

Joyful and Meaningful Learning of Integers through the Traditional Game *Mpa'a Geta* to Promote Students' Motivation in Learning Mathematics

Mardiah^{1*}, Astuti²

¹²SMPN 2 Dompu, Dompu, Indonesia

*Correspondence Author Email: japridiah@gmail.com

Abstrak: Penelitian ini bertujuan untuk mendeskripsikan penerapan permainan tradisional Mpa'a Geta dalam pembelajaran bilangan bulat serta dampaknya terhadap pemahaman konsep dan motivasi belajar matematika siswa. Penelitian menggunakan pendekatan kualitatif deskriptif dengan melibatkan 21 siswa kelas VII dalam satu sesi pembelajaran selama 2 × 45 menit. Data dikumpulkan melalui observasi, dokumentasi, respon siswa, dan refleksi guru, kemudian dianalisis secara tematik. Hasil penelitian menunjukkan bahwa permainan Mpa'a Geta menciptakan suasana belajar yang menyenangkan dan bermakna, meningkatkan keterlibatan siswa, serta memfasilitasi pemahaman konsep perkalian bilangan bulat melalui aktivitas konkret. Respon siswa menunjukkan bahwa pengalaman bermain membantu mereka memahami aturan tanda positif dan negatif dengan lebih jelas, sementara refleksi guru memperkuat temuan bahwa permainan ini efektif mencapai tujuan pembelajaran. Permainan juga meningkatkan motivasi intrinsik siswa karena aktivitas yang interaktif, kolaboratif, dan dekat dengan budaya lokal. Dengan demikian, permainan tradisional Mpa'a Geta memiliki potensi sebagai strategi pembelajaran alternatif yang relevan dalam mengajarkan konsep matematika dasar secara kontekstual dan menyenangkan..

Kata kunci: pembelajaran menyenangkan, pembelajaran bermakna, bilangan bulat, permainan tradisional, motivasi belajar

Abstract: This study aims to describe the implementation of the traditional game Mpa'a Geta in teaching integer multiplication and to examine its contribution to students' conceptual understanding and motivation in learning mathematics. The research employed a descriptive qualitative approach involving 21 seventh-grade students during a 2 × 45-minute learning session. Data were collected through classroom observation, documentation, student responses, and teacher reflection, and were analyzed using thematic techniques. The findings indicate that the Mpa'a Geta game creates a joyful and meaningful learning environment, enhances student engagement, and facilitates conceptual understanding of integer multiplication through concrete activities. Student responses revealed that the game helped them better grasp the rules of positive and negative signs, while teacher reflections confirmed that the activity effectively supported the learning objectives. The game also increased students' intrinsic motivation due to its interactive, collaborative, and culturally relevant nature. Therefore, the traditional game Mpa'a Geta holds strong potential as an alternative instructional strategy for teaching fundamental mathematical concepts in a contextual and enjoyable manner.

Keywords: joyful learning, meaningful learning, integers, traditional game, learning motivation

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INTRODUCTION

Mathematics learning in the 21st century demands an approach that emphasizes not only conceptual mastery but also fosters meaning and enjoyment in the learning

process. Mathematics is often perceived as an abstract, rigid, and difficult subject, often leading to decreased student motivation (Nabila, Santoso, & Kusno, 2025; Yabo, 2020). However, motivation is a crucial factor in determining learning success and student engagement in deeply understanding mathematical concepts. When learning is meaningful and enjoyable, students are better able to connect learning experiences with everyday life and are more motivated to understand concepts independently. This aligns with the constructivist perspective, which emphasizes the importance of active, contextual, and meaning-oriented learning experiences (Rahmawati & Pratiwi, 2023). Furthermore, Van der Togt and Van der Veen (2020) emphasized that one effective way to increase student motivation is by creating meaningful learning experiences in the classroom. Therefore, the application of fun and contextual learning strategies is an important need in modern mathematics learning.

