WWW.IJRPR.COM

International Journal of Research Publication and Reviews

Journal homepage: www.ijrpr.com ISSN 2582-7421

Zumba Math: Using Counting Exercises to Improve Multiplication Skills Among Learners

JOYCE B. SEVILLA

Biliran Province State University

INTRODUCTION

Mathematics is one of the most important subjects in the elementary curriculum, serving as the foundation for logical thinking and problem-solving. However, many learners struggle with basic operations, particularly multiplication. Memorizing multiplication facts often becomes a challenge, leading to poor performance and a lack of interest in learning math. Traditional methods such as drills and written exercises may sometimes cause boredom and anxiety, making learning less effective. Mastering the multiplication table is important not only in itself but also for acquiring more advanced mathematical skills: even if not-memorized multiplication facts can be solved by various workarounds (strategies, external devices), automatic knowledge is still advantageous because it can free cognitive resources that can be used for other tasks (Bratina & Krudwig, 2003; Hasselbring, 1988).

To address this concern, innovative and enjoyable teaching strategies must be explored. One promising approach is the use of Zumba counting exercises, which combine physical movement, music, and rhythmic counting. By integrating movement into the learning process, learners can develop a more active and engaging way of mastering multiplication facts. This approach aligns with the principles of kinesthetic learning, which emphasize learning through physical activity. As cited by Favre (2009), Thomas Alva Edi Sound defines kinesthetic learners as students who prefer whole-body movement to process new and difficult information.

"Zumba Math" transforms the usual math drill into a fun, energetic exercise where learners count by multiples while dancing to lively music. For example, learners can count 1 1 1(one one one), 1 2 2 (one two two) 2 3 6, 7 6 42 instead of saying 1x1=1, 1x2=2, 2X3=6, while performing Zumba steps. This rhythmic repetition not only enhances memorization but also promotes coordination, focus, and motivation.

In today's classroom, where learners have diverse learning styles, integrating physical activity in academic lessons can lead to better attention, memory retention, and participation. Through Zumba Math, learners can enjoy math while developing both their cognitive and physical skills.

Objectives of the Study

The main objective of this study is to improve the multiplication skills of learners through Zumba counting exercises.

Specifically, it aims to:

1. Determine the process in implementing the Zumba Math.
2. Find out the performances of the learners in term of:
   - **2.1** Pre-Test
   - **2.2** Post Test
3. A certain the difference between the pre-test and post test score.
4. Develop an implementation plan.

RELATED LETIRATURE

Physical activity and movement have long been recognized as effective tools for enhancing students' cognitive and academic performance. The 2011 study by Fedewa and Ahn revealed that physical activity and fitness have a significant and positive effect on children's achievement and cognitive outcomes, with aerobic exercise providing the greatest benefits. These findings suggest that movement-based activities such as Zumba counting exercises can positively influence learning outcomes by combining physical engagement with mental processing.

To promote an engaging and positive learning environment, teachers may integrate music and dance into classroom instruction. Segarra et al. (2018) found that combining dance and music in teaching mathematics concepts benefits K to 12 students by fostering a more stimulating learning atmosphere. Similarly, Leandro et al. (2018) discovered that body movement used to assimilate mathematical concepts leads to better learning achievement. When students move, they engage multiple senses and areas of the brain, which strengthens memory, comprehension, and focus. This physical engagement

keeps learners active and motivated, making learning more enjoyable and effective. Becker (2013) further emphasized that when body movement is integrated into lessons, students better understand concepts and retain them longer in memory.

Dance, in particular, has been identified as a powerful motivator in academic learning. Singh et al. (2012) reported that dance enhances both student motivation and academic performance. Gerofsky (2013) and Shamir et al. (2019) likewise highlighted that dance promotes mathematical engagement and helps students interact with mathematical ideas in creative, meaningful ways. Beyond movement, music also plays a crucial role in supporting mathematical understanding. McDonel (2015) explained that music enhances comprehension of mathematics due to the strong relationship between musical structure and mathematical patterns. The rhythmic and repetitive elements of music help students internalize mathematical relationships and concepts more easily.

