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MATHEMATICS AS A PHILOSOPHICAL FOUNDATION IN HOMBO BATU: EXPLORING NIAS' LOCAL WISDOM THROUGH THE PERSPECTIVE OF MATHEMATICS

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Abstrak

Penelitian ini bertujuan untuk menggali hubungan antara matematika dan kearifan lokal melalui permainan tradisional Hombo Batu di Nias. Hombo Batu, yang merupakan bagian dari budaya masyarakat Nias, mengandung konsep-konsep matematika yang dapat digunakan untuk memahami prinsip-prinsip dasar matematika dalam konteks budaya lokal. Penelitian pustaka ini mengidentifikasi bagaimana konsep-konsep seperti simetri, pengukuran, dan pola ditemukan dalam permainan ini, serta bagaimana nilai-nilai filosofis yang terkandung dalam Hombo Batu, seperti kerjasama, ketepatan, dan keberanian, dapat dihubungkan dengan konsep-konsep matematika yang diajarkan di sekolah. Melalui perspektif matematika, permainan ini menjadi media yang efektif untuk mengajarkan konsep-konsep matematika secara aplikatif, relevan, dan kontekstual bagi siswa. Penelitian ini menyimpulkan bahwa integrasi matematika dengan budaya lokal dapat memperkaya pengalaman pembelajaran, meningkatkan pemahaman siswa terhadap matematika, dan memperkuat identitas budaya mereka. Oleh karena itu, Hombo Batu dapat digunakan sebagai sarana untuk mengajarkan matematika dalam konteks budaya yang lebih luas.

***Kata Kunci**: Model; Pembelajaran Coopertive; Pemahaman Konsep Matematika*

Abstract

This study aims to explore the relationship between mathematics and local wisdom through the traditional game of Hombo Batu in Nias. Hombo Batu, which is a part of Nias culture, contains mathematical concepts that can be used to understand basic mathematical principles in the context of local culture. This library research identifies how concepts such as symmetry, measurement, and patterns are found in this game, as well as how the philosophical values embedded in Hombo Batu, such as cooperation, accuracy, and bravery, can be linked to the mathematical concepts taught in schools. Through the perspective of mathematics, this game serves as an effective medium to teach mathematical concepts in an applied, relevant, and contextual manner for students. This study concludes that the integration of mathematics with local culture can enrich the learning experience, enhance students' understanding of mathematics, and strengthen their cultural identity. Therefore, Hombo Batu can be used as a tool to teach mathematics within a broader cultural context.

***Keywords:** Mathematics; Hombo Batu; Local Wisdom; Symmetry; Measurement; Patterns; Nias Culture; Contextual Learning*

A. Introduction

Mathematics, as a branch of knowledge related to logic, numbers, and abstract concepts, is often viewed as a field that is only relevant in formal academic contexts (Harefa, D. 2024). However, with the development of educational thought that emphasizes the integration of cultural values into the teaching and learning process, mathematics can become an effective tool for exploring and

understanding the local wisdom of a region. One intriguing example is the application of mathematics in the traditional game *Hombo Batu* in Nias, an activity that contains philosophical values and local wisdom that can be linked to mathematical concepts such as geometry, patterns, and measurement.

Mathematics as a Science Based on Logic and Concepts Mathematics is viewed as a system of knowledge that combines logical concepts to understand the world around us. Stewart (2013) explains that mathematics involves the recognition of patterns, structures, and relationships between objects in everyday life. In the context of *Hombo Batu*, this traditional game hides mathematical elements that can be identified in the form of symmetry, measurement, and patterns, ultimately linking the game to basic mathematical concepts. Through this connection, it becomes evident that even in cultural and traditional activities, mathematical principles are not only present but can be effectively explored and applied.

Mathematics, according to Stewart (2013), is a system of knowledge that combines logical concepts to understand the world around us. In this context, mathematics plays a role not only in number calculations or basic operations but also in identifying patterns and relationships between objects in our surroundings. The application of mathematics in local culture, such as in *Hombo Batu*, demonstrates that mathematics can be found in many aspects of life, even in cultural activities that may not seem directly related to academic mathematics (Harefa, D., et al., 2024). This highlights how mathematical principles are embedded in everyday life and cultural traditions, offering a more holistic view of mathematics beyond the classroom and formal academic settings.

