face low academic performance, reduced confidence, and widening learning gaps. Late-developing learners, those who need more time and structured support, require targeted interventions beyond traditional teaching methods (Creswell, 2012).

While the Department of Education has implemented standard interventions to support learners struggling in mathematics, such as remedial worksheets and supplemental exercises (DepEd, 2024), these strategies often focus on general classroom instruction and may not fully address the needs of late-developing learners. Existing interventions frequently lack structured, time-bound, and developmentally sequenced activities that incorporate hands-on and pictorial approaches. To address this gap, this study introduces Project MathPath, a structured set of Concrete-Pictorial-Abstract (CPA)-based math activities designed specifically for late-developing Grade 2 learners. Unlike existing DepEd interventions, Project MathPath guides learners through a step-by-step progression from concrete manipulatives to pictorial representations and finally to symbolic numerical problems, providing targeted support for learners requiring additional scaffolding in one-digit addition and subtraction.

Previous studies highlight effective strategies in mathematics learning: structured remedial instruction improves basic skills, confidence, and motivation (Yang et al., 2014 as cited in Santos et al., 2022; Project MATHRESCUE, 2025 as cited in Filgona et al., 2020; Svane et al., 2023 as cited in Filgona et al., 2020), step-by-step problem solving and worked examples help learners internalize strategies (Sweller & Cooper, 1985 as cited in Filgona et al., 2020), and manipulatives enhance conceptual understanding (Moyer & Carbonneau, n.d. as cited in Santos et al., 2022). The Concrete Pictorial Abstract (CPA) approach further supports understanding by guiding learners from concrete objects to pictorial representations and abstract symbols (Hasibuan et al., 2025; Sadsang et al., 2022; Azzumar & Juandi, 2022 as cited in Santos et al., 2022).

However, most studies do not clarify the optimal timing for each CPA stage, and prior research mainly focuses on general populations or isolated strategies. This leaves a gap in localized, developmentally appropriate interventions for late-developing Grade 2 learners that integrate hands-on, pictorial, and time-bound activities to improve foundational math skills.

To address this gap, this study aims to determine the effectiveness of Project MathPath in improving one-digit addition and subtraction skills, contributing to structured mathematics interventions and providing practical strategies for teachers addressing early numeracy gaps.

OBJECTIVES OF THE STUDY

This developmental study aimed to design, develop, and evaluate the effectiveness of structured Math Activities for Late-Developing Learners in improving the mathematical skills in addition and subtraction of Grade 2 pupils in one elementary school during the School Year 2025–2026.

Specifically, this study sought to answer the following questions:

1. What is the level of acceptability of the developed structured math activities as evaluated by experts in terms of:
 - 1.1 content;
 - 1.2 format;
 - 1.3 presentation and organization; and
 - 1.4 Accuracy and Up-to-datedness of Information?
2. What is the level of mathematical performance of late-developing Grade 2 learners in addition and subtraction as reflected in their pretest and posttest scores?
3. Is there a statistically significant difference between the pretest and posttest scores of late-developing Grade 2 learners after the implementation of the structured math activities?

LITERATURE REVIEW

Many students find mathematics challenging, especially when it comes to basic operations like addition and subtraction. Difficulty with number sense, understanding procedures, and thinking abstractly can lead to lower grades, less confidence, and less interest in learning math (Yang et al., 2014 as cited by Santos et al., 2022). To help these learners, structured remedial instruction has proven effective. Programs that are carefully organized, connected to students' experiences, and scaffolded step by step can boost students' skills, confidence, and motivation (Project MATHRESCUE, 2025 as cited by Filgona et al., 2020). Such support is especially important for late-developing learners, as it helps bridge gaps in understanding and provides them a chance to catch up (Svane et al., 2023 as cited by Filgona et al., 2020).



Activities that are well-planned, like step-by-step problem solving and worked examples, make learning more manageable for students. These approaches reduce confusion and allow learners to gradually internalize strategies (Sweller & Cooper, 1985 as cited by Filgona et al., 2020). Additionally, using manipulatives—whether physical objects or digital tools—helps students understand concepts better and strengthens their foundation in mathematics (Moyer & Carbonneau, Various publications as cited by Santos et al., 2022). This shows that learners improve most when teaching is organized, hands-on, and supportive.

