Multiplication Fact Recall to Improve Math Performance in Multiplication

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ABSTRACT

This action research investigated the effectiveness of multiplication fact recall strategies in improving the mathematics performance of Grade 4 learners at Sta. Juana Central Elementary School during the period August to December 2025. Nineteen learners participated in the study, with their performance measured through a pre-assessment and post-assessment using a 20-item multiplication quiz. The intervention employed evidence-based techniques such as skip counting, visual aids, flashcards, timed recall, real-life applications, and engaging games to strengthen automatic retrieval of multiplication facts. Results revealed that prior to the intervention, 73.68% of learners demonstrated low performance and 26.32% were at the average level, with none reaching proficiency or advanced levels. After the intervention, however, only 5.26% remained at the low level, while 21.05% achieved average performance, 47.37% reached proficiency, and 26.32% attained advanced performance. These findings indicate a significant improvement in learners' mastery of multiplication facts, affirming that structured recall strategies enhance accuracy, speed, and confidence in solving multiplication problems. The study concludes that consistent practice, retrieval-based activities, and varied instructional approaches are effective in building mathematical fluency, though continued remediation is necessary to support learners who remain at lower performance levels.

ACKNOWLEDGEMENT

The researcher extends sincere gratitude to the school administration, teachers, colleagues, and students who generously supported the completion of this action research. Special thanks are given to our School Head for the guidance, encouragement, and approval to conduct the study, as well as to the participants who willingly shared their time, insights, and full cooperation throughout the process.

The researcher also expresses deep appreciation to family and friends for their unwavering motivation and understanding during the conduct of this research. Above all, the researcher is profoundly grateful to Almighty God for the wisdom, strength, and perseverance that made this work possible.

I. Context and Rationale

Multiplication -fact recall (automatic retrieval of multiplication facts) plays a crucial role in building mathematical proficiency , because quick and accurate recall fees up working memory for more complex problem solving . Research from elementary classrooms shows that using retrieval practice (e.g. flashcards) significantly improves long-term multiplication fluency compared to mere restudy (Opius-Cox, 2023). Similarly, interventions that combine engaging, hands-on materials like a "smart suitcase" with structured worksheets have been shown to boost students' understanding and fluency in multiplication (S. Rejeki, 2024). In another recent study in the Philippines, interactive taped math problems significantly increased Grade 6 students 'multiplication automaticity after just a few weeks of practice, (Sol & Galve, 2024).

Charmen Nalusay, Danissa Demoral & Jeric Suguis (2024) showed an intervention (Interactive Taped Problems) that significantly improved multiplication automaticity for Grade 6 Filipino pupils. A good example of a Philippine -based experimental study on fact fluency.

Overall, strengthening multiplication fact recall through evidence-based strategies is supported by research as a foundational lever for improving broader math achievement. It is for this reason that the researcher is presently embarked on this study among the learners of Sta. Juana Central Elementary School.

II. Action Research Questions

This study probes to improve the mathematics performance in Multiplication among the Grade 4 learners from August 2025 to January 2026.

Specifically, it sought to answer the following questions:

1 What is the math performance o f the Grade 4 learners before introducing the intervention?
2 What is the What is the math performance of the Grade 4 learners after the intervention?
3 What is the comparative difference on the math performance of the Grade 4 learners before and after the intervention?

III. Innovation, Intervention and Strategy

The researcher provided an evidence-based technique that help pupils internalize multiplication facts more efficiently as he came up on the study titled Multiplication Fact Recall to Improve Math Performance on Multiplication.

Simple Steps in Multiplication Fact Recall.