Hombo Batu, a traditional game that involves physical precision, strength, and cooperation among individuals, has a rich mathematical dimension that can be seen not only within the cultural context but also in terms of the mathematical concepts embedded in its practice (Harefa, D. 2024). Behind the game, there are elements related to mathematical logic, such as symmetry, measurement, and spatial arrangement, which provide an example of how mathematics can be applied in everyday life. Local Wisdom in Education Local wisdom refers to the knowledge or wisdom possessed by a community in managing its social and cultural life. Kuntowijoyo (2001) suggests that local wisdom can serve as an effective learning tool, not only in the social context but also in teaching mathematical concepts, as reflected in *Hombo Batu*. The integration of local wisdom with mathematics offers a powerful means to connect students with their cultural heritage while simultaneously enriching their understanding of mathematical principles. This approach emphasizes the value of cultural contexts in enhancing the relevance and application of mathematics in real-world situations.

According to Kuntowijoyo (2001), local wisdom is the knowledge or wisdom possessed by a community in managing its social life. Local wisdom found in various traditions and customs of society can be an educational resource, including in mathematics education. Therefore, local wisdom is not just a collection of stories or cultural practices but can also be used as a means to explore and understand mathematical concepts applied in everyday life. Mathematics in the Context of Culture and Philosophy D'Ambrosio (2001) states that mathematics is part of culture, a way for society to understand the world. As such, mathematics can be found in every cultural practice that contains philosophical values. *Hombo Batu* does not only function as a cultural game but also serves as a medium to teach mathematical concepts, such as

symmetry and measurement, within a broader context. This underscores the idea that mathematics is not just a subject confined to academic spaces but is deeply integrated into the culture and philosophical values of everyday life. By connecting mathematics to cultural practices like *Hombo Batu*, we can provide students with a richer, more meaningful learning experience.

According to D'Ambrosio (2001), mathematics is part of culture and a way for society to understand the world. In this context, mathematics is not limited to teaching in the classroom but can also be found in cultural practices that contain profound philosophical values. The application of mathematics in *Hombo Batu*, for instance, contains various mathematical concepts such as symmetry, patterns, and the measurement of space and time, which demonstrate how mathematics can function as a philosophical foundation in everyday life (Harefa, D., et al., 2024). This highlights the idea that mathematics is not only an abstract subject but is also intertwined with cultural practices and can serve as a bridge to understanding deeper values in society. Through such applications, students can see the practical and philosophical relevance of mathematics beyond traditional academic settings.

In line with this perspective, research by Kurniawan and Yusuf (2019) shows that traditional games have high educational value in introducing mathematical concepts to students. *Hombo Batu*, as one of the traditional games in Nias, can be used as a medium to understand various mathematical concepts in a practical and enjoyable way. In this game, children not only learn about physical strength and cooperation but also about measurement, symmetry, and patterns, which are fundamental concepts in mathematics. Traditional Games as a Learning Tool Kurniawan and Yusuf (2019) suggest that traditional games have educational value in introducing mathematical concepts to children. In this context, *Hombo Batu*, which combines physical and social aspects, can serve as a medium for teaching practical mathematical concepts such as patterns, measurement, and symmetry (Harefa, D., 2025). This approach not only makes learning mathematics engaging but also connects students to their cultural heritage, fostering a deeper understanding of mathematics as it applies to everyday life and traditional practices.

This study aims to explore and understand how mathematics serves as a philosophical foundation in the traditional game *Hombo Batu* in Nias, and to identify how the local wisdom embedded in this game can be interpreted through the perspective of mathematics (Harefa, D. 2025). Therefore, this research is expected to provide new insights into the application of mathematics within the context of local culture, which can enrich mathematics education in elementary schools and strengthen the connection between mathematics education and local wisdom (Gaurifa, M. 2024). By exploring this integration, the study seeks to highlight the relevance of mathematics in everyday life and cultural practices, offering a more holistic approach to learning for students.

