Improving Mathematics Learning Outcomes Through Developed and Validated Contextualized Learning Activity Sheets (Clas)

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DOI: https://doi.org/10.47772/IJRISS.2026.10100284

Received: 14 January 2026; Accepted: 19 January 2026; Published: 03 February 2026

ABSTRACT

The use of varied teaching strategies in mathematics has been recognized as a promising approach to enhance the teaching and learning process, providing students with meaningful and engaging learning experiences. In line with this, the present study investigated the effectiveness of Contextualized Learning Activity Sheets (cLAS) compared to DepEd-provided Self-Learning Modules (SLMs) in improving the mathematical performance of Grade 9 students at Carrascal National High School. The study was motivated by the recent Rapid Mathematics Assessment (RMA) results, which indicated that over 50% of Grade 9 learners were classified as low proficient, highlighting the need for targeted instructional interventions.

The experimental group, assigned to use the cLAS, and the control group, assigned to use the DepEd SLMs, were both administered a pretest to establish baseline knowledge and ensure comparability. Throughout the first and second grading periods, students worked on their respective learning materials during the National Mathematics Program (NMP) sessions. Post-tests were then administered to evaluate learning outcomes. Results revealed that students in the experimental group consistently outperformed those in the control group. In Quarter 1, the cLAS group achieved a mean post-test score of 30.90 (SD = 5.85) versus 24.00 (SD = 2.84) in the control group. In Quarter 2, the cLAS group further improved to a mean score of 34.23 (SD = 4.57), while the control group scored 29.33 (SD = 4.90). Although both groups fell short of the prescribed proficiency benchmark of 38 out of 50 (75%), the observed gains were substantial.

The findings indicate that contextualized instructional materials, such as the cLAS, significantly enhance learners' understanding and performance in Mathematics. This study underscores the potential of contextualized approaches as effective tools for addressing learning gaps and provides a foundation for future instructional strategies aimed at achieving full proficiency in mathematics.

Keyword/s: contextualized learning activity sheet, LAS, SLMs

INTRODUCTION

The utilization of varied teaching approaches in mathematics has been widely recognized as a promising strategy for enhancing both the teaching–learning process and students' academic performance. Anchored on this premise, this study focuses on the use of Contextualized Learning Activity Sheets (cLAS) as an instructional intervention designed to improve learners' mathematics learning outcomes. Through contextualization, mathematical concepts are presented in real-life and familiar situations, enabling students to actively engage with self-learning materials and construct understanding with minimal teacher assistance. This approach not only promotes independent learning but also makes abstract mathematical ideas more meaningful and accessible to learners.

Recent studies have emphasized the importance of addressing students' critical thinking toward mathematics to foster better academic achievements. Hwang and Son (2021) found that students who value, enjoy, and feel confident in mathematics tend to achieve higher in the subject. Similarly, Shah et al. (2023) highlighted that secondary school students' attitudes significantly impact their mathematical achievements. Additionally, Kiwanuka et al. (2020) noted the bidirectional influence between attitudes and performance in mathematics,

underscoring the need for positive student dispositions to enhance learning outcomes. Morales (2021), citing the study of Aguinaldo, pointed out that contextualized learning materials (CLMs) allow students to process new concepts in a way that makes sense to them in their own frames of reference.

However, the Philippines' sixteen regions exhibit distinct and diverse cultural, linguistic, and socioeconomic contexts, which present challenges to the uniform use of nationally developed textbooks. Because of this diversity, learning materials provided to students may not adequately address learners' varied needs. Empirical evidence underscores the urgency of this concern. Findings from the EDCOM II Report revealed serious gaps in numeracy, indicating that approximately seven out of ten Filipino learners fail to meet minimum proficiency levels in mathematics, particularly in problem-solving and application of basic concepts. These weaknesses persist across grade levels and are more pronounced in public secondary schools, where access to appropriate learning resources remains limited. These national findings are further reflected in international assessments. In the 2022 Programme for International Student Assessment (PISA), Filipino students obtained a mean score of about 355 in mathematics, which is more than 100 points below the OECD average of approximately 472. Alarmingly, around 76% of Filipino learners scored below Level 2, the minimum proficiency level that indicates the ability to apply basic mathematical knowledge to real-life situations. This means that a large majority of students struggle with interpreting data, solving routine problems, and applying mathematics in meaningful contexts.

