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Exploration of Jejamok Games as Local Wisdom: Basis for Developing E-Comics for Integer Learning

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***Abstract*:**
The persistent challenges students face in understanding integers indicate the need for learning approaches that connect abstract mathematical concepts with meaningful real-life experiences. Although culturally grounded contexts have been widely recommended in mathematics education, there remains a limited understanding of how specific traditional games can be systematically interpreted to reveal their embedded mathematical structures and support conceptual learning. This study seeks to investigate the Jejamok traditional game from North Lampung through an ethnomathematics perspective to identify its potential as a context for learning integer concepts and as a basis for developing instructional media. A qualitative exploratory approach was employed, involving literature review, field observations, and interviews with local community members and teachers. The findings reveal that Jejamok embodies several key mathematical ideas related to integers, including (1) positive and negative values represented through capture and release actions, (2) addition and subtraction of integers through score changes, and (3) comparison of quantities and strategic decision-making based on game situations. These concepts emerge naturally from the game's scoring system and player interactions, providing a meaningful bridge between informal experiences and formal mathematical understanding. Furthermore, the game structure reflects a form of situated mathematical representation that supports progressive mathematization within the PMRI framework. In addition, Jejamok reflects important cultural values such as cooperation, sportsmanship, and nengah nyappur, which contribute to social learning. These findings suggest that Jejamok can serve not only as a contextual learning resource but also as a conceptual foundation for developing culturally responsive instructional media, such as e-comics. This study contributes to the development of culturally grounded mathematics instruction by offering an empirically supported and theoretically informed model for connecting local cultural practices with formal mathematical learning.

Keywords: Ethnomathematics ; Integers; Jejamok; Local Wisdom; PMRI

Introduction

Understanding numbers plays an important role in the decision-making process and problem-solving in everyday life (Díez-Palomar et al., 2023; Keeley & M. Rose, 2015; Pickering et al., 2025; Rahmawati et al., 2023). However, in practice, many students experience difficulties when learning the concept of integers, including in solving problems related to them (Fouryza et al., 2019; Sovia & Herman, 2019).

Common obstacles arise due to a lack of understanding of the abstract concept of negative numbers due to obstacles in conceptual representation and mental construction (Bofferding & Wessman-Enzinger, 2017; Fuadiah et al., 2019; Lewis et al., 2020; Vlassis, 2008). This context helps students understand what negative numbers mean in real life, not just as symbols (Bolyard & Moyer-Packenham, 2012; Gravemeijer & Doorman, 2016; Nurnberger-Haag & Courtney, 2025).

These difficulties indicate the need for a learning approach that connects mathematical concepts with students' cultural and real-life experiences. Such an approach is essential to help students construct meaning from situations that are familiar to them, allowing abstract mathematical ideas to be interpreted through concrete and socially meaningful contexts. By engaging with experiences that are relevant to their daily lives, students are more likely to develop a deeper and more intuitive understanding of mathematical concepts, including integers.

Despite the growing body of research emphasizing the use of contextual and cultural approaches in mathematics learning, many studies still treat culture primarily as a complementary context rather than as a source of structured mathematical meaning. In particular, limited attention has been given to how traditional games can be systematically analyzed to uncover their internal mathematical structures and subsequently transformed into pedagogically meaningful representations. This gap indicates that the potential of local cultural practices, such as traditional games, has not been fully optimized as a conceptual bridge for understanding abstract mathematical ideas, especially integers. From an ethnomathematics perspective, cultural activities are not merely contexts for learning but are embedded with implicit mathematical ideas that can be interpreted and reorganized for instructional purposes. Therefore, it is important to reposition traditional games, including Jejamok, not only as engaging activities but also as culturally situated systems that inherently involve mathematical reasoning, such as value changes, comparisons, and strategic decision-making.