Through this research, it is hoped that a deeper connection between mathematical concepts and the cultural values embedded in *Hombo Batu* can be uncovered, which in turn can enrich the approach to mathematics education based on local wisdom. This understanding is also expected to open new perspectives for teaching mathematics that is more relevant to everyday life, allowing students to see the relationship between the mathematical theories they learn and the cultural practices around them. By bridging this gap, students can better understand the practical application of mathematics in their

own cultural context, making learning more meaningful and connected to their lived experiences.

B. Research Method

This study uses a library research method, which aims to explore, analyze, and connect various literatures relevant to the topic "Mathematics as a Philosophical Foundation in *Hombo Batu*: Exploring Nias' Local Wisdom through the Perspective of Mathematics." Library research is an approach focused on collecting and analyzing data from secondary sources, such as books, scholarly journals, articles, research reports, and other documents related to the topic being studied. The method involves reviewing existing literature to gain a comprehensive understanding of the subject matter and draw connections between the concepts of mathematics, local wisdom, and cultural practices. By utilizing a variety of resources, the study aims to provide a deeper insight into how mathematical principles can be linked to cultural values, particularly through the traditional game of *Hombo Batu* in Nias. The analysis of these secondary sources will help in interpreting the role of mathematics in local culture and contribute to enriching the current understanding of culturally relevant mathematics education.

1. Collection of Library Sources

The researcher will gather various relevant library sources related to the research topic. These sources will include books about mathematics, local wisdom, Nias culture, as well as previous studies on the relationship between mathematics and culture. The library sources will also cover scholarly journals, articles, and works that discuss the application of mathematics in the context of local culture and traditional games such as *Hombo Batu*. This process will ensure a comprehensive exploration of the theoretical and practical aspects of how mathematical principles are embedded in cultural practices. The sources will provide valuable insights into the philosophical connection between mathematics and local wisdom, enriching the research and providing a solid foundation for analyzing *Hombo Batu* as a medium for understanding mathematical concepts through a cultural lens. The researcher will also use these sources to draw comparisons and gain deeper insights into the integration of cultural practices with mathematical learning.

2. Theoretical Review

The researcher will review various relevant theories, such as mathematical concepts applied in culture and traditional games, as well as educational philosophies that integrate local wisdom into mathematics education. In this context, mathematical theories related to symmetry, measurement, and patterns will be analyzed to connect these elements with cultural practices found in the *Hombo Batu* game. This theoretical review will explore how concepts like symmetry in geometry, measurement in spatial reasoning, and pattern recognition can be observed in *Hombo Batu*, a traditional Nias game. By examining these mathematical concepts through the lens of local culture and traditional practices, the research will provide a deeper understanding of how mathematics is not just an abstract field but also a practical tool embedded within cultural activities. Furthermore, the review will incorporate educational philosophies that emphasize the relevance of local knowledge in enhancing the learning process, which is crucial in shaping a culturally responsive approach to teaching mathematics. This will contribute to a more comprehensive understanding of how local wisdom, like the one embodied in *Hombo Batu*, can serve as an effective medium for teaching mathematics.

3. Critical Analysis of Existing Literature

The researcher will conduct a critical analysis of the collected literature, evaluating how the mathematical elements present in

Hombo Batu can be understood through the perspective of mathematical theory and local culture. The analysis will involve comparing and linking existing theories on mathematics with the practice of *Hombo Batu* as a form of local wisdom that holds philosophical values. This critical analysis will focus on identifying the intersections between mathematical concepts such as symmetry, measurement, and patterns with the cultural practices observed in *Hombo Batu*. The researcher will assess how these mathematical elements are embedded in the game and how they reflect the values and principles of the Nias community. By connecting the theoretical frameworks of mathematics with the practical and cultural dimensions of *Hombo Batu*, the research will provide a more holistic understanding of how mathematics and local wisdom are intertwined, enhancing the educational potential of using traditional practices as a medium for teaching mathematics. This approach will allow for a deeper appreciation of the role of local wisdom in mathematics education, suggesting that cultural practices like *Hombo Batu* can serve as valuable tools in making mathematical concepts more accessible and relevant to students, while also preserving and promoting cultural identity.