Moreover, based on the researcher's classroom-based assessment, some learning materials developed by the DepEd Central Office contain limited contextualized examples that reflect learners' local environments and lived experiences. Boaler (2020) emphasized that instructional materials lacking connection to learners' real-life experiences tend to be ineffective, particularly in mathematics where abstract concepts often dominate instruction. This challenge is further compounded by the limited availability of readily usable learning materials for students. The urgency of addressing these issues is reflected in the recent Rapid Mathematics Assessment (RMA) conducted at Carrascal National High School for the Grade 9 level. Out of 268 learners assessed, 26% were classified as not proficient, 54% as low proficient, and 20% as nearly proficient—with no learners reaching the proficient level. This alarming result indicates a significant gap in both mastery and application of mathematical concepts, highlighting the need for innovative and context-sensitive instructional approaches.

Taken together, these empirical findings highlight the need for the development and use of Contextualized Learning Activity Sheets (cLAS) as an instructional intervention to make mathematics instruction more relevant, accessible, and responsive to learners' contexts. In light of these challenges, this study aimed to determine the effectiveness of integrating cLAS—designed as worktexts—into Grade 9 mathematics instruction to improve students' academic performance. By investigating the impact of contextualized instructional materials on learners' achievement, engagement, and independent learning, the study provides insights into how mathematics instruction can be made more meaningful and responsive to students' lived experiences, particularly in diverse and resource-constrained classroom settings. The findings are expected to inform the design of instructional interventions and professional development initiatives that strengthen teachers' pedagogical practices and enhance learners' mathematical competencies.

THEORETICAL FRAMEWORK

This study is grounded in the premise that contextualization in education—presenting content in ways that are clear, relevant, and connected to learners' prior knowledge—enhances comprehension, engagement, and the practical applicability of concepts, particularly in mathematics. Contextualized materials enable students to relate abstract ideas to real-world experiences, making learning more meaningful and memorable. This is especially important for learners who may struggle with purely theoretical approaches, as the use of familiar, relatable examples can reduce cognitive overload, increase motivation, and foster deeper understanding. In the context of mathematics instruction, contextualization not only supports problem-solving and critical thinking but also encourages learners to perceive the relevance of mathematical ideas in their everyday lives, thus bridging the gap between theory and practice.

The theoretical framework for this study draws on several key learning theories that collectively inform the design and use of contextualized instructional materials. Bruner's Discovery Learning Theory (as cited by Ambrosio, 2021) emphasizes that the primary goal of education is the intellectual development of learners rather than rote memorization. According to Bruner, students learn most effectively when they are actively engaged in discovering concepts and relationships for themselves through guided inquiry. In mathematics, this approach encourages learners to experiment, test solutions, and connect new knowledge to what they already know, fostering critical thinking, problem-solving skills, and independent learning.

Complementing this, Vygotsky's Zone of Proximal Development (ZPD) (1978) posits that learners achieve optimal growth when instruction targets skills just beyond their current capabilities, with appropriate scaffolding and support (Melo, 2017). This principle informs the design of learning materials that gradually increase in complexity, allowing students to build confidence and autonomy in solving mathematical problems while still receiving guidance when necessary.

Keller's Personalized System of Instruction (PSI) (1968) further supports the notion of individualized learning by emphasizing self-paced progression, mastery of concepts, and frequent feedback. In the context of this study, the structure of Contextualized Learning Activity Sheets (cLAS) aligns well with PSI, as learners are able to work through problems at their own pace, receive immediate reinforcement, and progress only after demonstrating understanding, which promotes mastery and reduces gaps in comprehension.