Mathematics has often been considered a "dry and neutral" science, but with a cultural approach, learning becomes more in touch with social values, cooperation, and diversity, thereby fostering a more engaging and relevant educational experience that resonates with students' backgrounds and encourages their active participation in the learning process. Cultural and local contexts are part of students' realities that can be utilized to develop mathematical understanding (Gravemeijer & Doorman, 2016). Indonesian Realistic Mathematics Education (PMRI) is an adaptation of the Realistic Mathematics Education (RME) approach developed by Hans Freudenthal. PMRI emphasizes the importance of contextual, meaningful, and life-appropriate learning for students, including the culture and environment in which they live (Zulkardi, 2002). The "realistic" context in PMRI refers not only to things that are physically real but also to things that are socially and culturally meaningful. Therefore, local culture, traditions, regional games, and community customs can be sources of effective

mathematics learning (Sembiring et al., 2008). For a situation or form of local wisdom to be said to be used in learning, there are six main aspects that need to be fulfilled. These aspects include the context coming from elements of local wisdom; having meaning for students; being relevant or significant in their lives; being able to encourage active involvement in class; and contributing to improving students' abilities (Utari et al., 2024).

This study employs an ethnomathematics framework as an analytical lens to explore the Jejamok traditional game as part of North Lampung local wisdom. Ethnomathematics conceptualizes mathematics as a form of human activity that emerges from cultural practices, social interactions, and everyday experiences rather than solely from formal symbolic systems (D'Ambrosio, 2006). From this perspective, traditional games are viewed as cultural artifacts that implicitly embody mathematical ideas through their rules, strategies, and interactions. By adopting an ethnomathematics framework, the analysis focuses on uncovering how such mathematical ideas are embedded in the structure of the game and how they can be interpreted pedagogically as a conceptual basis for future instructional development, including the representation of integer concepts in electronic comics.

The PMRI principles that support cultural engagement include 1) using real and meaningful contexts that help students bridge concrete experiences to mathematical understanding. 2) Progressive modeling, where local culture can be used as a model situation that students gradually mathematize towards more formal concepts. 3) Social interaction in learning: PMRI supports discussion and exploration activities together among students. These discussions can build a stronger understanding and are rooted in their cultural experiences. 4) Horizontal and vertical linkages. Horizontal linkages connect mathematics with students' everyday cultural experiences, while vertical linkages develop understanding from the informal to the formal level (Fauzan, 2002; Gravemeijer & Doorman, 2016). The importance of increasing efforts to integrate cultural elements into the school environment, especially through the learning process, in order to create a more natural learning experience and not burden students when dealing with new material (Roza et al., 2020). One approach taken is through the introduction of culture packaged in mathematics learning. Culture and mathematics are two very important and interconnected things (Ayuningtyas & Setiana, 2019). D'Ambrosio (2006) stated that mathematics must be linked to culture to understand how mathematics developed in various civilizations. When students see mathematics connected to their own culture, they feel valued and are more interested in learning. Integrating culture into mathematics learning strengthens students' identity as part of society and the nation.

The game context is also an effective learning resource in teaching integer concepts to students (Dewi & Sukasno, 2024; Sarbini et al., 2025). Games have fun, competitive, and contextual characteristics, which can stimulate learning motivation and actively engage students in the learning process. (Khoirunnisa & Putri, 2022). In

the PMRI approach, games can be used as a starting point to introduce mathematical concepts because they contain situations of changing values, both adding and subtracting scores, which naturally represent positive and negative numbers (Sembiring et al., 2008). In addition to modern or commonly used games, traditional games also offer culturally meaningful contexts that align with these characteristics. Traditional games typical of Lampung are included in the exploration of ethnomathematics of the Lampung community, which is relevant for mathematics learning. The study found that various traditional Lampung games contain elements such as number concepts, probability, and arithmetic operations (Merliza, 2021). For example, many traditional games use a scoring system. In such games, increases or decreases in scores can be directly linked to the addition and subtraction operations of integers (Fauzan, 2002). Group discussions about increases and decreases in scores during the game provide opportunities for students to explain strategies to each other and reinforce integer concepts based on their concrete experiences.