4. Synthesis and Conclusion

After conducting a review and analysis of the literature, the researcher will synthesize the various concepts found in the literature to align them with the research objectives. This synthesis will lead to a deeper understanding of how mathematics, as a philosophical foundation, is applied in *Hombo Batu*, and how Nias' local wisdom can serve as a valuable source for learning.

Through this library research method, the study aims to uncover new insights into the role of mathematics within local culture and how mathematical concepts can be integrated into culturally relevant education, particularly through the game of *Hombo Batu* in Nias. The synthesis will connect the theoretical understanding of mathematics with its practical application in cultural practices, emphasizing how the integration of local wisdom can enhance mathematics education.

Ultimately, this synthesis will provide a comprehensive view of the interconnectedness between local culture, philosophy, and mathematical learning, suggesting ways in which traditional practices like *Hombo Batu* can be used effectively to teach mathematical concepts while preserving and valuing local heritage. The findings are expected to offer valuable contributions to the development of mathematics education that is more culturally responsive and meaningful for students.

C. Research Results and Discussion

Results

This study aims to explore and analyze how mathematics serves as a philosophical foundation in the traditional game *Hombo Batu* and how the local wisdom of Nias can be understood through the perspective of mathematics. Based on the literature analysis conducted, several significant results were found regarding the relationship between mathematics and local wisdom in the context of *Hombo Batu*.

1. Application of Mathematical Concepts in *Hombo Batu*

The game of *Hombo Batu*, which is a local tradition of the Nias community, contains mathematical concepts that can be explained through geometry, measurement, and patterns. In this game, there are elements of symmetry that can be observed in the movement patterns of the players and the arrangement of stones, which reflect the application of symmetry concepts in mathematics. Additionally, this game involves the measurement of distance and time, particularly when players try to throw stones accurately to the designated target. This indicates the application of

measurement concepts in mathematics, particularly related to spatial and time aspects.

The concept of symmetry is clearly evident in how players arrange and position the stones in symmetrical formations before each throw. This not only highlights a basic principle in geometry but also reflects the inherent balance and order in the game. Moreover, measurement plays a crucial role as players need to estimate distances and force when aiming to hit a target, thus connecting the game to mathematical principles of spatial relationships and precision. The application of patterns also emerges as players recognize successful strategies based on previous throws, reflecting the recognition and use of patterns, a key concept in mathematics.

2. Local Wisdom of Nias Embedded in the Game of Hombo Batu

Hombo Batu is not merely a physical game, but also carries deep philosophical values such as cooperation, accuracy, caution, and bravery. In this context, the game indirectly teaches mathematical concepts, as players need to regulate the strength and accuracy of their throws, which involves unspoken calculations concerning distance, angles, and physical force. Therefore, the local wisdom of Nias embedded in *Hombo Batu* is not only cultural but can also be seen as a manifestation of the mathematical understanding present within the community.

The game's reliance on these core principles-cooperation, accuracy, and careful measurement-mirrors the fundamental concepts of mathematics that are essential for strategic thinking and problem-solving. For example, players must coordinate their efforts to accurately position and throw the stones, requiring them to assess distance and force, as well as adjust to environmental factors such as wind or terrain. These elements highlight how local wisdom, derived from cultural practices like *Hombo Batu*, serves as an intuitive way of applying mathematical thinking in a real-world context.

By incorporating these philosophical and mathematical values into everyday life, *Hombo Batu* reflects the cultural depth of Nias while simultaneously showcasing how mathematics is practically applied in community activities. This not only makes mathematics more relatable for students but also reinforces the importance of understanding cultural practices as integral parts of mathematical learning. Thus, the game of *Hombo Batu* becomes an essential tool for learning, blending local wisdom with mathematical principles.