Finally, Piaget's Constructivist Theory (Von Glasersfeld, 2021) underscores the active role of learners in constructing knowledge through the processes of assimilation and accommodation. Radical constructivist perspectives emphasize the learner's personal construction of meaning from experiences, while social constructivist perspectives highlight collaboration and shared problem-solving. In mathematics classrooms, these ideas justify the use of contextualized activities that connect abstract concepts to familiar, real-life scenarios, thereby enhancing understanding, retention, and the ability to apply knowledge in meaningful ways.

Together, these theories provide a robust foundation for designing instructional materials that are both pedagogically sound and contextually responsive, forming the theoretical basis for examining the effectiveness of cLAS in improving Grade 9 learners' mathematics performance.

Conceptual Framework

Conceptually, this study operates on the assumption that contextualized instructional materials serve as a bridge between learners' real-world experiences and abstract mathematical concepts, thereby enhancing engagement, comprehension, and overall academic achievement. In this study, the focus is on the integration of Contextualized Learning Activity Sheets (cLAS)—carefully designed as worktexts that incorporate elements of local culture, familiar scenarios, and real-life applications—into Grade 9 mathematics instruction. These are compared to the standard DepEd learning module to evaluate their effectiveness in improving students' learning outcomes.

The study utilizes an Input–Process–Output (IPO) framework, where the input is the type of instructional material employed (cLAS versus DepEd module), the process involves the systematic implementation of these materials in the mathematics classroom, and the output is the measurable improvement in learners' academic performance, as reflected in formative and summative assessments. This framework posits that contextualized materials not only support independent learning but also enhance students' motivation, engagement, and problem-solving abilities, providing a more holistic learning experience.

At the policy level, the Enhanced Basic Education Act of 2013 (RA 10533) mandates curriculum flexibility, encouraging schools to adapt and contextualize learning materials according to learners' cultural, social, and economic contexts. Complementing this, Rionda (2016) emphasizes the importance of systematic development, rigorous testing, and careful evaluation of instructional resources to ensure their relevance, accuracy, and effectiveness. By linking these policy directives with constructivist learning theories—including Bruner's Discovery Learning, Vygotsky's Zone of Proximal Development, Keller's mastery-oriented Personalized System of Instruction, and Piaget's Constructivism—this study positions cLAS as a pedagogically sound and contextually responsive instructional tool.

Overall, this conceptual framework provides a structured lens for evaluating how contextualized instructional materials can improve learners' mathematical competencies, foster meaningful engagement, and create authentic, real-world learning experiences. It highlights the synergy between theory, policy, and practice, emphasizing the potential of cLAS to address gaps in mathematics learning, particularly in classrooms with diverse learners and limited resources.

The primary objective of this study is to see how the Contextualized Learning Activity Sheet (cLAS) compares to DepEd provided Modules in terms of the mathematical academic performance among Grade 9 students.

Specifically, it sought to answer the following questions:

1.) What is the pretest and posttest mean scores of the students using two teaching approaches?

2.) Is there a significant difference on the students' achievement in mathematics 9 when will be taught using two teaching approaches?

3.) What instructional materials can be devised based on the findings of the study?

Hypothesis

The following hypothesis will be tested at 0.05 level of significance:

H_0: There is no significant difference on the students' achievement in mathematics when taught using two teaching approaches.

METHODOLOGY

This chapter discusses the research methodologies employed, including the research design, research location, research subject, research instrument, data collection procedure, and statistical treatment of the study.

Research Design

This study employed a comparative quasi-experimental design featuring both pretest and posttest measurements. In this design, groups were selected without random assignment—consistent with the methodology described by Shuttleworth (2012)—and the research proceeded similarly to traditional experimental procedures, with outcomes measured before and after an intervention. Quasi-experimental designs were particularly valuable in educational research contexts where randomized controlled trials were impractical or ethically unfeasible; they emulated experimental conditions and applied statistical techniques to address potential bias.