After utilizing local culture as a context close to students' experiences, the next step is to convey that context through innovative media that aligns with the preferences of today's digital generation. Research shows that electronic comics (e-comics) are effective as a medium for mathematics learning because they present content visually, narratively, and interactively (Yulaichah et al., 2024). Electronic comics can convey local cultural activities and values through visual stories involving characters, settings, and plots that are easily recognized by students, thus building strong emotional and cognitive connections (Lestari et al., 2021). When cultural contexts, such as phenomena reflecting changes in values or status, are framed in comic format, students more easily understand the mathematical concepts implied within them, such as integers and addition/subtraction operations (Safitri et al., 2021).

While various instructional media, such as textbooks, worksheets, and digital applications, have been widely used to support the learning of integers, these media often present mathematical concepts in a decontextualized and symbolic manner. As a result, students may struggle to connect abstract representations with meaningful experiences. In contrast, e-comics offer a unique combination of visual, narrative, and contextual elements that enable the representation of dynamic situations, such as changes in score, opposing actions, and sequential events, in a more intuitive and engaging way. This multimodal representation allows students to visualize abstract integer concepts through story-based scenarios that are closely aligned with their lived experiences. Furthermore, when grounded in culturally familiar contexts such as the Jejamok game, e-comics can function not only as a delivery medium but also as a representational tool that supports progressive mathematization. Through narrative sequences, characters, and visual symbolism, e-comics can illustrate how informal strategies and intuitive understandings emerging from gameplay are gradually transformed into formal mathematical concepts. This makes e-comics particularly

suitable compared to other media for bridging the gap between cultural experience and abstract mathematical reasoning.

Although various previous studies have demonstrated the effectiveness of cultural contexts and traditional games in supporting mathematics learning, to date, no study has specifically investigated how elements of the Jejamok game can be systematically explored and interpreted to reveal their embedded mathematical ideas, particularly in relation to integer concepts, and how these can serve as a basis for their potential representation in instructional media such as electronic comics. Previous studies have focused on utilizing cultural contexts in general, without providing a conceptual framework or systematic learning design to connect game dynamics with meaningful mathematical representations for students. This gap indicates the need to develop learning contexts that are not only close to students' cultures but also transformed instructionally so that they can become representational bridges that bridge the gap between concrete experiences and abstract concepts. If this research is not conducted, the opportunity to optimize local culture as a relevant and effective learning resource will be overlooked, and students will potentially continue to experience persistent misconceptions about integers, which are known to be carried over to higher levels. Thus, this research makes an important contribution to enriching the design of culture-based mathematics learning while providing theoretical and practical models that have not been developed before.

This study aims to explore the jejamok game as a traditional game and part of the local wisdom of North Lampung. This study is novel in leveraging the Jejamok game to teach integer operations contextually. The research question that guided this study was: What are the characteristics of the Jejamok game that can be adapted into an electronic comic to support integer learning?

Research Methods

This research uses an exploratory study with a descriptive qualitative approach. According to Stebbins (2012), an exploratory study aims to explore, examine, analyze, develop, or investigate a particular phenomenon. In this context, the exploratory study seeks to generate new ideas on how local wisdom in North Lampung can be effectively integrated into number learning. The qualitative approach begins with direct data collection from various parties related to the game that will be the focus of the study. The focus of this research is to explore one of the traditional games of Lampung province, namely Jejamok, particularly in relation to identifying mathematical structures relevant to integer concepts, so that it can be adapted into an electronic comic. To validate the results of the literature review, observations were conducted on elementary school students playing jejamok, and interviews were conducted with cultural experts, the village head, teachers, and local residents there. Participants were selected using purposive sampling, involving 12 students and four key informants consisting of a cultural expert, the village head, one teacher, and one local resident.

Data obtained from the 12 students were primarily collected through direct observation during gameplay activities. The analysis focused on identifying students' actions, interactions, and responses related to counting, scoring, and decision-making processes that reflect their intuitive understanding of numerical changes. No formal written test was administered, as this study emphasized naturalistic observation to capture authentic student engagement within the cultural context of the Jejamok game. Data collection was conducted in Peraduan Waras Village by observing children playing jejamok, followed by interviews with cultural figures, the village head, and elementary school teachers to gather more specific data. The following are the instruments. The instrument was developed based on relevant literature and research objectives, and its content validity was reviewed through expert judgment involving mathematics education lecturers and practitioners familiar with ethnomathematics and local culture.

