IMPROVING THE MULTIPLICATION SKILLS OF ELEMENTARY LEARNERS USING THE PERSONALLY CRAFTED SONG

ALDEN MATERBONIA ASIS[1]*, MARIA CAROL M. ABENIR[2]
https://orcid.org/0009-0003-1504-1518[1], https://orcid.org/0000-0002-6041-5828[2]
aldenasis@nisu.edu.ph[1]
College of Education, Northern Iloilo State University- Concepcion Campus
Philippines

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ABSTRACT

This action research was conducted to upskill teachers' competencies in improving learners' numeracy skills in multiplication using personally crafted songs and to test its effectiveness. The participants of the study were the 30 Grade V learners of Lo-ong Elementary School for the S.Y. 2023-2024. During the conduct of the study, the researchers used the created multiplication songs for tables 2 to 10 with a piano, and in the intervention, the thirty (30) learners listened to the song, then they joined in singing the multiplication song. Every two days, the learners sang one table so that they could memorize. This study used a one-group pre-test post-test research design; the data were analyzed using a mean, standard deviation, and paired t-test for paired samples. The findings revealed that there was a significant difference between the pretest and posttest scores of the learners. Furthermore, it revealed that after exposure to the intervention results showed "very high" performance in the multiplication table. It was concluded that a personally crafted song is an effective intervention in improving the performance of the learners in multiplication skills. With this, personally crafted songs are deemed recommended to be utilized as an intervention in teaching multiplication subjects in all Elementary grades in the District of Concepcion.

Keywords: Personally Crafted Song, Multiplication Skills, Elementary, Learners

INTRODUCTION

In a system that often struggles with literacy, numeracy, and overall academic performance, classroom intervention is important for addressing the different learning needs of students. These interventions aim to support inclusiveness, engagement, and the development of lifelong skills while also bridging learning gaps. Elementary school teachers strongly adhere to the Department of Education's suggested activities in response to current educational trends. To help primary teachers improve their understanding and skills in using interventions, training and seminars were arranged. However, none of these were found to be effective. Teachers must devise interventions that suites to the needs of their learners, especially in teaching Mathematics.

Mathematics is the foundation of quantitative analysis and logical thinking, serving as a universal language. Among its basic operations, multiplication is important not just as an extension of addition but also as a key part of more advanced concepts and mathematical fluency. Teachers need to have a deep understanding of their students to teach effectively (Ruslan, N. N. 2024). This means knowing how students learn and identifying their weaknesses so that teachers can help them improve. Multiplication is one of the four basic mathematical operations, but students often find it difficult to

grasp the concept and struggle to solve problems correctly. (Asis and Isogon 2025) published papers on teachers' approaches to pedagogy, content knowledge, and practices in music education. One key finding from their research is the successful integration of music as a teaching tool in other subject areas. When music was purposely included in subjects like physics, math, and language, students showed increased engagement, better memory for concepts, and greater creativity. This approach not only strengthened the content but also created a learning environment that accommodated various styles, making education more engaging and meaningful. Another well-recognized connection between mathematics and music is the mnemonic strength of music, particularly song. For example, the memory of a counting song rhythm may prompt the memory of the words that accompany that rhythm Salcedo, 2010).

Another study, titled "Influence of musical learning in the acquisition of mathematical skills in primary school" (Chao-Fernández, A., et al. 2020), found that including musical learning, such as rhythmic exercises, melodies, and structured tasks, in math lessons improved primary students' math skills compared to traditional methods. Music activities helped kids understand abstract math concepts more clearly, supporting the idea of arts-integrated teaching.

Additionally, a study examined 'MusiMath' and 'Academic Music,' two music-based programs designed to teach fractions to fourth graders. Both programs improved fraction learning in Grade 4 students compared to standard instruction. Students who used rhythm and melody to represent fractions understood the concepts better than those who only memorized them. Connecting musical rhythm to mathematical fractions makes math concepts more engaging and easier to grasp (Azaryahu, L., et al. 2020).

In the school year 2023-2024, Lo-ong Elementary School conducted a multiplication facts test among Grade V learners. Two sections scored 82 out of 192 or 75% and above average scores. The song aims to develop teaching materials that will improve elementary learners' multiplication skills and enhance teachers' strategies for teaching mathematics. Thus, linking music to mathematics and other subjects relies heavily on teachers' interest in helping improve their students' skills, particularly in multiplication. This study was designed to respond to the Department of Education's call for classroom innovation and intervention.

OBJECTIVES OF THE STUDY

This study aimed to determine the effect of personally crafted songs on the multiplication skills of elementary learners in the Philippines.

Specifically, this study answers the following questions

1. To determine the level of multiplication skills of Grade V learners before and after the exposure to a personally crafted song.
2. To measure if there is a significant difference between the pretest and post-test results of the personally crafted song on the multiplication skills of elementary learners.