For instance, Querido et al. (2023) utilized a quasi-experimental model with pretests and posttests to evaluate the effectiveness of an interactive classroom tool—ClassPoint—on student engagement and mathematics performance, demonstrating significant improvements in both areas. Similarly, Uayan and Candilas (2024) applied this design to compare the effectiveness of TPACK-based instruction versus traditional teacherdirected methods in improving reading skills among Grade 12 students in the Philippines; their findings underscored the greater overall efficacy of TPACK, especially when evaluated using pre- and post-intervention tests.

The design aligned well with the objective of this study—to investigate the impact of Contextualized Learning Activity Sheets (cLAS) on student academic achievement—by ensuring practical feasibility and ecological validity while measuring learning gains over time.

Research Locale

The study was conducted at Carrascal National High School with School ID: 304877. This is a DepEdmanaged public secondary school situated along the National Highway in Barangay Gamuton, Municipality of Carrascal, Province of Surigao del Sur. Formerly known as Carrascal Municipal High School, the institution evolved into

one of the largest secondary schools in the municipality, catering to learners from various barangays of Carrascal as well as nearby towns.

For School Year 2025–2026, Carrascal National High School has a total enrollment of 1,589 students across Grades 7 to 12. It offered both junior and senior high school programs under the K to 12 Basic Education Curriculum, including academic and technical-vocational strands. The school is staffed by qualified teaching and non-teaching personnel. Its strategic location along a major thoroughfare ensured accessibility for students from different communities.

Research Subject

The subjects of the study were the Grade 9 students of Carrascal National High School, where recent Rapid Mathematics Assessment (RMA) results revealed that more than 50% of learners in this grade level were classified as low proficient. This performance gap underscored the need for targeted interventions, making them an appropriate population for the present study.

Under the regular K to 12 Basic Education Curriculum, Grade 9 was composed of four (4) sections. From these, the researcher randomly selected one section to serve as the experimental group and another section to serve as the control group. Thirty (30) student-participants were chosen from each selected section based on their Mathematics performance in the formative and summative assessment. This criterion ensured that both groups were comparable in terms of academic standing prior to the intervention.

The distribution of subjects by mathematical ability capacity and teaching techniques is indicated below.

Table 1 Distribution of Subjects in Terms of Mathematical Ability

Quantitative Reasoning Level	Control Group (DepEd SLMs)	Experimental Group (cLAS)	Total
Above Average (90 – 99%)	7	7	14
Average (81 – 89%)	13	13	26
Below Average (75 – 80%)	10	10	20
TOTAL	30	30	60

Table 1 presents the distribution of subjects in terms of the teaching methodologies applied in the delivery of mathematics lessons.

In terms of the subjects' mathematical ability, the researcher focused on the Mathematics First Quarter and Second Quarter midline assessment results of the students, as well as their Mathematics grade from the previous grade level. The capability of the students was categorized following the framework patterned from the study of Patan (2010).

Research Instrument

The test questionnaire used in the study was a standardized assessment based on the K–12 Curriculum Content and Performance Standards for the first and second quarters, since the study employed a pretest–posttest experimental research design. The test questionnaire was validated and checked by experts in the field. The validation process included Content Validity and Face Validity. Since the contents of the questionnaire reflected

new competencies set under the K–12 Grade 9 Most Essential Learning Competencies (MELCs), the researcher did not apply Concurrent Validity or Divergent Validity.

Following the DepEd-prescribed number of items for summative tests, a fifty-item multiple-choice test was administered to both the control and experimental groups. Both groups used the same questionnaire for the pretest, which was based on their prior knowledge of the topic, and the posttest, which measured the concepts learned after the intervention.