Table 1. Jejamok Game Aspect Instruments

Aspect	Question	Indicator
Jejamok play area	- What is the shape and size of the Jejamok playing area, are there any rules? - How to determine the location of the fort (asinan)?	Geometric shapes, distance measurements, determining the location of forts
Rules and procedures for playing Jejamok	- What are the rules of playing Jejamok? - How to find players? - How to determine the winner or keeper based on the score?	Game procedures, counting skills, scoring system
Player positions when playing Jejamok	- What is the position of the players when the game starts?	Predicting playing positions, running and dodging strategies
Body movements of players in Jejamok	- How are the movements of the guard and the hiding player different?	Motor skills, pursuit and avoidance strategies
Mathematical ideas in Jejamok	- How can the Jejamok game be connected to mathematics learning? - Is there any counting or scoring activity in this game?	The concept of integers, addition, subtraction, counting the number of players

Although several aspects such as geometric shapes and body movements are identified in the Jejamok game, this study specifically focuses on aspects that have potential connections to integer concepts, such as counting, scoring systems, and value changes.

After data was obtained through observation, the next step was to analyze each activity in the Jejamok game to identify its potential adaptation to mathematics learning. The analysis was conducted by carefully examining the sequence of game activities, game rules, player roles, and interactions that occurred during the game. Each stage of the game was analyzed to uncover aspects that could be linked to the concept of integers, such as value comparisons, score changes, positive and negative meanings, and arithmetic operations that appeared implicitly in the game flow.

This analysis focused on contextual and interpretive observations of the observed phenomena, namely the activities in the Jejamok game, and then connected them to relevant mathematical concepts. This process is known in qualitative research methodology as interpretative observation and narrative interpretation, where the researcher's interpretation of the phenomenon is constructed through careful, repeated, and context-based observations (Ali, 2024; Denzin & Lincoln, 2005). To ensure the reliability of the analysis results, observations were conducted repeatedly, and the interpretations were discussed through focus group discussions with partner teachers and lecturers in related fields. This step aims to ensure that the identified mathematical meanings are not only subjective but also consistent and pedagogically sound. The findings from this analysis will then be used as a basis for determining aspects of the game that can be adapted into e-comics and for designing curriculum-aligned mathematics learning activities. This study does not concentrate on the design or implementation of electronic comics; instead, it emphasizes the exploratory analysis of cultural and mathematical elements that could influence future instructional media development. To ensure the trustworthiness of the findings, this study employed data triangulation by comparing information obtained from observations, interviews, and literature sources. In addition, peer debriefing was conducted through discussions with fellow researchers and partner teachers to validate the interpretation of the data. Member checking was also carried out by confirming key findings with selected informants to ensure the accuracy of the interpretations. These strategies were applied to enhance the credibility and consistency of the qualitative analysis.

In line with the ethnomathematics framework, data analysis was conducted by interpreting cultural activities in the Jejamok game to reveal their implicit mathematical meanings. Observed game rules, player roles, scoring situations, and interactions were first described within their cultural context. These descriptions were then analyzed to identify underlying mathematical ideas related to integers, such as value changes, gain and loss situations, and addition and subtraction processes. This interpretative process represents a form of cultural mathematization, in which informal and context-based mathematical ideas embedded in cultural practices are made explicit without transforming them into formal instructional sequences or classroom interventions.

Results and Discussions

Based on the results of literature reviews in research (Ali, 2023; Meishinta et al., 2023; Muslimin et al., 2012; Srintin et al., 2019), it shows that games can improve mastery of concepts in number material. Exploration of traditional games of the Lampung community is known to contain mathematical concepts in traditional games such as numbers (Merliza, 2021). Based on the results of interviews and observations, the details of the game are explained as follows.