Concrete Pictorial Abstract (CPA) Approach

The Concrete Pictorial Abstract (CPA) approach is a method designed to help learners gradually move from using concrete objects to drawing pictures and finally to working with abstract symbols in math (Hasibuan et al., 2025 as cited by Santos et al., 2022). In the concrete stage, students use objects they can touch and manipulate, which helps them understand how numbers and operations work. In the pictorial stage, they represent these ideas with drawings, bridging the gap between hands-on experience and abstract thinking. Finally, they work with symbols, such as numbers and operation signs, confidently and meaningfully.

Research has shown that CPA can really help students improve their math skills. For example, using CPA for two-digit addition has been shown to increase understanding, reduce math anxiety, and keep students engaged, with skills retained even after the lessons ended (Hasibuan et al., 2025 as cited by Santos et al., 2022). It has also worked well for fractions, where students were able to perform addition and subtraction beyond the expected level after intervention (Sadsang et al., 2022 as cited by Santos et al., 2022). A review of CPA studies found that it consistently improves both learning outcomes and students' attitudes toward math (Azzumar & Juandi, 2022 as cited by Santos et al., 2022).

However, most studies do not explain how much time should be spent on each stage, which could be important for learners who need extra support. Early research with first graders showed improvement in subtraction, but again, the timing for each stage was not specified (Yin, Master's Thesis as cited by Santos et al., 2022). Overall, CPA is a powerful approach for helping learners understand math concepts, stay motivated, and build confidence.

Structured Remedial Instruction and Activity Design

Structured remedial instruction is another key way to help late-developing learners succeed in mathematics. Small-group activities, scaffolded exercises, and lessons connected to real-life situations give learners the support they need to build competence and confidence (Yang et al., 2014 as cited by Santos et al., 2022). Structured worksheets, for example, give students step-by-step practice that strengthens their understanding while keeping them engaged (Project MATHRESCUE, 2025 as cited by Filgona et al., 2020).

Worked examples are also helpful, showing learners how to solve problems in a guided way. When combined with manipulatives, these activities create a supportive learning environment that helps students move from concrete experiences to abstract thinking more smoothly (Sweller & Cooper, 1985; Moyer & Carbonneau, Various publications as cited by Santos et al., 2022).

Synthesis

In general, late-developing learners in mathematics benefit most from lessons that are structured, scaffolded, and interactive. The CPA approach provides a clear pathway from hands-on experiences to abstract understanding, which helps improve both conceptual knowledge and engagement. While previous studies have shown CPA to be effective for addition and subtraction, there is still a need to determine the optimal time allocation for each stage, especially for learners who require extra support to consolidate foundational concepts.

Integrating structured activities, guided examples, and manipulatives within a CPA framework appears to be one of the most promising strategies for enhancing learning outcomes, motivation, and confidence. Future research could focus on how to best distribute time for each CPA stage, providing teachers with practical guidance to more effectively support late-developing learners in mathematics.

METHODOLOGY

Research Design

This study employed a developmental research design to design, develop, and evaluate the effectiveness of structured math activities under Project MathPath for late-developing Grade 2 learners. Developmental research systematically focuses on the planning, creation, validation, and evaluation of instructional materials intended to address identified learning gaps (Ibrahim, 2018). In this study, the developmental process included four major phases: planning, development of activities, validation through the Division Learning Resources Management and Development System (LRMDS), and implementation of the intervention.



To determine the effectiveness of the developed structured math activities, the study utilized the One-Group Pretest–Posttest Design. According to Creswell (2012), this design involves administering a pretest to a group of participants, implementing an intervention, and then administering a posttest to measure changes in performance. This approach allows the researcher to examine learning gains within an intact group in a real classroom setting.

The choice of this design is also grounded in Bruner's Theory of Representation (1966), which proposes that learners progress through three stages of understanding: enactive (concrete), iconic (pictorial), and symbolic (abstract). Project MathPath was developed following this structured progression, guiding learners from hands-on manipulatives to visual representations and finally to numerical symbols. By measuring learners' mathematical performance before and after exposure to this CPA-based progression, the research design enables the researcher to determine whether the structured, theory-based intervention resulted in measurable improvement in addition and subtraction skills.