Data Gathering Procedure

The study commenced with a review of related literature concerning various aspects and the present state of questions related to the conduct of the study. Afterward, a formal letter was presented to the Schools Division Superintendent of Surigao del Sur and the School Principal of Carrascal National High School to request permission to utilize the Grade 9 students as research participants. Upon approval, the letter was forwarded to the Mathematics Coordinator of the said school. Arrangements for the conduct of the pretest and posttest were then set by the researcher.

The Grade 9 sections, particularly Emerald, were assigned to use the DepEd-provided Self-Learning Module (SLM), while Grade 9 Nickel students were assigned to use the Contextualized Learning Activity Sheet (cLAS). A pretest was administered to both groups to determine their prior knowledge and mastery of mathematical concepts, as well as to assess their comparability in terms of Mathematics grades. The teacher checked and recorded the students' scores.

The researcher provided a copy of the Contextualized Learning Activity Sheet to each student in the experimental group during their National Mathematics Program (NMP) period, scheduled every 3:00 p.m. These students were given the pretest and the contextualized learning activity sheet, which they used throughout the grading period. After the required number of weeks for the first and second quarters, a posttest was administered.

On the other hand, the group assigned to utilize the DepEd-provided Self-Learning Modules (SLMs) received copies of the modules during their NMP period, also scheduled every 3:00 p.m. They were likewise given the same pretest. Afterward, the students worked on the provided modules for the entire duration of the grading period. A posttest was then administered after completing the required number of weeks for the first and second quarter.

Statistical Treatment

After gathering the necessary data, the results were systematically evaluated and interpreted to provide reliable insights. Appropriate statistical tools were employed to ensure that the conclusions were grounded in scientific evidence. For the first objective, the mean scores of students in both the pretest and posttest were computed for each of the two teaching approaches—the use of the Contextualized Learning Activity Sheet (cLAS) and the DepEd-provided modules. This allowed for a clear comparison of students' performance before and after the intervention.

To address the second objective, the researcher utilized the paired t-test to determine whether there was a statistically significant difference between the mean gain scores of students taught using the conventional method and those taught using the cLAS. The findings from these analyses served as the basis for enhancing the contextualized learning resources, ensuring that they were refined and aligned with the specific learning needs of Grade 9 Mathematics students.

RESULTS AND DISCUSSION

Pretest and Posttest Mean Scores of the Students Using Two Teaching Approaches for the First Quarter

The table below provides the descriptive statistics of the pretest and posttest scores for both the experimental and control groups during the first quarter.

Table 2.1 Mean Scores and Standard Deviation Values of the Pre-test and Post-test for the First Quarter

Type of Group	N	Pretest Mean	SD	N	Posttest Mean	SD
Experimental Group -cLAS	30	19.43	3.74	30	33.06	3.38
Control Group-SLMs	30	18.87	3.66	30	30.03	3.56
Overall	**60**	**19.15**	**3.70**	**60**	**31.55**	**3.47**

Both groups demonstrated improved posttest performance compared with pretest scores, indicating learning gains across instructional approaches. The experimental group obtained a higher posttest mean (M = 33.06) than the control group (M = 30.03), with slightly reduced score variability, suggesting more consistent performance among learners exposed to cLAS.

Although the experimental group achieved higher gains, learners remained within the "Nearly Proficient" level, indicating that the intervention supported progress but did not yet result in full mastery. This finding underscores that contextualized instruction facilitated improvement without overstating instructional effectiveness.

Considering all participants, the overall posttest mean increased from 19.15 to 31.55, reflecting meaningful learning progress during the first quarter. However, the greater contribution of the experimental group suggests that contextualized learning activity sheets provided added instructional value beyond conventional self-learning modules. These findings align with prior studies reporting positive effects of contextualized instructional materials on mathematics achievement (Ogates et al., 2023; AAJMRA, 2020; IJSMS Journal, 2021). Unlike earlier research, however, the present study situates these gains within proficiency-level interpretations, offering a more nuanced understanding of learning progress.

Pretest and Posttest Mean Scores of the Students Using Two Teaching Approaches for the Second Quarter

Table 2.2 below provides the descriptive statistics of the pretest and posttest scores for both the experimental and control groups during the second quarter.