1. **Start with Skip Counting**
   Learners practice counting by 2s, 5s, and 10s to understand repeated addition
   Example: 5,10,15,20
2. **Use Visual Aids and Arrays**
   Show multiplication using pictures, groups, dots, or grids so learners can see the multiplication fact.
3. **Introduce Multiplication Patterns**
   Teach easy patterns first.
   Example: x 2 is double
   Anything x 1 is the same number
   X 5 ends in 0 or 5
4. **Chunk the Facts**
   Learn multiplication in small sets:
   Master 2s, 5s, and 10s.
   Then learn 3s and 4s
   Save the hardest ones (6,7,8,9) for last.
5. **Practice Using Flashcards**
   Flashcards helps learners recall facts quickly through repetition and retrieval practice.
6. **Use Timed Recall (Low Pressure)**
   Give short 1-2minute exercises to encourage recall without stressing the learners.
7. **Apply Multiplication in Real Life Situations**
   Use simple examples such as: If you have 3 bags with 4 candies, how many candies do you have?”
8. **Reinforce through Games**
   Math bingo, digital apps, make practice fun and engaging.
9. **Check for mastery**
   Give quizzes, oral drills, or quick checks to know which facts are mastered and which need more practice.
10. **Review Regularly (Spaced Repetition)**
    Daily short reviews help students remember multiplication facts long-term.

IV. Action Research Methods

A. Participants of the study

The Grade 4 learners of Sta. Juana Central Elementary School which consist of 7 boys and 11 girls a total of 19 were chosen as the participants since the researcher is currently handling Mathematics subject in that particular grade level.

B. Data Gathering Methods

Complete enumeration sampling was used since all the Grade 4 learners were included in the study.
The researcher asked permission form the office of the principal that he will be conducting research on Grade 4 in their respective school. Upon approval, a 20-item quiz was conducted by the researcher

C. Data Analysis Utilized

The researcher used simple frequency percentage to determine the number of learners fall under the 4 categories namely low performance, average performance, proficiency performance and advanced performance.

The researcher made sure that the result be kept and hidden for confidentiality. Names were not revealed as well as their result in the pre-assessment and post assessment. The pre-assessment was conducted on August 2025 . However, post-assessment was managed on December 2025.

Every week , the researcher used the multiplication fact recall strategy for them to improve their performance i
n Math subject particularly on Multiplication, which is one of the basic fundamental operations in Math. Results were recorded for further monitoring and evaluation.

V. Discussion of Results and Reflection

Discussion of Results

The researcher presented the result of the pre- assessment among the Grade 4 learners.

Table 1. PRE-ASSESSMENT IN MATH PERFORMANCE ON MULTIPLICATION

Grade 4 learners	Low Performance 0 -9 correct answers	Average Performance 10-13 correct answers	Proficient Performance 14-17 correct answers	Advanced Performance 18-20 correct answers	Total
19	14	5	0	0	19
%	73.68%	26.32%	0%	0%	100%

The table revealed that out 19 learners in Grade 4 level. 14 got low performance and 5 met the average performance. Sadly, none of them were in the proficient performance and even in the advanced performance.

Upon reflecting the result, there is a great need to have an absolute and immediate intervention on this respective problem. It might be alarming on the part of the Grade 4 learners knowing that they must have mastered this basic fact on multiplication.

Table 2. POST -ASSESSMENT IN MATH PERFORMANCE ON MULTIPLICATION

Grade 4 learners	Low Performance 0 -9 correct answers	Average Performance 10-13 correct answers	Proficient Performance 14-17 correct answers	Advanced Performance 18-20 correct answers	Total
19	1	4	9	5	19
%	5.26%	21.05%	47.37%	26.32%	100%

The study involved a total of 19 learners whose academic performance was categorized into four levels. Low, average, proficient and advanced. Results show that 1 or 5.26%learner demonstrated low performance, indicating minimal mastery of the required competencies. 4 or 21.05% learners were classified under average performance, suggesting partial understanding and developing skills.

The majority of the learners, 9 or 47.37% achieved a proficient performance level , which reflects satisfactory mastery of the learning objectives and the ability to apply learned skills effectively. Meanwhile, 5 or 26.32% learners exhibited advanced performance, indicating a high level of mastery, strong conceptual understanding and the ability to perform tasks beyond the expected standard.