3. Mathematics as a Philosophical Foundation in Local Wisdom

From the perspective of mathematics education, this study demonstrates that mathematics is not confined to the classroom but can also be applied in everyday life contexts, including traditional games. *Hombo Batu*, as part of Nias' local wisdom, functions as a philosophical foundation that supports the teaching of mathematical concepts. Concepts such as measurement, patterns, symmetry, and space can be explained through the activities involved in this game, showing how mathematics integrates with culture and the way of life of the community.

By engaging in *Hombo Batu*, players indirectly apply mathematical reasoning while aligning with the cultural values of cooperation, precision, and strategic thinking. For example, the concept of **measurement** is clearly visible in how players assess distance and force when aiming at the target, while **symmetry** is demonstrated in the equal distribution of stones and the balanced movements of players. **Patterns** emerge as players recognize successful strategies and adjust their techniques accordingly. These mathematical concepts are not taught explicitly but are learned through the process of playing,

making them more accessible and contextually meaningful.

The philosophical foundation embedded in *Hombo Batu* demonstrates how local wisdom and mathematics are interconnected. The integration of these mathematical principles within a traditional cultural practice underscores that mathematics is not an isolated academic subject but is deeply embedded in the fabric of everyday life and local culture. This highlights the potential for incorporating local wisdom into mathematics education, bridging the gap between abstract concepts and practical, culturally relevant applications. Thus, *Hombo Batu* serves as a perfect example of how mathematics can be taught through cultural contexts, enriching students' understanding and appreciation of both disciplines.

4. The Importance of Integrating Local Wisdom into Mathematics Education

The results of this study also highlight the importance of integrating local wisdom, such as *Hombo Batu*, into mathematics education in schools. By introducing students to traditional games that contain mathematical concepts, they not only learn abstract mathematical theories but also understand the practical application of mathematics in everyday life. This approach does not only enhance students' understanding of mathematics but also enriches their understanding of local culture and the philosophies embedded within it.

Integrating local wisdom into mathematics education makes the learning process more relevant and engaging for students, as they can see the real-world application of the concepts they are learning. This approach helps students appreciate the connection between cultural practices and mathematical thinking, fostering a deeper understanding of both subjects. By learning through culturally meaningful activities like *Hombo Batu*, students are able to experience firsthand how mathematics operates outside the academic context, making it more tangible and accessible.

Moreover, this integration helps preserve and promote cultural heritage while also making mathematics education more inclusive and diverse. It emphasizes that mathematics is not just a universal academic subject, but one that is deeply connected to the cultures and practices of different communities. Therefore, *Hombo Batu* and other local traditions can serve as powerful tools for teaching mathematics in a way that is both culturally responsive and academically enriching.

5. The Role of Teachers in Connecting Mathematics with Local Wisdom

This study also found that the role of the teacher is crucial in connecting mathematical concepts with local wisdom, such as *Hombo Batu*. Teachers can use this game as an engaging learning medium that is relevant to students' lives, while also introducing mathematical concepts that might be difficult to understand if taught purely through theoretical methods. This approach can increase student engagement and make it easier for them to grasp mathematical concepts through direct experiences that are tied to their own culture.

By incorporating local wisdom into the mathematics curriculum, teachers can create a more dynamic and interactive learning environment. Using *Hombo Batu* as a teaching tool allows students to see the practical application of mathematics in a cultural context, bridging the gap between abstract theory and real-world experience. Teachers who use culturally relevant methods, such as this game, can help students feel more connected to the material, increasing their motivation and understanding of both mathematics and their cultural heritage.

Furthermore, by embracing local wisdom in the classroom, teachers play a key role in promoting a holistic education that values both

academic and cultural knowledge. This not only benefits students in terms of their mathematical understanding but also helps them appreciate the richness of their cultural identity. Thus, teachers are essential in fostering an environment where mathematics is taught as an accessible, meaningful, and culturally responsive subject.