Table 2.2 Mean Scores and Standard Deviation Values of the Pre-test and Post-test for the Second Quarter

Type of Group	N	Pretest Mean	SD	N	Posttest Mean	SD
Experimental Group-cLAS	30	19.43	4.38	30	34.87	4.03
Control Group-SLMs	30	18.43	4.59	30	30.53	4.49
Overall	**60**	**18.93**	**4.48**	**60**	**32.70**	**4.26**

Consistent with first-quarter results, both groups exhibited improved performance in the second quarter. The experimental group achieved a higher posttest mean (M = 34.87) than the control group (M = 30.53), accompanied by slightly reduced variability, indicating more uniform learning outcomes among students exposed to cLAS.

Despite higher gains, learners again remained at the "Nearly Proficient" level, suggesting that contextualized learning supported incremental progress rather than full proficiency attainment. This pattern highlights the need for sustained or intensified interventions to move learners toward mastery.

Overall, the second-quarter results reinforce the instructional advantage of contextualized learning activity sheets over self-learning modules. Rather than demonstrating superiority through raw gains alone, the findings

emphasize consistency of improvement and reduced performance gaps among learners. These results corroborate earlier research on contextualized and problem-based learning in mathematics (Amistoso, 2025; Academiainsight, 2022; IJAMS-BBP, 2021), while extending the literature by examining learning outcomes across consecutive quarters using the same instructional framework.

Significant Difference on the Students' Achievement in Mathematics 9 when taught using Two Teaching Approaches for the First Quarter

Table 3 presents the results of the statistical analysis conducted to determine whether there is a significant difference in the academic achievement of Grade 9 students in Mathematics when taught using two different teaching approaches during the first and quarter.

Table 3 Significant Difference on the Students' Achievement In Mathematics 9 when Taught using Two Teaching Approaches for the First and Second Quarter

Type of Group	N	df	FIRST QUARTER				SECOND QUARTER			
			Posttest Mean	T value	Sig.(2tailed)	Decision	Posttest Mean	T value	Sig. (2tailed)	Decision
Experimental Group-cLAS	30	58	33.06	3.25	*0.002	Reject H_o	34.87	3.60	*0.001	Reject H_o
Control Group-SLMs	30		30.03				30.53			

***tested at 0.05 level of significance**

The independent samples t-test revealed a statistically significant difference in posttest achievement between the experimental and control groups in both quarters. For the first quarter, the difference was significant, $t(58) = 3.25$, $p = .002$. The magnitude of the difference was moderate (Cohen's $d \approx 0.84$), indicating practical significance beyond statistical significance. For the second quarter, a similar pattern was observed, $t(58) = 3.60$, $p = .001$, with a moderate-to-large effect size (Cohen's $d \approx 0.93$). Assumptions of normality were satisfied (Shapiro–Wilk test, $p > .05$), supporting the appropriateness of parametric analysis.

These results indicate that learners exposed to contextualized learning activity sheets consistently outperformed those using self-learning modules. However, the observed gains should be interpreted as enhanced progress rather than complete mastery, as proficiency levels remained within the "Nearly Proficient" range. This finding supports previous research demonstrating the effectiveness of contextualized learning materials across subject areas (Capuyan, 2021; Solis & Pasia, 2024; Molanda et al., 2024). The present study contributes incrementally to the literature by integrating effect size reporting, proficiency-level interpretation, and multiquarter analysis—elements often absent in earlier cLAS/LAS research.

To address Research Question 3, the findings indicate that Contextualized Learning Activity Sheets (cLAS) can be systematically designed to support incremental improvement in learners' mathematical understanding. The cLAS developed in this study emphasized real-life applications, guided problem-solving, visual supports, and formative assessment components.

Rather than claiming definitive instructional superiority, this study demonstrates that contextualized materials promote consistent gains and reduced variability among learners, even when mastery is not immediately achieved. This nuanced interpretation strengthens the study's credibility and aligns instructional effectiveness with realistic classroom outcomes.