However, despite the benefits of these creative learning strategies, mathematical anxiety remains a significant challenge in mathematics education. Zhang et al. (2019) identified math anxiety as one of the main factors negatively affecting students' performance, particularly among Asian learners, and noted that it often surfaces during problem-solving assessments. Similarly, Lesser et al. (2019) described mathematical anxiety as a common issue in the classroom that hinders students' confidence, engagement, and achievement. Addressing this emotional barrier is crucial to ensuring that students experience mathematics positively.

Student engagement is a key factor in improving learning outcomes. According to Christenson et al. (2012), Fredricks and McColskey (2012), and Wang and Degol (2014), engagement consists of three interconnected dimensions—behavioral, cognitive, and emotional. Integrating movement, music, and dance can activate all three dimensions, leading to deeper and more sustained learning. In this regard, Ngalim and Chinye (2018) emphasized that incorporating songs into mathematics lessons makes the learning process lively, engaging, and effective, as it keeps students continuously involved in learning activities.

Furthermore, mastering basic multiplication facts is fundamental to mathematical development. Baker and Cuevas (2018) stated that multiplication facts serve as essential building blocks in mathematics. Many students, however, struggle with memorization, which negatively affects not only their classroom performance but also their overall perception of mathematics. Since math builds upon previously learned concepts, a lack of mastery in multiplication can impede progress in higher-level mathematical learning.

In light of these studies, integrating Zumba-inspired counting exercises presents a promising approach to improving multiplication skills among learners. By combining aerobic movement, rhythm, and counting, Zumba Math can make learning more enjoyable, reduce anxiety, and strengthen students' understanding and recall of multiplication facts. This movement-based strategy supports both physical and cognitive development, offering a holistic way to enhance mathematical learning and engagement.

Methodology

Research Design

This study will employ a quasi-experimental action research design using the one-group pretest-posttest method. This design is appropriate since it aims to determine the effectiveness of an intervention—Zumba counting exercises—on learners' multiplication skills. The researcher will administer a pretest to measure the learners' initial performance, implement the intervention (Zumba Math), and then give a posttest to measure improvement.

Research Locale

The study will be conducted at Maripipi Central School located in Barangay Binongto-an, Maripipi, Biliran during the School Year 2025–2026. The research will be carried out in the Grade 6 classroom. This classroom provides a conducive learning environment where learners can comfortably participate in both the academic and physical components of the Zumba Math sessions.

Participants of the Study

The participants will be Grade 6 learners of Maripipi Central School who are identified as having difficulties in learning multiplication facts based on their previous performance in Mathematics. A total of 20 learners will be purposively selected to participate in the study.

Selection Criteria:

- Learners who have low scores in multiplication tests.
- Learners who are willing and physically able to participate in light physical activities (Zumba).
- Learners with parental consent to join the study.

Research Instrument

The main instruments of the study will include:

1. Multiplication Skills Test (Pretest and Posttest) – a teacher-made test designed to assess learners' mastery of multiplication facts from 1 to 30. It will consist of multiple-choice and computational items. The test will be validated by mathematics teachers for content validity before administration.
2. Observation Checklist – used by the teacher to record learners' participation, enthusiasm, and engagement during Zumba Math sessions.
3. Learner Feedback Form / Interview Guide – designed to gather learners' perceptions and experiences after the intervention, focusing on enjoyment, motivation, and perceived improvement.

Data Gathering Procedure

Pre-Implementation Phase

- Seek permission from the school head and parents to conduct the study.
- A pretest will be administered to determine the learners' baseline multiplication skills.
- The Zumba Math plan (music selection, steps, and counting routines) will be developed and reviewed by subject experts.

Implementation Phase (Intervention)

· The intervention will run for four to six weeks, conducted 3 times a week for 20 minutes each session.
Each session will include:
· Warm-up activity (2–3 minutes)
· Zumba counting exercises focused on one or two multiplication tables (e.g., 2s, 3s, 4s) performed rhythmically while dancing
· Cool-down and reflection period (2–3 minutes)
· The teacher will integrate multiplication practice within Zumba routines, encouraging learners to count by multiples as they move to the music (e.g., 2 3 6…2 4 8…2 5 10..).
· Learners' engagement will be observed and documented using the observation checklist.