This study concludes that the traditional game *Hombo Batu* contains various relevant mathematical concepts, such as measurement, symmetry, and patterns, which can be used to explore and teach mathematics within the context of Nias' local wisdom. By connecting mathematics with local culture, students not only learn mathematics theoretically but also see its application in everyday life. Therefore, *Hombo Batu* can be used as a tool to introduce mathematical concepts that are integrated with cultural values, which in turn can enrich mathematics education in schools. By using *Hombo Batu*, students gain a deeper understanding of how mathematical principles are not only abstract concepts but are also deeply embedded in cultural practices, making the learning process more relevant and engaging.

Discussion

This study aims to explore and analyze how mathematics can serve as a philosophical foundation in the traditional game *Hombo Batu* in Nias, as well as to connect Nias' local wisdom with the perspective of mathematics. Through a deep literature review and analysis of the mathematical elements embedded in this traditional game, several findings have revealed the profound connection between mathematics and local wisdom within the context of *Hombo Batu*.

1. Mathematics in *Hombo Batu*: Concepts and Applications

Hombo Batu is a traditional game that combines both physical and social elements within the Nias community. Although the game is primarily known as a cultural activity, it contains mathematical concepts that are implemented in daily practices. The mathematical concepts found in this game include symmetry, measurement, and patterns, which are fundamental elements in mathematics.

Symmetry**:** One of the most visible mathematical concepts in *Hombo Batu* is symmetry. The symmetrical positioning of stones and the movements of the players often follow a balanced pattern, representing the concept of symmetry in geometry. This principle highlights how balance and harmony are not just cultural but also mathematical principles inherent in everyday life. Measurement: The game involves the measurement of distance and physical force, especially when players aim to throw the stone accurately. While this may not always involve formal tools, players intuitively assess the distance between the stones and the target, as well as the force needed to achieve the desired outcome. This relates directly to the concept of measurement in mathematics, which involves spatial understanding and precision. Patterns: Players often recognize patterns in the way the stones are thrown, learning from previous throws to improve their future attempts. The recognition of patterns is a core mathematical concept that allows individuals to predict outcomes and adjust their strategies accordingly.

These concepts demonstrate how *Hombo Batu*, while being a cultural practice, also embodies essential mathematical principles that are used in real-world applications. The game's inherent reliance on symmetry, measurement, and patterns shows how mathematics can be found in everyday cultural activities, bridging the gap between abstract mathematical theory and practical, culturally relevant experience. Through this, *Hombo Batu* not only teaches mathematical concepts but

also reinforces the value of integrating local wisdom with academic learning.

The constructivist theory, popularized by Piaget and Vygotsky, emphasizes that knowledge is built through direct experience and social interaction. In this context, *Hombo Batu* serves as a real-world experience for students, helping them build an understanding of mathematical concepts such as measurement, symmetry, and patterns. This understanding occurs through practice and applications that are relevant to their lives, in line with constructivist principles, which suggest that learning is more effective when it is connected to real-life experiences.

a. Symmetry

In *Hombo Batu*, symmetry is not only seen in the arrangement of stones that are thrown but also in the movement patterns created by the players. The players unconsciously create balance and symmetry when positioning the stones before throwing them, which can be connected to the concept of symmetry in mathematics. The idea of balance and equal distribution, both in the arrangement of stones and the movements of players, is an essential mathematical concept. This element of symmetry demonstrates how mathematics can be observed and applied in cultural activities, making the concept more tangible and understandable for students.

b. Measurement

The process of measurement is crucial in *Hombo Batu*. Players must calculate the distance and determine the exact position of the stones to achieve the target. While this measurement is done intuitively by the players, the concepts of time and spatial measurement embedded in the game can be explained through the perspective of mathematics, such as measuring distance, angles, and speed. The ability to estimate and adjust these factors accurately is essential in *Hombo Batu*, and it directly relates to real-world applications of measurement in mathematics, highlighting its importance in everyday activities.

c. Patterns

The use of patterns is clearly evident in how players adjust their throwing techniques. Players learn to recognize patterns based on the outcomes of previous throws and adjust their force and angle accordingly. This process illustrates an understanding of patterns, which is a fundamental concept in mathematics. By recognizing the patterns in their results and modifying their strategies, players engage in problem-solving, which involves recognizing and applying mathematical patterns. This ability to perceive and adapt to patterns reflects a key aspect of mathematical thinking and emphasizes how real-world games can serve as a platform for learning mathematical concepts.