In many schools in Indonesia, mathematics learning still takes place conventionally, predominantly through lectures and practice exercises, leaving little room for students to actively engage in the learning process. Consequently, students often experience boredom and difficulty understanding abstract concepts such as integer operations, particularly regarding the rules of positive and negative signs. National research shows that low levels of active participation and a lack of varied learning models are the main causes of low student motivation and understanding in mathematics (Sari & Budiyo, 2021). This condition aligns with international findings that learning that is not contextualized and does not involve direct experience leads to mathematics being perceived as difficult and irrelevant by students (Opitz et al., 2019). Therefore, learning innovations that are more interactive, contextual, and closer to students' lives are needed, particularly through a local culture-based approach that has been proven to increase student interest and motivation in understanding mathematical concepts (Rosa & Orey, 2016).

A local culture-based learning approach, or ethnomathematics, offers a significant opportunity to provide a more contextual, meaningful, and life-affirming learning experience for students. Through ethnomathematics, abstract concepts in mathematics can be connected to everyday cultural practices, enabling students to gain a deeper and more authentic understanding (Rosa & Orey, 2016). Traditional games, as part of local culture, have also been shown to increase engagement and motivation to learn by providing an active, collaborative, and enjoyable learning experience (Nababan & Siregar, 2020). In this context, the traditional game Mpa'a Geta has the potential to be an effective learning medium to help students understand the concept of integer multiplication in a concrete way. By throwing colored rubber bands at positive and negative markers, students not only learn to apply the rules of sign in multiplication but also develop logical thinking skills and meaningful learning experiences. Learning that integrates cultural elements like this has been shown to strengthen students' intrinsic motivation through emotional engagement and a sense of ownership in the mathematics learning process (Utami & Widodo, 2022).

Although various studies have examined culture-based mathematics learning, exploration of the use of regionally specific traditional games as learning media remains

relatively limited. Most previous studies have focused on modern educational games or general manipulative activities, while the use of the traditional game *Mpa'a Geta* as a learning tool for integer concepts has not been widely developed in scientific studies. Furthermore, research related to the integration of local culture in mathematics learning generally emphasizes cognitive aspects, while its impact on student learning motivation has rarely been studied in depth. This research gap indicates the need for studies that describe how the traditional game *Mpa'a Geta* can create a fun and meaningful learning experience while simultaneously boosting student motivation in learning integers. Therefore, this study aims to analyze the implementation of the traditional game *Mpa'a Geta* in mathematics learning and describe its contribution to students' conceptual understanding and learning motivation.

METHOD

This study used a descriptive qualitative approach because it focuses on an in-depth understanding and depiction of the learning process based on students' actual experiences during the implementation of the traditional game *Mpa'a Geta* in learning integer multiplication. This approach was chosen to allow researchers to explore the dynamics of activities, student responses, and the learning context that occurs naturally without variable manipulation.

The study was conducted on April 13, 2025, involving 21 seventh-grade students in a single 2 x 45-minute learning session. The learning process involved modifying the traditional *Mpa'a Geta* game to facilitate its use as a medium for understanding the concept of integer multiplication. The game uses colored rubber bands representing positive and negative numbers, along with markers labeled with integers. This concrete representation facilitates students' connection between the game and the rules of multiplication.

The research began with the planning stage, which involved preparing game equipment and student activity sheets to record the results of the throws and calculate integers. During the lesson, students worked in groups and took turns throwing rings at numbered stakes. Each throw served as the basis for calculating multiplication based on the number of rings landed and the value of the stake. This process provided an opportunity for students to discuss, collaborate, and understand the sign patterns more concretely. After the activity was completed, the researcher and students conducted a reflection to review the learning success, patterns of student understanding, and factors influencing motivation and engagement during the game.

Research data was collected through direct observation of the learning process to record levels of engagement, enthusiasm, and group work dynamics. Furthermore, researchers utilized documentation in the form of activity photos, score sheets, and learning process notes. Data were also obtained from student statements included in the implementation report, which provided insight into their perceptions of the game and their understanding of the concept of integer multiplication. Teacher reflections were also used as a data source to strengthen interpretations of successes and challenges in the learning process.

All data were analyzed thematically through data reduction, categorization, and conclusion drawing. Data were organized by grouping findings into themes such as conceptual understanding, student engagement, motivation, and learning constraints. The findings were then presented in narrative form, describing the relationship between the use of the traditional game Mpa'a Geta and students' learning experiences. Data validity was maintained through technical triangulation, comparing observations, documentation, teacher reflections, and student responses to ensure accurate and reliable interpretations.