Based on interviews with community leaders, Jejamok is a traditional game originating from North Lampung and is particularly well known among the people of Peraduan Waras Village. One informant stated that children in the village have been playing Jejamok, an ancient game, for a long time. The term is believed to derive from bejamok, which means “to hide” or “to conceal,” although local people more commonly refer to it as jejamuk'an. The informant further explained that Jejamok is similar to hide-and-seek, but it contains distinctive variations. In this game, guards attempt to capture hiding players, while other players may free their captured teammates by successfully reaching the fort or pickle. This rule makes the game more dynamic, engaging, and strategically demanding. These characteristics indicate that Jejamok combines elements of pursuit, rescue, and territorial defense, making it rich in strategic and social interactions that are relevant for pedagogical interpretation.

Children continue to play this game as part of their social activities outside of school hours. It is passed down orally from generation to generation and has become an integral part of the local culture, and the daily lives of the villagers. Jejamok is characterized by its physical and collaborative nature, as it involves running, defending territory, and team strategy in chasing or repelling opponents. The competitive nature of the game is also prominent, as two teams race to reach an area considered a "fortress" while defending themselves. Jejamok has been around since the colonial era, played by children on moonlit nights, during harvest time, or when gathering in the courtyards of stilt houses. Later, it evolved to be played during school breaks. Today, Jejamok is generally played in the afternoons after school or on weekends. This game is played in open spaces, such as residential yards or empty fields, large enough to allow for free movement. Jejamok's primary purpose is to provide children with entertainment and physical activity, while also serving as a platform for teamwork training and social values. Children practice strategy, coordination, and physical agility as they chase and defend the playing area.

One reason this game remains popular among village children is that it requires no special equipment and can be played spontaneously with a flexible number of players. Interviews with children who regularly play Jejamok revealed that the playing area does not follow fixed rules regarding shape or size. Instead, players usually determine the area collectively before the game begins, depending on the available space and their ability to run. The children further explained that the fort or pick is commonly chosen from a visible object in the surrounding environment, such as a large tree or a

building, so that all players can easily recognize it. Jejamok is generally played in open spaces such as fields, while the boundaries of the playing area are established informally through prior agreement among the players. Regarding the rules of the game, the participants stated that these are commonly understood within the community and are transmitted informally from older children to younger ones. As a result, children are usually able to begin playing immediately without requiring formal explanations. This finding suggests that Jejamok is sustained through intergenerational social learning and shared cultural practice.

The following is a summary of the game rules.

Table 2. Jejamok Game Rules and Potential Mathematical Indicators

Stages / Rules	Description	Potential of Mathematical Indicators
1. Number of Players	Minimum 3 people, ideally 5–10 people.	Count the number of players (whole numbers).
2. Preparation	- Designate one person as guard . - Designate one point as a "pickle" or "fortress" (e.g. a tree, pole, or wall) . - Play rock-paper-scissors to choose the first guard. One person acts as the guard, the rest as the hiding players.	Random selection (simple probability).
3. How to Play	1) The guard closes his eyes and counts to a certain number (usually 10, 20, or 100) as agreed. 2) While the guard counts the pickles, the other players hide in an agreed area. 3) After finishing counting, the guard looks for the players. 4) If the guard sees someone, he must run to catch him. 5) If caught, the player cannot hide again. 6) If a player manages to reach the castle before being caught, he touches the castle and says "Salty". 7) Players who are caught can be freed again by other players who are still free. 8) The freed player may not hide	- Counting backwards (positive integer concept). - Comparison of the distance between the guard and the player

Stages / Rules	Description	Potential of Mathematical Indicators
	again and is freed from choosing the next guard.	
4.Winning and Losing Rules	- If all players are caught, the guard wins and the next guard is determined. - If a player survives or touches the castle first, the score is counted.	- Determination of the winner based on the score (whole number). - Positive and negative arithmetic operations according to the success or failure of the action.

