Project MATHRESCUE (Mathematics Activity Tool for Helping and Remediating Elementary Students' Competency and Understanding Effectively)

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ABSTRACT

This action research aimed to improve the numeracy skills of selected Grade 4 learners at Famy Elementary School through the use of activity sheets as a remedial intervention tool. Nine learners who demonstrated low performance in Mathematics based on diagnostic and quarterly assessments were selected as participants. The intervention, titled Project MATHRESCUE (Mathematics Activity Tool for Helping and Remediating Elementary Students' Competency and Understanding Effectively), involved the weekly administration of contextualized and scaffolded activity sheets aligned with the Most Essential Learning Competencies (MELCs). A pre-test and post-test were conducted to measure learners' progress, and observational checklists and learner feedback were used to assess engagement and participation.

The results showed a significant improvement in the learners' average scores, increasing from 56% in the pre-test to 83% in the post-test. A paired t-test showed statistical significance ($p < 0.05$), indicating that the observed improvements were unlikely due to chance. Additionally, qualitative data indicated that learners became more confident, motivated, and actively engaged in Mathematics lessons. The findings suggest that the use of structured and learner-friendly activity sheets is an effective remedial strategy to enhance mathematical understanding and academic performance. However, the small sample size and absence of a control group limit the generalizability of findings. Future studies should consider larger samples and controlled designs to validate outcomes.

RATIONALE

This action research was conceptualized to address learning gaps in Mathematics among selected Grade 4 learners at Famy Elementary School. Based on formative assessments and class observations, it was found that several pupils struggled with basic arithmetic skills and problem-solving. Hence, Project MATHRESCUE was launched to utilize structured activity sheets as a remedial intervention strategy. The approach aimed to reinforce numeracy concepts, build learner confidence, and improve academic performance in Mathematics.

According to Vygotsky's Zone of Proximal Development (ZPD), learners benefit most from scaffolded instruction that supports them in mastering tasks slightly beyond their current ability (Vygotsky, 1978). The use of activity sheets as a form of scaffolding aligns with this approach, allowing for differentiated and guided learning tailored to student needs (Tomlinson, 2014).

Based on recent formative assessments and class performance data, nine Grade 4 learners were identified as needing focused remediation. These learners received specially designed activity sheets aligned with the Most Essential Learning Competencies (MELCs) in Mathematics. The materials included scaffolded exercises and contextualized problems aimed at reinforcing key concepts and skills. Studies have shown that structured, contextualized instructional materials help bridge learning gaps by promoting student engagement and understanding (Bayocot, 2019; Bautista, 2020).

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Objectives

- To identify specific numeracy weaknesses among selected Grade 4 learners.
- To implement contextualized and scaffolded activity sheets as a remedial tool.
- To evaluate the improvement in numeracy skills after the intervention.
- To determine the effectiveness of activity sheets in enhancing pupil performance and engagement.

METHODOLOGY

Participants:

Nine Grade 4 learners selected based on diagnostic and quarterly Mathematics assessments.

Test Construction and Validation:

The pre-test and post-test were both 20-item assessments covering addition, subtraction, multiplication, division, and simple word problems. The items were aligned with the MELCs and reviewed by the Mathematics Coordinator and two Grade 4 teachers for content validity. A pilot test was also conducted in a other section to ensure reliability and clarity.

Instruments Used:

- Pre-test and post-test
- Observation checklist
- Learner reflection logs
- Parental feedback forms

Intervention Details:

Learners were given contextualized activity sheets weekly over a period of four months. Each sheet included:

- Step-by-step guided problems
- Practice sets with increasing complexity
- Real-life contextual applications

Data Collection and Analysis:

Quantitative: Pre- and post-test scores were analyzed using percentage scores and a paired t-test.

Qualitative: Observation logs and learner feedback were analyzed thematically.