METHODOLOGY

Research Design. This study used a one-group pre-test post-test research design with a personally crafted song to improve the multiplication skills of grade V learners in the Schools District of Concepcion, Cluster II, Province of Iloilo, Philippines. The research focused on Lo-ong Elementary School during the 2023-2024 school year. Math teachers find it challenging to introduce math in the simplest way for the learners. The researchers created an intervention to teach math concepts through music. The researchers were eager to test its effectiveness in teaching math.

Research Instrument. The instrument used in this study was a standardized mathematics test, specifically a 100-item Basic Multiplication Facts. Standardized tests are tools that have been validated, tested for reliability, and normed across representative populations. They go through careful development processes that include item analysis, reliability testing, and validation by

experts. Therefore, their reliability has already been established.

Since the multiplication test used is standardized, pilot testing is not necessary. Pilot testing is usually needed for researcher-made tools to check the clarity of items, the suitability of content, and the reliability of results before the actual administration. On the other hand, standardized instruments have been pretested and calibrated thoroughly, ensuring consistency and comparability of scores across various groups of learners.

Respondents of the study. This study was conducted on thirty grade V learners who were enrolled in Lo-ong Elementary School, Lo-ong Concepcion, Iloilo, Philippines. During the School Year (SY) 2023-2024. They were selected because of their performance in mathematics, especially in the four fundamentals; most of their score were very low.

In addition, two grade 5 teachers from Lo-ong Elementary School were asked to participate in the study. They were asked to immerse themselves in the implementation of the intervention to gain an understanding of how songs can be effectively used as an innovation strategy to enhance the numeracy skills of the learners.

Procedures.. The study lasted 6 months, from July to December 2024. The researchers first asked the school administrator for permission to conduct the study. Once they received approval, they visited the study site to get approval for their work there. Next, they spoke with the adviser of the grade 5 learners about the study. They scheduled a pretest for the learners to check their multiplication skills. The participants were the Grade 5 sunflowers. After determining who would participate, the researchers held an orientation program and a meeting with parents to explain the process. They also had parents sign a permit for their children to take part in the study.

To improve memorization of multiplication skills, the strategy is to use a multiplication song created by the researchers. In this study, the researchers used songs for multiplication tables 2 to 10, accompanied by a piano. During the intervention, thirty learners listened to the songs and then sang along.

The tunes for multiplication tables 2, 3, and 4 are based on “Modified Magtanim ay Di Biro.” The tunes for tables 5, 6, and 7 follow “Modified Agadoo.” Meanwhile, tables 8, 9, and 10 feature an original composition titled “Up and Down and Shake.” Throughout the intervention, thirty learners listened to the songs and joined in singing. They sang one table every two days to help with memorization.

All sections underwent the intervention. After the intervention program, a posttest was conducted to measure whether there was an improvement in the learners’ performance.

2.5. Statistical analysis

The frequency count, percentages, and mean were used to determine the distribution of grade 5 learners exposed to the crafted songs. The mean was used to determine the level of achievement of the learners before and after they were exposed to the intervention. A paired t-test was used to determine the difference between the pretest and posttest of Grade 5 learners.

2.6. Ethical Consideration

Participants were briefed by the researchers on the goals, procedures, and possible hazards of the study. Before gathering any data, they obtained each participant's signed consent. Through the use of pseudonyms and the safe storage of all gathered data, the researchers guaranteed the participants' confidentiality and anonymity. All participants were informed that participation in the study is entirely voluntary and that they are free to discontinue participation at any moment. In order to ensure that no sensitive or personal information was shared without permission, the researchers collected data in an ethical and non-intrusive manner.

Regardless of the result, they also reported findings truthfully and preserved the data's integrity and correctness. They declared any possible conflicts of interest pertaining to their financial or personal ties to the research participants that might have an impact on the findings. The study's methodology, data collection instruments, and data analysis strategies were all transparently disclosed. They discussed any

restrictions and possible prejudices in the planning or conduct of the study.

RESULTS AND DISCUSSION

1. Improving the Multiplication Skills of Elementary Learners Using the Personally Crafted Song

Table 1

Level of multiplication skills of Grade V learners before and after the exposure to personally crafted song

	Mean	SD	Description
Pre-test (Traditional)	40.00	20.68	Low
Post-test Experimental group (with intervention)	83.00	19.00	Very High

Legend: 80.01-100.00 (Very High), 60.01-80.00 (High), 40.01-60.00 (Average), 20.01-40.00 (Low), 0.00 -20.00 (Very Low)

With a mean score of 40.00 on the pre-test, the findings were evaluated as "Low,". However, the results demonstrate that Grade V learners' multiplication abilities significantly improved following their exposure to the intervention through the creation of songs. With a pre-test mean score of 40.00 (SD = 20.68), it is classified as "Low." This suggests that learners struggled to grasp basic multiplication before the intervention. This finding raises the possibility that limited performance resulted from traditional teaching methods' inability to maintain students' interest and aid in their retention of the material.