Activity	Duration	Month/Year
Preparation of instruments and approval	1 week	September 2025
Pretest administration	1 day	September 2025
Implementation of Zumba Math sessions	6 week	September - October 2025
Posttest and learner feedback	1 week	November 2025
Data analysis and reporting	2 week	December 2025

Timeline of Activities

Post-Implementation Phase
After the intervention, a posttest will be given to assess improvement in multiplication skills. Learners will also accomplish a short feedback form or participate in a focus group discussion to express their experiences and attitudes toward Zumba Math.
The pretest and posttest results will be compared to evaluate learning gains.

Data Analysis
The data were collected from the Grade 6 learners of Maripipi Central School, Maripipi, Biliran, during the School Year 2025–2026. The study aimed to determine the effectiveness of using Zumba counting exercises as an intervention to improve multiplication skills among learners.

The data were obtained through pre-test and post-test results, observation checklists, and teacher's notes on learner participation and behavior during the Zumba Math sessions.

Before implementing the Zumba Math intervention, a pre-test on multiplication was administered to determine the learners' initial performance level. After four weeks of Zumba Math sessions integrated with regular mathematics lessons, a post-test was conducted to measure improvement.

Test	Mean Score	Description
Pre-Test	16.05	Developing
Post-Test	26.35	Proficient

Table 1 : Learners' Pre-Test and Post-Test Scores in Multiplication

Table 1 shows that the mean score in the pre-test was **16.05**, indicating that most learners were still at the *Developing* level of multiplication skills. After the implementation of the Zumba Math intervention, the mean score increased to **26.35**, which falls under the *Advance* level.

Performance Level	Pre-Test (f)	Post-Test (f)	Increase / Decrease
Beginning (0–10)	3	1	-2
Developing (11–17)	7	1	-6
Proficient (18–24)	10	1	-9
Advanced (25–30)	0	17	+17
Total	**20**	**20**	

This result suggests a significant improvement in the learners' multiplication performance after exposure to rhythmic counting and movement-based exercises. The improvement indicates that integrating physical activity, rhythm, and counting enhances learners' engagement and memory retention of multiplication facts.

Table 2: Comparison of Learners' Performance Before and After the Intervention

Table 2 reveals that the number of learners in the *Beginning*, *Developing and Proficient* levels decreased, while those in the *Advanced* levels increased after the intervention. This clearly indicates that the Zumba Math strategy helped shift learners toward higher achievement levels in multiplication.

Table 3: Observation Checklist Results on Learner Engagement

Indicators	Weighted Mean	Verbal Description
Participates actively in Zumba Math sessions.	3.75	Always
2. Performs the counting movements correctly and rhythmically.	3.60	Often
Responds enthusiastically to the music and counting exercises.	3.80	Always
Demonstrates cooperation with classmates during group activity.	3.65	Often
Shows enjoyment and motivation during the activity.	3.70	Often

Table 3 shows that learners *always* or *often* participated actively in Zumba Math sessions. They demonstrated enthusiasm, cooperation, and improved recall of multiplication facts while enjoying the activity. This indicates that the integration of music, movement, and counting created a positive learning environment that supported motivation and focus.

Ethical Consideration

The study strictly followed ethical standards to ensure the safety, rights, and well-being of all participants. Parental consent was obtained before involving learners, and participation was completely voluntary, allowing students to withdraw at any time without consequences. Confidentiality and anonymity were maintained by using coded identifiers instead of learners' names, and all data were stored securely and used only for academic purposes.

Results and Discussion

The findings of the study clearly demonstrate that Zumba Math is an effective strategy for improving multiplication skills among learners. The significant increase from the pretest to the posttest scores shows that incorporating rhythmic counting and physical movement enhances learners' recall, accuracy, and understanding of multiplication facts. The intervention also created a positive and enjoyable learning environment, as evidenced by high engagement, enthusiasm, and active participation observed during sessions.

Learners' positive perceptions further support the effectiveness of Zumba Math, indicating that movement-based activities make mathematics more meaningful, motivating, and easier to remember. Overall, the study concludes that integrating Zumba-inspired counting exercises into mathematics lessons can serve as a powerful tool for both cognitive improvement and classroom engagement.

The study recommends regularly integrating Zumba Math activities into mathematics lessons to strengthen learners' multiplication skills. Teachers should ensure a safe learning space for movement-based activities and may also use Zumba Math as a remediation strategy for struggling learners. Schools are encouraged to provide training on creative, kinesthetic teaching methods, while future researchers may explore the strategy with more learners, across different grade levels, or for a longer duration to further validate its effectiveness.