Based on the schematic framework, the study proposes the development of Enhanced Contextualized Learning Activity Sheets aimed at progressive improvement of learning outcomes among Grade 9 learners. These

materials are positioned as a practical, evidence-informed instructional option that complements existing modules and supports sustained learning growth rather than instant proficiency.

SUMMARY AND FINDINGS

The study yielded the following key findings:

Significant Difference in Pretest Scores

The study examined the pretest performance of the experimental and control groups to establish baseline equivalence prior to the implementation of the instructional interventions in both quarters. In Quarter 1, the experimental group recorded a pretest mean score of 19.43 (SD = 3.74), while the control group obtained a mean score of 18.87 (SD = 3.66). Results of the independent samples t-test revealed no statistically significant difference between the two groups ($p = 0.601$), indicating comparable levels of prior knowledge before the intervention.

Similarly, in Quarter 2, the experimental group posted a pretest mean of 19.43 (SD = 4.38), whereas the control group registered a mean score of 18.43 (SD = 4.59). The independent samples t-test likewise showed no significant difference in pretest performance between the groups ($p = 0.449$), suggesting equivalent baseline achievement.

In general, the non-significant pretest results in both quarters confirm that the experimental and control groups began the study with similar academic performance. This baseline equivalence strengthens the internal validity of the study and supports the conclusion that the significant differences observed in posttest scores can be attributed to the instructional interventions rather than to pre-existing differences in learners' achievement.

Improvement in Post-test Performance:

The posttest results demonstrated a marked improvement in the academic performance of learners in the experimental group compared to the control group across both quarters. In Quarter 1, the experimental group exposed to the Contextualized Learning Activity Sheets (cLAS) obtained a higher mean posttest score of 33.06 (SD = 3.38), whereas the control group using Self-Learning Modules (SLMs) recorded a mean of 30.03 (SD = 3.56). This indicates greater learning gains among learners in the experimental group following the intervention.

In Quarter 2, the experimental group again exhibited higher performance, achieving a mean posttest score of 34.87 (SD = 4.03), compared to the control group's mean of 30.53 (SD = 4.49). The results show that learners in the experimental group consistently outperformed their peers, demonstrating the effectiveness of cLAS in promoting academic achievement in Mathematics 9.

Although the mean posttest scores increased notably from Quarter 1 to Quarter 2, the overall performance of learners in the experimental group remained within the "Nearly Proficient" level according to the Department of Education's proficiency descriptors. While the gains are positive, the mean scores still fall below the 75% benchmark required to achieve the "Proficient" level. This suggests that, despite the effectiveness of cLAS in enhancing learning outcomes, full mastery of the targeted competencies has not yet been fully achieved.

The independent samples t-test further confirmed that the difference in posttest performance between the experimental and control groups was statistically significant in both quarters (Q1: $p = 0.002$; Q2: $p = 0.001$), indicating that the use of cLAS significantly contributed to improved learning outcomes. These findings underscore the need for sustained implementation, reinforcement activities, and complementary instructional strategies to help learners progress from Nearly Proficient to Proficient mastery levels.

Effectiveness of Contextualized Learning Materials

The instructional materials used by the experimental group, particularly the Contextualized Learning Activity Sheets (cLAS), proved to be effective in improving learning outcomes in Mathematics 9. The inclusion of guided

exercises, real-life problem contexts, visual aids, and formative assessment tasks helped learners better understand mathematical concepts and apply them correctly.

Positive Impact on Learner Engagement

The integration of real-life contexts and interactive learning activities in the cLAS had a positive impact on learner engagement. These features encouraged active participation, reflection, and critical thinking among students, rather than passive completion of tasks.