The rules of the game indicate that Jejamok possesses considerable mathematical potential. This view was reinforced through an interview with a mathematics teacher from Peraduan Waras Village, who identified several gameplay activities that can be linked to mathematical learning. According to the informant, one example occurs when the guard counts before searching for players, which may support the development of number sense and sequential understanding. The teacher further explained that the game also contains contrasting situations, such as when a guard successfully captures a player and when a player manages to free a captured teammate. These opposing events provide meaningful opportunities to introduce integer concepts through a scoring system, where successful captures may be represented by positive values (+), while releases may be represented by negative values (−). In addition, the process of calculating the total score enables children to observe addition and subtraction operations directly within a real-life context. Through these experiences, students can begin to recognize negative numbers not as abstract symbols but as meaningful representations of gains, losses, and changing values during gameplay. This finding suggests that Jejamok can function as a contextual bridge between informal play experiences and formal integer learning.

From an ethnomathematics perspective as proposed by D'Ambrosio, mathematical knowledge is not viewed as a detached formal system but as a form of human activity embedded within cultural practices. In the context of the Jejamok game, the processes of capturing, releasing, and scoring represent culturally situated mathematical actions that embody fundamental integer concepts. Specifically, capturing can be interpreted as a gain or increase in value, while releasing reflects a loss or decrease, forming a natural representation of positive and negative quantities. These opposing actions also illustrate relational thinking, where values are understood in terms of their changes and interactions rather than as isolated numbers. Therefore, Jejamok can be conceptualized as a cultural system that inherently contains mathematical structures, enabling learners to construct meaning for integer operations

through lived and socially mediated experiences. This interpretation reinforces the role of ethnomathematics in bridging informal cultural knowledge and formal mathematical understanding.

The following is a picture of the students when playing the game

Picture 1. Children playing the game

This image shows students playing Jejamok in the schoolyard during an active moment of chasing and defending the fort. Some students run to avoid being captured, while others attempt to catch them, demonstrating the roles of guards and free players. This specific moment can be interpreted mathematically through score changes during the game. For example, when a free player is successfully captured, the opposing team may gain one point (+1), while the captured team experiences a loss (−1). Conversely, if a player manages to reach the fort or free a teammate, the team may recover points or gain an additional score. These situations illustrate how addition and subtraction of integers can emerge naturally from gameplay activities. The game also involves strategy, cooperation, and agility in defending or attacking the fort. The lively atmosphere reflects students' enthusiasm for preserving local game traditions while also developing physical, social, and mathematical skills.

The description of Jejamok game activities on the school field, as described previously, aligns with the results of the interview conversations. The movements of students chasing each other, alternating roles as defenders and attackers, and working together to defend the fort not only demonstrate strategy and physical dexterity but also reflect the cultural values inherent in the game. The interviewee emphasized that Jejamok embodies the values of Piil Pesenggiri (maintaining group honor) and Nengah Nyappur (adaptability and social skills), which are evident naturally when children play. Thus, this game serves as a medium for social and cultural learning, where children spontaneously learn to work together, respect the roles of team members, and uphold shared honor from an early age.

Interviews with community informants indicated that Jejamok contains important cultural values beyond mere recreational activity. According to the informants, the game reflects the value of Piil Pesenggiri, which refers to maintaining honor and dignity. This is visible in the players' efforts to defend the fort or designated

safe area, as if protecting the honor of their group or territory. The informants also explained that Jejamok embodies the value of Nengah Nyappur, which refers to adaptability and social competence. During the game, players frequently switch roles between guards and attackers, requiring them to quickly adjust strategies and interact effectively with others. These interactions foster togetherness and respect for each participant's role.

Based on interviews between researchers and informants, it can be interpreted that the traditional game of Jejamok has a cultural function that goes far beyond mere recreational activity. The informants emphasized that the game is embedded with the value of Piil Pesenggiri, reflected in the players' efforts to defend the fort, a symbol of group honor. Defending the playing area is not only a competitive strategy but also a representation of maintaining the group's dignity and identity. Furthermore, the game embodies the value of Nengah Nyappur, reflected in the players' ability to adapt when roles switch between defender and attacker. The dynamic of changing roles requires players to quickly adjust strategies, socialize, and cooperate with group members. This interpretation suggests that these cultural values emerge naturally as children play. Without formal instruction, children learn to cooperate, appreciate the contributions of their peers, and understand the importance of collective honor. Thus, Jejamok serves not only as a form of entertainment but also as a vehicle for developing social and cultural character from an early age.