Through this design, the mathematical skills of the late-developing Grade 2 learners were assessed using the E-RUNT pretest prior to the intervention and the E-RUNT posttest after the three-week implementation. The difference between pretest and posttest scores served as the basis for evaluating the effectiveness of Project MathPath in improving learners' accuracy, fluency, and conceptual understanding in one-digit addition and subtraction.

Locale of the Study

The study was conducted in one elementary school in the Division of Escalante City during the school year 2025–2026. The school was selected based on accessibility and the presence of Grade 2 learners identified as late-developing in mathematics.

Respondents of the Study

The participants were thirteen (13) Grade 2 pupils identified as late-developing through the E-RUNT pretest. Learners scoring below the proficiency threshold were selected for inclusion in the study to ensure that the intervention targeted those who most needed structured support in one-digit addition and subtraction.

Research Instruments

This study will employ two primary research instruments: the Enhanced Regional Unified Numeracy Test (E-RUNT) for Grade 2 and a set of structured math activities under Project MathPath: Conveys a journey or Pathway to Math Understanding.

I. Enhanced Regional Unified Numeracy Test (E-RUNT)

The E-RUNT will be a standardized test developed and validated by the Department of Education to measure the numeracy skills of Grade 2 learners. This test will be used as both a pretest and a posttest to assess learners' progress in addition and subtraction before and after the intervention. The E-RUNT's validity and reliability will have been established through formal procedures, ensuring that it will accurately measure learners' numeracy skills and produce consistent results across different groups of learners.

II. Project MathPath: Conveys a journey or Pathway to Math Understanding

The activities in Project MathPath are designed to help late-developing Grade 2 learners improve their one-digit addition and subtraction skills. These activities were planned based on the learners' pretest results and the areas they need the most help with. The program lasts for three weeks, and each day students do 3 to 4 activities. Each activity has a time limit to help learners focus and practice without feeling rushed. The activities are varied to keep learners engaged and include:

- Worksheets for step-by-step practice
- Hands-on games using manipulatives such as popsicle sticks, cups, and cards
- Paper-and-pencil games to make learning fun while practicing addition and subtraction

The activities follow the Concrete-Pictorial-Abstract (CPA) method:

Concrete Stage – Learners use real objects or manipulatives to explore addition and subtraction. Games at this stage allow learners to practice in a fun, interactive way while the time limit ensures they stay focused.

Pictorial Stage – Learners use drawings, diagrams, or number lines to show their thinking. Both worksheets and paper-and-pencil games help learners connect hands-on experiences to numbers, with time limits to guide completion.

Abstract Stage – Learners solve problems using numbers and symbols only. Timed worksheets and games encourage learners to apply what they have learned independently and confidently.



By the end of the three-week program, learners will have completed multiple activities every day, each with a time limit to help them concentrate. The combination of worksheets, hands-on manipulatives, and games makes learning addition and subtraction fun, interactive, and effective. This step-by-step, timed, and varied approach helps late-developing learners gradually build understanding, confidence, and fluency in mathematics.

To ensure the quality, validity, and appropriateness of the structured math activities, they were submitted for validation through the Learning Resources Management and Development System (LRMDS) of the Division of Escalante City. The validation was conducted by the LRMDS Supervisor and designated Division evaluators, who are experts in the development, evaluation, and utilization of instructional materials and learning activities within the Department of Education. The activities were evaluated in terms of content accuracy, clarity of instructions, suitability to the learners' developmental level, instructional design, and alignment with the Grade 2 Mathematics curriculum and learning competencies.

Only the structured math activities that met the standards and requirements of the Division LRMDS of Escalante City and were approved for classroom use were implemented in the study. The LRMDS validation process ensured that the materials are instructionally sound, relevant, and aligned with DepEd learning standards, making them appropriate for use as intervention materials for late-developing learners.

Since the structured math activities function as instructional materials rather than assessment instruments, and because they underwent formal Division-level validation through the LRMDS, the researcher did not conduct a separate pilot testing or statistical reliability analysis. The approval of these materials by the Division LRMDS serves as assurance of the validity and suitability for implementation in the study.

Validity and Reliability of Instruments

This study utilized the Enhanced Regional Unified Numeracy Test (E-RUNT) as the primary instrument for measuring the mathematical performance of Grade 2 learners in addition and subtraction. The E-RUNT is a standardized numeracy assessment developed by the Department of Education at the regional level and is widely used in schools to assess learners' numeracy proficiency. As a standardized instrument, the E-RUNT has undergone established procedures for test development, including item review, pilot implementation, and statistical analysis to ensure its validity and reliability (Department of Education, 2024; Sebastian, Segovia, & Nemiada, 2025). Because of these established measurement properties, the researcher did not conduct a separate validity and reliability test for the E-RUNT in this study.