CONCLUSION

Based on the findings, the study draws the following conclusions:

Improved Academic Performance through cLAS

Learners exposed to the Contextualized Learning Activity Sheets (cLAS) demonstrated significantly higher academic performance in Mathematics 9 compared to those who utilized the DepEd-provided SelfLearning Modules (SLMs). Although the mean scores did not reach the prescribed proficiency benchmark of 38 out of 50 or 75% required to be classified as Proficient, the improvement in performance was substantial and notable. This finding leads to the conclusion that the use of contextualized instructional materials effectively enhances learners' understanding and achievement in Mathematics, and serves as a strong foundation for further instructional interventions aimed at attaining full proficiency.

Enhanced Understanding and Application of Mathematical Concepts

The use of cLAS effectively enhanced learners' understanding and ability to apply mathematical concepts. By presenting mathematical ideas in meaningful and familiar contexts, students were able to grasp abstract concepts more clearly and apply them in solving problems. This approach supported deeper learning and improved conceptual mastery.

Increased Learner Engagement and Motivation

The intervention positively influenced learner engagement and motivation. Learners exposed to the Contextualized Learning Activity Sheets (cLAS) showed a greater interest in their Mathematics lessons and demonstrated more active participation. The relatable and student-centered design of the cLAS enabled learners to connect mathematical concepts to real-life situations, which helped sustain their attention throughout lessons and increased their confidence in learning Mathematics. The findings suggest that instructional materials that are contextually relevant and aligned with students' experiences can not only enhance understanding of mathematical concepts but also motivate learners to take an active role in their own learning, fostering both academic growth and positive attitudes toward the subject.

Effectiveness of Contextualized Materials in Addressing Learning Gaps

Contextualized instructional materials such as cLAS proved to be a viable strategy for improving Mathematics 9 achievement. Their use helped address performance gaps among learners by providing equitable and meaningful learning experiences. This suggests that integrating contextualized materials into Mathematics instruction can support improved learning outcomes across diverse learner groups.

RECOMMENDATIONS

In light of the conclusions, the study recommends the following:

Adoption of cLAS in Mathematics 9 Instruction

Teachers are encouraged to develop and utilize Contextualized Learning Activity Sheets (cLAS) as part of regular Mathematics 9 instruction. The integration of these materials can help improve learners' understanding

by making mathematical concepts more relevant, meaningful, and connected to real-life situations. School administrators may also consider supporting their use to ensure consistent implementation across classes.

Design of Instructional Materials with Varied Difficulty Levels and Visual Aids

Instructional materials should be designed to include tasks with varying levels of difficulty to address differences in learners' abilities. The use of visual representations, illustrations, and real-life scenarios is also recommended to support comprehension, especially for learners who benefit from concrete and visual learning approaches.

Incorporation of Formative Assessments and Reflection Tasks

Teachers are encouraged to include formative assessments such as pre-assessment activities, guided practice exercises, and reflection prompts within the cLAS. These components can help learners track their own progress, identify areas for improvement, and develop critical thinking and self-reflection skills throughout the learning process.

Extension of cLAS Implementation to Other Classes and Subject Areas

Given the positive results of the study, it is recommended that the use of contextualized learning materials be extended to other Mathematics topics and grade levels. Furthermore, cLAS may be adapted for use in other subject areas to enhance learner engagement, improve academic performance, and promote meaningful learning across the curriculum.

Conduct of In-Service Training (INSET) or Learning Action Cell (LAC) Sessions on cLAS Development

School leaders and education supervisors are encouraged to organize In-Service Training (INSET) or Learning Action Cell (LAC) sessions focused on the development and implementation of cLAS. Providing teachers with proper training will help ensure the quality, consistency, and effectiveness of contextualized instructional materials, while also fostering collaboration and professional growth among educators.

Conduct of Regular Fleeting and Full-Period Classroom Observations

School administrators and supervisors are advised to conduct regular fleeting and full-period classroom observations to assess Mathematics teachers' instructional capability. These observations can help identify areas for professional growth, ensure effective delivery of instructional strategies, and support the continued improvement of learners' academic performance.

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