In addition to its cultural significance, the Jejamok game also contains important mathematical elements, particularly related to integer concepts. The actions of capturing, escaping, and defending can be interpreted as representing changes in value within the game context. For instance, when a player is successfully captured, this situation may be associated with a decrease or loss, while successfully escaping or freeing teammates can be seen as an increase or gain. These opposing conditions reflect the fundamental ideas of negative and positive values. Moreover, the dynamic interactions between players create opportunities to understand comparison, accumulation, and reduction of values, which are essential components of integer operations. Through these contextual experiences, students can develop an intuitive understanding of integers before engaging with formal mathematical symbols.

Culture is not only embedded in ceremonies or formal symbols but also naturally present in community interactions, including in children's play activities in the community environment (Colina & Rachmawati, 2021; Miratunnisah, 2024; Suwardi & Dinata, 2021). In this context, traditional games are not merely a means of entertainment but have the potential as a learning medium that contains social structures, educational values, and mathematical elements that are relevant to study (Sangadji & Umar, 2024). The traditional values of the Lampung people are reflected in customary laws, including those concerning state administration (kepunyimbangan), kinship, deliberation and consensus, and all of these are based on a philosophy of life (Hadikusuma, 1989). This is inseparable from the Lampung

people's philosophy of life, which is manifested through customary principles, which form a framework of values in the daily lives of the Lampung people, including interactions between community members, cooperation, and respect for roles and responsibilities (Halim, 2024).

Jejamok, as a traditional game that lives in the North Lampung community, is not merely a recreational activity for children but also reflects social and cultural values. This information was obtained from interviews with traditional figures in North Lampung. Therefore, an educational approach that integrates local culture as a learning context not only strengthens students' identity as part of a cultural community but also enriches their learning experiences through the connection between real life, cultural values, and academic concepts, including in mathematics learning (Kurniawan et al., 2024; Leton et al., 2025).

The use of culture in learning has been supported by the government through Permendikbudristek No. 12 of 2024, which states that local content in the form of cultural values can be integrated with other subjects. Law Number 5 of 2017 concerning the Advancement of Culture. Article 24 states that this culture must be passed on to the next generation. Articles 32 and 33 state that cultural assets need to be utilized to build national character and the need for internationalization of cultural values. This finding also has potential implications for supporting broader educational goals, such as promoting culturally relevant and inclusive learning.

From an ethnomathematical perspective, the Jejamok game provides a culturally meaningful narrative structure characterized by opposing roles, score changes, and strategic decisions. These elements form a coherent storyline that can be visually and narratively represented through electronic comics. Rather than functioning as an instructional intervention, electronic comics are positioned in this study as a representational medium that can translate cultural experiences into visual narratives, enabling students to connect their lived experiences with abstract mathematical concepts.

In the Jejamok game, students can record their scores while playing, then discuss changes in those scores in the form of mathematical representations, such as number lines or numerical tables, in accordance with the principle of progressive modeling in PMRI. The traditional game of Jejamok has great potential as a learning tool for integer concepts. In this game, there are two opposing situations: a defender who successfully captures a player gains an advantage, while an attacker who successfully frees his teammate results in a disadvantage for the defender. These two situations can be transformed into a simple scoring system with a positive (+) number for each successful capture and a negative (-) number for each failed or freed player. In this way, students can practice addition and subtraction of whole numbers contextually while still being actively involved in fun physical activities. The following are the results of the analysis of the relationship between jejamok game activities and potential in mathematics learning, which are presented in Table 3.