In addition to the standardized test, the study utilized Project MathPath, a set of structured math activities developed by the researcher as intervention materials for late-developing learners. The activities were designed based on the learners' pretest results and identified learning needs in one-digit addition and subtraction. To ensure the quality and appropriateness of the developed instructional materials, the structured math activities were subjected to expert validation through the Division Learning Resource Management and Development System (LRMDS). The validation was conducted by the LRMDS Supervisor and designated Division evaluators who are experts in the development and evaluation of instructional materials in the Department of Education. The activities were evaluated based on the following criteria: content, format, presentation and organization, and accuracy and up-to-datedness of information.

Only the structured math activities that met the standards and requirements of the Division LRMDS and were approved for classroom use were implemented in the study. The LRMDS validation process ensured that the materials were instructionally sound, relevant, and aligned with the Department of Education learning standards.

Since the structured math activities served as instructional materials rather than measurement instruments, a separate statistical reliability analysis was not conducted. The Division-level validation through the LRMDS served as assurance of the validity, appropriateness, and instructional quality of the materials used in the intervention.

The use of a standardized assessment tool (E-RUNT) together with Division-validated instructional materials strengthened the credibility and trustworthiness of the data collected in this study.

Data Gathering Procedures

Data collection followed four phases:

Phase 1: Planning

Review of literature on mathematics interventions and CPA approach.

Identification of learners' needs based on pretest scores.

Phase 2: Development of Structured Activities

Activities designed according to CPA stages with clear objectives and step-by-step instructions.

Drafted activities addressed specific learning gaps in one-digit addition and subtraction.



Phase 3: Validation of Activities

Draft activities submitted to Division LRMSD for review.

Evaluators assessed content, format, presentation, and accuracy.

Only approved activities were implemented.

Phase 4: Implementation and Data Collection

Project MathPath implemented for three weeks, Monday to Friday, 2:15–2:45 PM.

Four structured activities were conducted per day, totaling 60 activities.

E-RUNT posttest administered after the intervention to measure improvements.

Data Analysis

Acceptability of Project MathPath: Expert evaluations summarized using descriptive statistics (mean and SD) with a 4-point scale:

Table 1

Scale for Interpreting the Level of Acceptability

Mean Range	Interpretation
3.26 – 4.00	Highly Acceptable
2.51 – 3.25	Acceptable
1.76 – 2.50	Slightly Acceptable
1.00 – 1.75	Not Acceptable

Learners' performance: Pretest and posttest scores analyzed using descriptive statistics (mean, SD). Scores interpreted using the E-RUNT proficiency scale:

Table 2

E-RUNT Numeracy Score Interpretation Scale

Percentage Score	Interpretation
90–100%	Highly Proficient
75–89%	Proficient
50–74%	Nearly Proficient
25–49%	Low Proficient
0–24%	Not Proficient

Statistical significance: Normality tested using Shapiro-Wilk; non-normal data analyzed with Wilcoxon Signed Rank Test at $\alpha = 0.05$ using SPSS.

Ethical Considerations

Informed consent obtained from parents/guardians.

Participation was voluntary and learners' identities were anonymized using codes.

Data confidentiality: Physical documents locked, digital files password-protected.

Compliance with DepEd Child Protection Policy (DepEd Order No. 40, s. 2012).

RESULTS AND DISCUSSION

This chapter presents the results and discussion, focusing on the acceptability and effectiveness of the developed structured math activities for late-developing learners. The findings are organized according to the study's specific objectives, beginning with the level of acceptability of the activities as evaluated by experts, followed by an examination of learners' mathematics performance before and after exposure to the activities, and concluding with an analysis of whether the observed changes in



performance were statistically significant. The chapter integrates the presentation of data with interpretive discussion, connecting the findings to relevant educational research and theories on supporting learners who require additional assistance in mathematics.