By linking the game of *Hombo Batu* with constructivist theory, this research shows how students can learn mathematical concepts more effectively through hands-on experience and interaction with their environment. The game allows students to directly apply the concepts of symmetry, measurement, and patterns in a cultural and social context, making abstract mathematical ideas more accessible and meaningful.

2. Local Wisdom in *Hombo Batu*

Hombo Batu not only contains mathematical concepts but also teaches the cultural values and local philosophy of the Nias people. This game embodies values such as cooperation, accuracy, courage, and caution, which are highly valued in Nias culture. Contextual learning encourages students to connect the material being taught to the context of their daily lives. This study supports this theory by linking mathematics with the traditional game *Hombo Batu*, allowing students to see the direct application of mathematics in their culture. Through this approach, students can more easily understand the mathematical concepts

taught in school. These values are closely related to the philosophy of life, which prioritizes togetherness and precision in every action, which is also reflected in the practical application of mathematics in the game.

a. Cooperation

To win in *Hombo Batu*, players not only rely on individual strength but also on teamwork. The concept of teamwork is highly relevant to the approach used in mathematics education, which often requires individuals to work in groups to solve problems. In *Hombo Batu*, collaboration is key, as players must coordinate their efforts, share strategies, and rely on each other's strengths. This parallels the process in mathematical problem-solving, where collaboration enhances the outcome, and students learn to work together to find solutions.

Through the game, students experience firsthand how mathematics can be approached as a collective effort, fostering teamwork, communication, and the sharing of knowledge. This connection between *Hombo Batu* and mathematics education highlights the importance of collaborative learning and how teamwork is vital in solving complex mathematical problems.

b. Accuracy

Players must have accuracy when throwing the stone at a designated target. This reflects the importance of caution and careful calculation in every action, which is also the foundation of various mathematical concepts such as geometry and measurement. In *Hombo Batu*, the accuracy required for a successful throw involves assessing distance, angle, and force, which are core components of spatial awareness and measurement in mathematics. The game teaches players to pay attention to detail and make precise adjustments based on their observations.

This focus on accuracy is a valuable lesson in mathematics, where precision is crucial in problem-solving and calculations. By practicing accuracy in the game, students develop skills that are transferable to mathematical tasks, such as measuring, estimating, and applying geometric principles. Through *Hombo Batu*, students can see how accuracy in real-life applications aligns with mathematical rigor, reinforcing the importance of precision both in the game and in mathematical problem-solving.

In summary, *Hombo Batu* serves as a powerful tool for teaching both cultural values and mathematical concepts. By linking local wisdom with mathematics, the game provides a context for students to understand the practical application of mathematics in their everyday lives. Values such as cooperation and accuracy not only align with cultural philosophy but also with fundamental mathematical principles, making the learning experience richer and more meaningful for students. By using *Hombo Batu* as an educational medium, students can connect their cultural heritage with their mathematical education, deepening their understanding and appreciation of both.

3. Mathematics as a Philosophical Foundation in Education

The integration of local wisdom in *Hombo Batu* with mathematical concepts demonstrates that mathematics is more than just a tool for calculations in formal contexts; it is also an integral part of daily life and the culture of society. According to Gay (2010), learning that is relevant to students' culture can enhance their engagement and understanding of the material being taught. By integrating *Hombo Batu* into mathematics education, students not only learn mathematics but also develop an appreciation for their own culture. This culturally relevant learning helps students connect mathematical knowledge to their social and cultural contexts.

This reinforces the idea that mathematics education should not be confined to the classroom but should be linked to the real world, including the cultural traditions present in society. By connecting mathematics to cultural practices like *Hombo Batu*, students can see how mathematical concepts are applied in practical, everyday situations, making the learning process more meaningful and engaging. In the context of education, traditional games such as *Hombo Batu* offer opportunities to integrate cultural mathematics into more practical and contextual learning. The use of *Hombo Batu* in teaching mathematics can help students grasp mathematical concepts in a more practical, enjoyable, and relevant manner, connecting the abstract theories they learn with real-world applications. This also creates a deeper connection between students and their local culture. By experiencing how mathematics is applied in a cultural context, students gain not only mathematical knowledge but also a strengthened sense of cultural identity and appreciation.