However, the post-test mean score of 83.00 (SD = 19.00) indicates a notable improvement and falls into the "Very High" range. This modification shows how well songs may be used as a teaching technique to help students comprehend and remember multiplication concepts. According to Chao et al. (2020), the increase in the mean score shows that music not only made studying more fun but also aided learners in understanding and remembering concepts.

Learners may have performed more consistently following the intervention, as indicated by the decreased standard deviation in the post-test when compared to the pre-test. This indicates that the group's performance gap was lessened since all students, regardless of skill level, had an equal opportunity to learn and perfect multiplication abilities through the use of specially composed songs.

The findings provide credence to theories of musical mnemonics and multimodal learning Salcedo, 2010). According to Selph (2023), integrating rhythm, melody, and repetition enhances memory retention and promotes in-depth learning. Through the use of well-known and captivating formats, such as songs, multiplication facts can help students connect abstract mathematical ideas with distinct aural patterns. This method improved and prolonged recollection. The results also support the idea that teaching mathematics through the use of created songs is a successful approach. In addition to raising "Low" multiplication skills to "Very High," it promoted engagement and a positive outlook on math education. This suggests that comparable approaches might be tried in other mathematical procedures or disciplines where students typically have difficulty.

2. Comparison of pretest-post test results

Table 2

Represents the significant difference between the pretest and posttest on the personally crafted song.

	Paired Difference					t	df	Sig. (2-tailed)
	Mean	SD	Std.Error Mean	95% Confidence Interval of the Difference Lower	Upper			
Pair 1	-16.733	14.372	2.624	-22.100	-11.367	-6.377	29	.000

The statistical analysis showed a significant value of p = .000 (2-tailed), indicating a strong difference in learners' multiplication skills before and after the intervention. This result suggests that the improvement was not due to random chance but can be credited to the intervention itself, specifically the use of a personally crafted song. These findings highlight the effectiveness of the intervention in making mathematics more engaging, relevant, and meaningful to learners. By incorporating music into the teaching materials and promoting hands-on learning, learners can grasp the content easily and get involved in the learning process (Asis et al.

2025). This intervention promotes critical thinking, problem-solving, and collaboration, which are essential parts of scientific process skills. Additionally, using the crafted song in the activity reduces barriers to understanding, allowing learners to better grasp complex concepts (Azaryahu, L., et al. 2020).

These findings underscore the effectiveness of the instructional intervention in enhancing learners' achievement. The significant gains observed between the pretest and posttest support the claim that targeted teaching strategies, when implemented effectively, can yield measurable improvements in learning outcomes (Talikan et al. 2024; Statistics by Jim, 2023). Beyond statistical significance, the practical implications are notable: learners not only showed improvement, but the magnitude of their progress is educationally valuable, suggesting that similar approaches could be beneficial in comparable contexts.

CONCLUSION

In conclusion, the study's findings show a significant improvement in learners' multiplication skills after they encountered the intervention—the crafted song. The remarkable distinction between the pretest and posttest results suggests that the intervention was effective in improving learners' memorization skills. These results highlight how crucial it is to offer stimulating math exercises in order to sustain curiosity among learners and increase their involvement. Furthermore, maintaining and enhancing numeracy will require integrating these strategies. Along with improving mathematical skills, the use of creative songs develops critical thinking abilities, improves motivation and engagement among learners, and makes learning more relevant to everyday life. All things taken into account, incorporating songs into other subjects can greatly improve the educational environment and make it more interesting and successful for every type of learner.

At the onset of the study, experimental groups started as low performers; some of them could multiply well, and most of them could not. A huge improvement was visible after the intervention as they moved to a very high level. This connotes that teaching using a personally crafted song as an intervention yielded better test results than without intervention. Since significant differences were noted between the pretest and posttest of the experimental group, it can be said that no matter which group they are in, learners were able to acquire knowledge and enhance their skills in multiplication.

RECOMMENDATION

The following recommendations are hereby advanced:

1. Learners should be taught using varied strategies suited to their learning needs and difficulties to enhance their performance in the subject.
2. Teachers should look into the topic that they are about to teach, matching it with the type of strategy that they will use, and consider the type of learners they have. As there are lots of strategies and techniques in teaching and there are different types of learners, it is their task to search for the most appropriate and not just be content with their traditional teaching.
3. Using interventions such as personally crafted songs in teaching mathematics may be used by teachers to make the subject more fun and exciting, so that it would make the lesson enjoyable.
4. Teachers are advised to conduct their own action research and test out different teaching strategies that would help improve the overall performance of learners.

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