Table 3

Level of Acceptability of the Structured Mathematics Activities as Evaluated by Experts

Criteria	Mean	SD	Interpretation
Content	3.96	0.071	Highly Acceptable
Format	3.82	0.123	Highly Acceptable
Presentation and Organization	3.90	0.115	Highly Acceptable
Accuracy and Up-to-Datedness of Information	4.00	0.000	Highly Acceptable
Overall Mean	3.89	0.072	Highly Acceptable

The results presented in Table 3 indicate that the developed structured mathematics activities were evaluated as “Highly Acceptable” across all four criteria—Content ($M = 3.96$), Format ($M = 3.82$), Presentation and Organization ($M = 3.90$), and Accuracy and Up-to-Datedness of Information ($M = 4.00$)—with an overall mean score of 3.89 and a very low overall standard deviation ($SD = 0.072$). The high level of expert agreement suggests that the materials are viewed as both consistently high in quality and suitable for the intended learner population. These results align with recent research emphasizing that well-validated instructional materials significantly contribute to instructional quality when expert evaluators rate them as comprehensive, organized, and relevant (Niño & Lomibao, 2026).

The strong acceptability in the content domain suggests that the activities were perceived as developmentally appropriate and aligned with learning needs, a feature widely recognized as critical for effective educational materials (Castañeda, 2026). Such findings are consistent with research showing that instructional tools with clearly defined and relevant content promote both learner engagement and instructional clarity (Castañeda, 2026).

Likewise, the high ratings for format and presentation reflect the importance of user-friendly design and logical organization in instructional materials. Scholars note that materials that are structured intuitively not only support learner comprehension but also facilitate ease of instructional use by teachers (Niño & Lomibao, 2026).

The perfect score in accuracy and up-to-datedness underscores that the materials were evaluated as reflecting current standards and educational best practices. Recent instructional development research highlights that alignment with curricular standards and current pedagogical knowledge is essential for the acceptability and long-term utility of educational materials (Castañeda, 2026).

Overall, the highly acceptable ratings across all evaluated criteria suggest that the structured mathematics activities are not only perceived as high quality by experts but also likely to be effective instructional tools. This is in keeping with recent evidence showing that rigorously developed and validated materials are instrumental in enhancing classroom instruction and supporting improved learner outcomes, particularly when they are systematically organized and reflect current educational standards (Niño & Lomibao, 2026; Castañeda, 2026).

Having established that the developed structured mathematics activities are highly acceptable across all evaluated criteria, the next focus of the study was to examine their effectiveness in improving learners’ numeracy skills. While expert validation confirms the quality and suitability of the materials, it is equally important to determine whether these activities produce measurable gains in learners’ performance. The following section presents the learners’ numeracy outcomes before and after exposure to the structured activities, providing insights into the practical impact of the intervention.

To assess the impact of the structured math activities on learners’ numeracy, descriptive statistics were calculated for both the Pre-Test and Post-Test scores. Table 3 presents the learners’ mean scores, standard deviations, percentage scores, and



corresponding proficiency levels based on the E-RUNT scale. These results provide an initial overview of learners' numeracy performance and indicate the degree of improvement following exposure to the intervention.

Table 4

Numeracy Levels of Respondents Before and After Structured Math Activities

Time	Mean	SD	% Score	Interpretation
Pre-Test	6.31	3.01	31.55%	Low Proficient
Post-Test	16.77	3.49	83.85%	Proficient

As shown in Table 4, the learners' numeracy levels increased substantially from the Pre-Test to the Post-Test. The Pre-Test mean of 6.31 (SD = 3.01) corresponds to 31.55%, placing respondents in the Low Proficient category of the E-RUNT scale, indicating limited mastery of foundational mathematical concepts. Following the intervention, the Post-Test mean increased to 16.77 (SD = 3.49), corresponding to 83.85%, which falls within the Proficient category. This marked improvement indicates a positive impact of the structured math activities on learners' numeracy skills.

These findings are consistent with recent empirical studies demonstrating the effectiveness of structured or targeted instructional interventions in improving students' mathematics performance. For example, research on Strategic Intervention Materials (SIM) in a large sample of Grade 7 students showed significant gains in basic mathematical operations after intervention, with post-test scores substantially higher than pre-test scores (Cabangon & Bonaobra, 2025). Moreover, systematic reviews of math intervention studies highlight that interventions targeted at learners with lower performance or at-risk students generally result in improved mathematics skills, supporting the value of structured approaches to learning (Svane et al., 2023).