Over-all, the distribution reveals that most of the learners fall within the proficient to advanced levels, suggesting that the instructional strategies implemented were generally effective.

VI. Reflection

The results of this study reveals a generally positive outcome in the learners' mastery of multiplication fact recall . Out of 19 learners, the majority were classified under proficient (9 learners) and advanced (5 learners) performance levels. This indicates that the strategies employed in improving multiplication fact recall were effective in helping learners develop accuracy, speed and confidence in basic multiplication skills. These results affirm that consistent practice and structured recall activities significantly contribute to mathematical proficiency.

However, the presence of learners in the average (4 learners) and low (1 learner) categories suggest that learning gaps still exist. The findings emphasize that while recall-based strategies are effective for most learners, they must be complemented with remediation activities to ensure inclusivity and mastery of all.

A 2025 research perspective by Guy, Cragg, and Gilmore highlights why multiplication fact recall is fundamental in building mathematical fluency and freeing cognitive resources for more complex problem solving. Their work discusses how repeated practice, retrieval and structured assessments like the Multiplication Tables Check (MTC) influence both recall and broader mathematical skill. They also note that while timed recall test can raise performance scores.

Over-all the results of this study reinforce the value or importance of systematic multiplication fact recall strategies in improving learners' mathematical performance. The outcomes also serve as a reminder for educators to continuously refine instructional practices, incorporate varied recall strategies, and provide sustained support to struggling learners to achieve equitable learning outcomes.

VII. ACTION RESEARCH WORK PLAN AND TIMELINE

Target Milestone	Projected Week
Preparation Phase	**August 2025 (First Week)**
Implementation Phase	**August 2025 (Second Week)**
Monitoring Phase	**August 2025 (Third Week) to December 2025 (First Week)**
Completion Phase	**December 2025 (Second Week)**

Plans for Dissemination and Utilization

After presenting the intervention to the District panel, the researcher plans to present the results to the results to the district office for the dissemination of the effectiveness of Multiplication Fact Recall Strategy in improving the performance of the Grade 4 learners of Sta. Juana Central Elementary School. This intervention will be used for the coming school year if there is still the same problem truly existed in this particular year whenever if possible.

APPENDIX A- RESULT OF PRE-ASSESSMENT and POST-ASSESSMENT IN MATH PERFORMANCE ON MULTIPLICATION (20 items)

Learners	Before Intervention		After Intervention	
	Score	Level	Score	Level
Learner 1	2	Low Performance	5	Low Performance
Learner 2	4	Low Performance	11	Average performance
Learner 3	5	Low Performance	13	Average performance
Learner 4	4	Low Performance	10	Average performance
Learner 5	6	Low Performance	13	Average performance
Learner 6	5	Low Performance	14	Proficient performance

Learner 7	**7**	**Low Performance**	**17**	**Proficient performance**
Learner 8	**5**	**Low Performance**	**14**	**Proficient performance**
Learner 9	**6**	**Low Performance**	**15**	**Proficient performance**
Learner 10	**7**	**Low Performance**	**16**	**Proficient performance**
Learner 11	**5**	**Low Performance**	**17**	**Proficient performance**
Learner 12	**7**	**Low Performance**	**16**	**Proficient performance**
Learner 13	**6**	**Low Performance**	**17**	**Proficient performance**
Learner 14	**9**	**Low Performance**	**15**	**Proficient performance**
Learner 15	**10**	**Average performance**	**18**	**Advanced Performance**
Learner 16	**12**	**Average performance**	**18**	**Advanced Performance**
Learner 17	**13**	**Average performance**	**19**	**Advanced Performance**
Learner 18	**14**	**Average performance**	**20**	**Advanced Performance**
Learner 19	**13**	**Average performance**	**20**	**Advanced Performance**

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