RESULTS AND FINDINGS

Assessment	Average Score (Pre-Test)	Average Score (Post-Test)	Improvement
Numeracy Test	56%	83%	+27%

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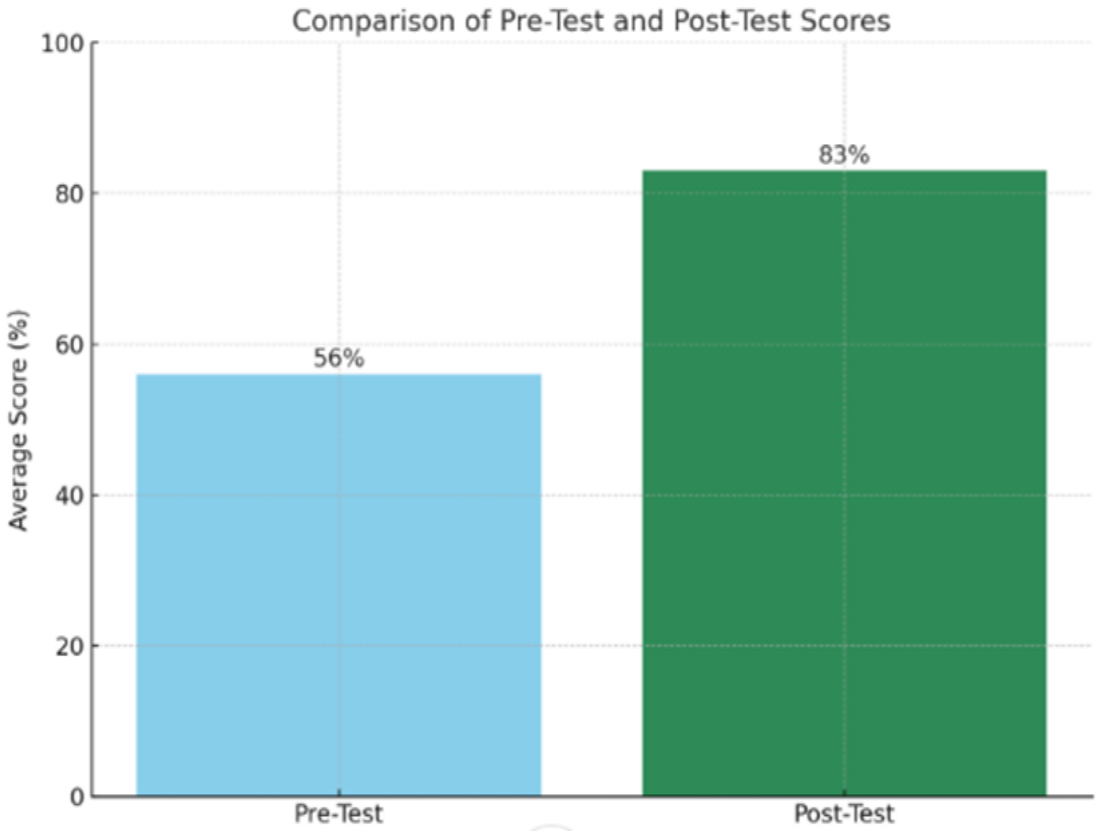
Paired t-test Result

t (8) = -8.12, $p < 0.001$ → Statistically significant improvement



The graph comparing the pre-test and post-test scores of selected Grade 4 learners. It clearly illustrates a 27% improvement in numeracy skills following the Project MATHRESCUE intervention

- **Observation Findings:**
  - ✓ Learners showed increased participation and confidence in class discussions.
  - ✓ Improvement in task completion and accuracy was noted week by week.
  - ✓ Pupils enjoyed interactive and contextualized exercises, which increased motivation.
- **Qualitative Feedback:**
  - ✓ Learners reported that activity sheets were “helpful and easy to follow.”
  - ✓ Parents appreciated the structured support for their children at home.
  - ✓ The teacher observed more focused and engaged learners by the end of the intervention.