REFERENCES

1. Elementary math in elementary school: the effect of interference on learning the multiplication table. https://pmc.ncbi.nlm.nih.gov/articles/PMC9716515/

2. Campbell, J. I. D. (1987). Network interference and mental multiplication. *Journal of Experimental Psychology: Learning, Memory, and Cognition, 13*(1), 109–123. https://doi.org/10.1037/0278-7393.13.1.109

3. De Visscher A, Noël MP. A case study of arithmetic facts dyscalculia caused by a hypersensitivity-to-interference in memory. Cortex. 2013;49(1):50–70. doi: 10.1016/j.cortex.2012.01.003.

4. De Visscher A, Vogel SE, Reishofer G, Hassler E, Koschutnig K, De Smedt B, Grabner RH. Interference and problem size effect in multiplication fact solving: Individual differences in brain activations and arithmetic performance. NeuroImage. 2018;172:718–727. doi: 10.1016/j.neuroimage.2018.01.060.

5. Dehaene S, Cohen L. Towards an anatomical and functional model of number processing. Mathematical Cognition. 1995;1:83–120.

6. Katzoff A, Zigdon NM, Ashkenazi S. Difficulties in retrieval multiplication facts: The case of interference to reconsolidation. Trends in Neuroscience and Education. 2020;20:100137. doi: 10.1016/j.tine.2020.100137.

7. Math dance and song: Means to reduce student mathematical anxiety and promote engagement. Jorelyn E. Insorio1. Pacita Complex National High School, Philippines (ORCID: 0000-0001-7195-9145)

8. The Effectiveness of Zumba Exercises Training on the Physical and Health Course Outputs among University Students. March 2021. International Journal of Human Movement and Sports Sciences 9(2):316-323. DOI:10.13189/saj.2021.090220. CC BY 4.0

9. Have, M., Nielsen, J. H., Ernst, M. T., Gejl, A. K., Fredens, K., Grøntved, A., & Kristensen, P. L. (2018). Classroom-based physical activity improves children's math achievement: A randomized controlled trial. *PLOS One, 13*(12), e0208787. PMC

10. Mavilidi, M.-F., Okely, A. D., Chandler, P., & Paas, F. (2019). Effects of integrated physical activity and mathematics on preschool children's executive function and arithmetic skills. International Journal of Behavioral Nutrition and Physical Activity, 16(1), 109. (This is part of the systematic review of PA interventions.) BioMed Centra

11. Shapiro, D., & Stolz, S. (2019). The impact of movement-integrated instruction on physical literacy development in elementary students. Education Sciences, 15(5), 545. (Note: MDPI article on embodied learning in math from physical tasks.) MDPI

12. Ferder, B. (2015). *The integration of kinesthetic learning through the Math & Movement Program: Pilot study* (Master's thesis). State University of New York College. digitalcommons.cortland.edu

13. National Math Foundation. (n.d.). Why Kinesthetic Learning? Retrieved from National Math Foundation website. National Math Foundation

14. International Journal of Innovative Research and Scientific Studies. (2025). Kinesthetic play strategy in early mathematics learning. IJIRSS, 8(1), 1440–1449.
IJIRSS

15. International Journal of Behavioral Nutrition and Physical Activity. (2019). Effects of school-based physical activity on mathematics performance in children: A systematic review. IJBNPA, 16, Article 109. BioMed Central

16. International Journal of Research in Undergraduate Mathematics Education. (2023). Students' mathematical thinking in movement. *IJRUME*. SpringerLink

17 National Math Foundation. (n.d.). Research Library: Kinesthetic Learning, Physical Activity, & Play. Retrieved from National Math Foundation website. National Math Foundation
18. (2024). Influence of learning styles on mathematical performance among junior high school students. *Unspecified Journal*. (Study that finds kinesthetic learning style significantly correlates with math performance.) ResearchGate

19. Jostmp-KSU. (2023). The kinesthetic learning strategy in mathematics: Engaging students through movement, rhythm, and coordination. *Journal of Science, Technology, and Mathematics Pedagogy, 1*(1). jostmp-ksu.com.ng