Together, these studies support the present results, suggesting that structured math activities can effectively address learning gaps and enhance numeracy among learners who initially demonstrate limited proficiency.

To assess whether the increase in numeracy scores from Pre-Test to Post-Test was statistically significant, the Wilcoxon Signed Rank Test was conducted. Table 4 presents the test results, including Z, p-value, and direction of change.

Table 5

Wilcoxon Signed Rank Test for Pre-Test and Post-Test Numeracy Scores

Assessment	N	Z	p-value	Direction of Change
Pre-Test	13	-3.194	0.001	Post-Test > Pre-Test
Post-Test	13			

The results of the Wilcoxon Signed Rank Test (Table 5) indicate that the improvement in numeracy scores from Pre-Test to Post-Test was statistically significant, $Z = -3.194$, $p = .001$, with the direction of change showing higher scores after the intervention. This suggests that the structured math activities had a meaningful effect on learners' numeracy performance, beyond what might be expected by chance. Such findings align with prior intervention research in mathematics education: for example, a quasi-experimental study demonstrated significant improvements in mathematics performance using innovative teaching strategies, with Wilcoxon tests confirming higher post-test scores (Linao Jr., 2025). Additionally, research on intervention methods targeting arithmetic skills found that pre-post improvements were significant when analyzed with non-parametric tests like the Wilcoxon Signed Rank Test, supporting the efficacy of structured instructional activities (Nalusay et al.,



2024). These studies reinforce the present results, indicating that carefully designed instructional interventions can produce statistically significant gains in learners' mathematical outcomes.

Overall, the findings of this study indicate that the developed structured math activities were highly acceptable to experts and effectively improved learners' numeracy skills. Expert evaluations (SOP1) demonstrated strong acceptability across content quality, instructional design, clarity, and appropriateness, suggesting that the materials were suitable for classroom implementation. Descriptive statistics (SOP2) revealed a substantial increase in learners' numeracy scores from the Pre-Test (Mean = 6.31, SD = 3.01; Low Proficient) to the Post-Test (Mean = 16.77, SD = 3.49; Proficient), indicating a clear improvement in performance following exposure to the intervention. The Wilcoxon Signed Rank Test (SOP3) confirmed that this improvement was statistically significant ($Z = -3.194$, $p = .001$), demonstrating that the structured math activities had a meaningful impact on learners' numeracy outcomes. These results collectively suggest that structured and well-designed instructional interventions can effectively enhance numeracy among late-developing learners, supporting both engagement and skill mastery (Linao Jr., 2025; Nalusay et al., 2024).

CONCLUSION

The findings of this study indicate that the developed structured mathematics activities were highly acceptable to experts, with strong ratings across content quality, instructional format, clarity of presentation, and accuracy of activities. This high level of acceptability demonstrates that the materials are well-designed, pedagogically sound, and suitable for classroom implementation, aligning with best practices in mathematics instruction. In terms of learners' numeracy performance, the results revealed a substantial improvement following exposure to the structured activities, suggesting that the intervention effectively enhanced learners' understanding and application of foundational mathematical concepts. Statistical analysis further confirmed that the observed improvements were significant, highlighting the meaningful impact of the activities on learners' numeracy skills. Collectively, these findings suggest that structured, expert-validated instructional interventions can play a crucial role in supporting late-developing learners, bridging learning gaps, and fostering greater proficiency in mathematics (Linao Jr., 2025; Nalusay et al., 2024).

RECOMMENDATIONS

Based on the findings of this study, several recommendations can be made. First, teachers and educators are encouraged to integrate structured math activities into their instructional practices, particularly for learners who demonstrate delayed numeracy skills, as these activities have been shown to improve understanding and application of foundational mathematical concepts. Second, schools and curriculum planners should consider incorporating structured and carefully designed instructional materials into the mathematics curriculum to support consistent and effective learning outcomes. Third, professional development programs can be offered to teachers to enhance their skills in designing, implementing, and evaluating structured learning activities, ensuring that interventions are both engaging and pedagogically sound. Finally, future research is recommended to explore the long-term effects of structured math activities, investigate their impact on other learning domains, and assess their effectiveness with larger and more diverse learner populations to strengthen generalizability.

Conflict of Interest

The author declares that there are no financial or personal relationships that could in any way influence or bias the content of this work.

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