The implementation of Project MATHRESCUE at Famy Elementary School yielded significant improvements in the numeracy skills of the nine selected Grade 4 learners. Prior to the intervention, learners were given a pre-test to assess their initial understanding and proficiency in basic arithmetic operations and problem-solving. The average pre-test score was 56%, indicating considerable learning gaps that needed to be addressed.

Following the four-week remedial intervention using structured activity sheets, the learners were assessed again using a post-test that mirrored the concepts and skills covered in the pre-test. The results showed a marked improvement, with the average post-test score rising to 83%. This reflects a 27% increase in performance, demonstrating the effectiveness of the intervention in enhancing the mathematical abilities of the target learners. According to Slavin (2018), well-structured, targeted instructional strategies such as guided worksheets significantly contribute to students’ learning outcomes, especially in foundational subjects like Mathematics.

Beyond the quantitative data, qualitative observations and feedback provided further insights into the success of the program. Weekly classroom observations revealed a gradual yet consistent increase in learner participation during Mathematics sessions. Learners who were previously hesitant or passive became more active in class discussions and were more willing to attempt problem-solving activities independently. The teacher noted that the learners' confidence grew steadily as they engaged with the activity sheets, and that improvements in task completion and accuracy were evident from week to week. This aligns with findings by Vygotsky (1978), who emphasized the importance of scaffolded learning in supporting the development of learner independence and confidence.

The activity sheets were designed to be interactive and contextualized, which helped sustain learner interest and motivation. Pupils expressed that the materials were "helpful and easy to follow," which contributed to a more positive learning experience. These findings were corroborated by parental feedback. Several parents expressed their appreciation for the structured support provided by the activity sheets, noting that the materials enabled them to assist their children more effectively at home. As Tomlinson (2014) emphasized, differentiated and learner-centered materials can support diverse learning needs and enhance engagement in mixed-ability classrooms.

Furthermore, the teacher observed that learners became more focused and engaged by the end of the intervention period. Disruptions during class sessions decreased, and students were more attentive and enthusiastic about completing their Mathematics tasks. The intervention not only improved academic outcomes but also fostered a more supportive and enjoyable learning environment. Research by Hattie (2009) supports the idea that frequent, formative feedback and active engagement strategies are among the most impactful influences on student achievement.

In summary, the data gathered through assessments, observations, and feedback indicate that Project MATHRESCUE was successful in achieving its goals. The use of structured activity sheets as a remedial tool proved to be an effective strategy in improving numeracy skills, boosting learner confidence, and promoting a more engaging Mathematics learning experience.

CONCLUSIONS

The use of structured and contextualized activity sheets aligned with the MELCs was effective in improving the numeracy skills of selected Grade 4 learners. The average score improvement of 27%, validated by a significant paired t-test result, suggests meaningful academic gains. Additionally, positive behavioral changes and enhanced learner engagement were evident.

However, the study's small sample size and lack of a control group limit the generalizability of the results. These findings should be interpreted as preliminary, with recommendations for further research using larger and more diverse samples.

RECOMMENDATIONS

1. Institutionalize the use of activity sheets as part of remediation strategies in other grade levels.
2. Replicate the project in other classes with similar performance gaps.
3. Provide capacity-building sessions for teachers in designing effective and engaging activity sheets.
4. Extend the duration of interventions and include follow-up assessments to track retention.
5. Incorporate pre/post assessment validation procedures in future studies.
6. Consider using control groups or quasi-experimental designs to strengthen causal claim
7. Continue monitoring and supporting learners beyond the duration of the intervention to sustain gains.

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Teacher Reflection

As the implementer of Project MATHRESCUE, I witnessed not only academic improvements but also increased learner enthusiasm and self-confidence. Initially, many pupils hesitated to participate, but over time they began to volunteer answers and even help peers. This experience reminded me of the power of structured support and the importance of meeting learners where they are. The success of this project reaffirms my commitment to differentiated instruction and targeted remediation.

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