RESULT AND DISCUSSION

The research results show that the implementation of the traditional game Mpa'a Geta in learning about integers has a positive impact on both conceptual understanding and student motivation. Throughout the activity, students were active, enthusiastic, and demonstrated collaborative behavior within their groups. Activities such as throwing rings, calculating multiplication results, and analyzing sign patterns made the typically abstract learning more concrete and understandable.

Students' understanding of the sign rule in integer multiplication improved, as seen in how they explained the results during the game. Students were able to articulate the reasoning behind the results of multiplying positive and negative numbers based on direct experience during the activity. This was reflected in student statements such as, "I learned that when multiplying a positive number by a negative number, the result is negative," and "At first I was confused about why negative times negative makes positive, but after playing, it became clearer." The use of different colored wristbands also helped reinforce understanding, as one student expressed: "The color of the wristbands makes it easier for me to remember the sign rule."

In addition to conceptual understanding, students' motivation to learn significantly increased during the lesson. Students demonstrated high levels of interest in participating in the activities, as evidenced by their eagerness to wait for their turn to play, active group discussions, and positive reactions to the outcomes of the games. Several students expressed that this method made math enjoyable and less boring. Comments such as "It's fun because it's not just about writing on paper" demonstrate that game-based activities can foster intrinsic motivation in learning mathematics.

Teacher reflections also reinforced these findings. Teachers assessed that this strategy successfully achieved the learning objectives, as most students were able to calculate and explain integer multiplication correctly. The learning also fostered positive values such as cooperation, sportsmanship, and mutual assistance. However, several challenges emerged, such as students' difficulty throwing the rings accurately and limited time for recording scores. These challenges were technical and could be addressed through adjustments to the game design or time allocation.

Research findings indicate that the traditional game Mpa'a Geta can create a joyful learning experience while strengthening understanding of integer concepts. These results align with the theory of meaningful learning, which emphasizes that students

more easily grasp abstract concepts when engaged in concrete and contextual activities (Ausubel, 1968). The activities of throwing rings, observing results, and calculating multiplication directly provide a structured connection between physical experience and mathematical concepts, so students do not simply memorize sign rules but build understanding through experience. This approach is also consistent with the constructivist view that states that mathematical understanding develops through students' active interaction with the learning environment (Rahmawati & Pratiwi, 2023).

The integration of local culture through the Mpa'a Geta game has been shown to increase students' learning motivation, as reflected in the enthusiasm they displayed during the activity. This supports ethnomathematics studies that suggest that culture-based learning can increase students' engagement and sense of ownership in the learning process because the activity is close to their lives (Rosa & Orey, 2016). Furthermore, Van der Togt and Van der Veen (2020) emphasize that meaningful learning—learning connected to real experiences and cultural values—has a significant impact on students' intrinsic motivation. The findings of this study clearly demonstrate this through students' comments that mathematics feels "more exciting and less boring" when taught through games.

In addition to supporting understanding and motivation, traditional games also encourage the development of social values such as cooperation, sportsmanship, and communication. This aligns with the view that educational games can be a means to develop students' non-cognitive skills, which in turn strengthens the academic learning process (Nababan & Siregar, 2020). Obstacles that arise, such as difficulty throwing the bracelet or time constraints, are common technical aspects of activity-based learning and can be overcome by modifying the game instruments. Overall, the results of this study confirm that the traditional game Mpa'a Geta is an effective and relevant alternative learning medium for teaching basic mathematics concepts through a fun, meaningful, and culturally grounded approach.

CONCLUSION

This study concludes that the application of the traditional game Mpa'a Geta in learning integers can create a fun, meaningful, and motivating learning experience for students while improving their understanding of the rules of signs in integer multiplication. Concrete activities such as throwing rings, recording results, and analyzing sign patterns allow students to build conceptual understanding in a constructivist manner, while the integration of local culture has been shown to strengthen their intrinsic motivation and engagement during learning. Positive student responses and teacher reflections indicate that this game is not only effective in overcoming difficulties with abstract concepts, but also beneficial in fostering cooperation, sportsmanship, and a positive attitude towards mathematics. Thus, the traditional game Mpa'a Geta has the potential to be a relevant alternative learning strategy and is feasible to be implemented in mathematics learning in schools.

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