Table 3. Analysis of Jejamok game activities with potential in learning

No	Visible Game Activity	Activity Description	Potential of Mathematical Concepts	Initial Information Relating to Integers
1	Count before starting to search	Example: The guard counts to 20	Whole numbers, multiples	Can be used as a prefix for positive arithmetic operations
2	Scoring on catch/rescue	Players are given +3 for capture, -2 if captive escapes, -1 for violation	Positive & negative integers	The concept of adding and subtracting integers
3	Measuring the distance to the fort or enemy	Players estimate when to run	Measurement, estimation	Can be linked to the strategy of using distance differences
4	Counting free/caught players	Players count the number of friends caught.	Addition & subtraction	Changes in amount (+/-) according to game conditions
5	Determine the playing strategy	Choosing a route or tactic to capture/evade	Logic, decision making	Can be linked to integer story problems based on game situations
6	Define play area & fort	Determining boundaries and positions	Plane geometry	Not directly integers, but could be the context of the story

The results of the study show that integers can be taught using the context of the Jejamok game. Rakhmawati (2016) explains that traditional Lampung games provide opportunities for students with the concepts of grouping, counting, and calculating. More than just entertainment, traditional games can be a means of connecting students and understanding mathematical concepts, while also helping to preserve their sociocultural heritage (Risdiyanti & Prahmana, 2018). Other studies show that traditional games not only provide pleasure but also instill an understanding of mathematical concepts; hone critical, creative, and competitive thinking skills; foster a sense of togetherness and honesty; and develop social sensitivity (Febriyanti et al., 2018) (Susanti, 2020). Thus, mathematics is no longer seen merely as an abstract concept but as a useful tool in solving everyday problems.

In learning integer material, the concept of positive and negative numbers, which are generally abstract, can be interpreted through visual representation in electronic comics so that students can connect real experiences with mathematical concepts more concretely (Toh, 2009) (Uy, 2018). The storyline in the comic can be designed to present challenges or conflicts that require mathematical problem-solving, thus encouraging critical and creative reasoning and exploration of integer concepts. Therefore, it is recommended that mathematics teachers innovate in their teaching styles and strategies to strengthen students' learning process, such as the use of comic strips.

The novelty of this research lies in its in-depth exploration of the structure of the traditional Jejamok game activity to uncover its mathematical potential, particularly related to the concept of integers. Unlike previous studies, which generally used traditional games as a supporting context or a means of increasing learning

motivation, this study focuses on analyzing the game activity itself as the object of study. This research systematically examines the game flow, rules, player roles, and interactions that occur during the game. It then interprets how these elements can be linked to mathematical meanings, such as comparisons of values, changes in quantity, and the positive and negative meanings that emerge implicitly within the game's dynamics. With this approach, the Jejamok game is viewed not merely as a learning medium but as a cultural phenomenon containing mathematical thought structures.

Furthermore, the novelty of this research lies in its interpretative approach based on contextual observation, which emphasizes the meaning of game activity from a pedagogical perspective, rather than simply normative concept mapping based on the curriculum. This approach allows for a more authentic picture of how local cultural activities can be a potential source for mathematics learning in elementary schools. Thus, the main contribution of this study is to provide an empirical and conceptual basis for how the traditional game Jejamok can be explored as a source of mathematical activity, which can be utilized in further research or the development of learning designs.

Conclusions and Suggestions

This study explored the traditional game Jejamok as part of the local wisdom of North Lampung and identified its potential as a meaningful context for learning integer concepts. The findings indicate that Jejamok contains gameplay structures such as guarding areas, role switching, capturing, releasing, and score changes, which can be pedagogically interpreted through positive and negative number representations. These features make the game relevant for supporting students' understanding of integers and integer operations through contextual experiences. In addition, the study highlights that Jejamok embodies cultural values such as Piil Pesenggiri and Nengah Nyappur, showing that mathematics learning can be enriched through culturally grounded contexts while simultaneously supporting the preservation of local wisdom. Through an ethnomathematics perspective, the game provides a conceptual bridge between informal cultural practices and formal mathematical understanding.

For future practice, developers of electronic comic media are encouraged to design storylines based on authentic Jejamok gameplay situations, particularly scenes involving capturing, freeing teammates, defending the fort, and calculating score changes, so that students can visualize addition, subtraction, and negative numbers more meaningfully. Teachers may also integrate discussion tasks that connect game events with symbolic integer operations.

This study is limited to the exploration and conceptual analysis stage. It has not yet developed or tested the effectiveness of Jejamok-based electronic comic media in classroom settings. Therefore, future studies are recommended to develop prototype media and examine their impact on students' conceptual understanding, engagement, and learning outcomes in integers.

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