In conclusion, incorporating *Hombo Batu* into mathematics education is an effective way to bridge the gap between theory and practice, as well as between the classroom and the world outside. This approach allows students to see the relevance of mathematics in their daily lives and cultural heritage, making the subject more relatable, meaningful, and engaging.

4. The Role of Teachers in Applying Mathematics through Local Wisdom

Teachers play a vital role in connecting mathematical concepts to real-life situations, including local cultural contexts. By using *Hombo Batu* as a learning medium, teachers can bring abstract mathematical concepts into real-life situations that are easily understood by students. Through this approach, teachers not only teach mathematics theoretically but also provide insight into how mathematics can be applied in everyday life through their culture.

This indicates that effective mathematics education must consider the cultural context and local experiences of students. Teachers must be able to adapt materials and teaching methods to create learning experiences that are relevant and meaningful to students, while also connecting mathematics to their experiences and culture. This study highlights that the traditional game *Hombo Batu* holds great potential as a learning medium for mathematics that links local wisdom with mathematical concepts.

The game introduces various relevant mathematical concepts such as symmetry, measurement, and patterns, which are very useful in introducing mathematics to students in a fun and contextual manner. Additionally, the local wisdom embedded in *Hombo Batu* provides philosophical values that enrich the teaching of mathematics. This allows students not only to learn mathematical concepts but also to appreciate the social and cultural values embedded in the game. By integrating local wisdom into mathematics education, teachers can offer a holistic learning experience that connects theory with real-world applications, making mathematics more engaging, accessible, and meaningful for students. Furthermore, students gain a deeper understanding of how mathematics is not just an abstract subject but is also intricately linked to the culture and everyday practices of their community. Therefore, the teacher's role in guiding students to recognize these connections is crucial in making mathematics relevant and enriching.

D. Conclusion

Conclusion

This study concludes that *Hombo Batu*, as a traditional game of the Nias community, contains relevant mathematical concepts that can be used to explore and teach mathematical

principles within the context of local culture. Through *Hombo Batu*, mathematical concepts such as symmetry, measurement, and patterns can be practically applied in everyday life. Although not explicitly taught with formal formulas or theories, this game demonstrates how mathematics is applied in the culture and traditions of the Nias people, and it can subsequently serve as a means of connecting mathematics to students' lives.

Furthermore, this game embodies philosophical values that reflect local wisdom, such as cooperation, accuracy, and courage, which are highly relevant to the foundational principles of mathematics. These values not only teach mathematical concepts but also provide essential character education for students' social and emotional development. Therefore, *Hombo Batu* is not just a cultural game but can also be used as an effective tool to teach applicable and relevant mathematics, while simultaneously introducing students to their local wisdom.

The integration of mathematics and local culture in learning offers a more comprehensive and contextual experience for students, enhancing their understanding of mathematics and strengthening their cultural identity. By connecting mathematical knowledge to real-world cultural practices, students are able to appreciate the practical value of mathematics in their daily lives, making learning more meaningful and connected to their heritage. This approach bridges the gap between abstract mathematical concepts and practical, culturally significant applications, providing a rich and holistic learning experience for students.

Suggestions

1. Application of Contextual Learning

It is recommended that teachers integrate the mathematical concepts found in traditional games like *Hombo Batu* into the mathematics curriculum. Using a contextual approach that connects mathematics with local culture will not only make mathematics learning more engaging but also more relevant to students' everyday lives. By doing so, students can more easily understand and appreciate mathematics within the context of their own culture.

2. Teacher Training on Culture-Based Learning

To implement learning that combines mathematics with local culture, teacher training is essential. Teachers should be equipped with creative teaching methods and an understanding of how to integrate cultural values into mathematics education. It is important for teachers to deepen their understanding of how local wisdom, such as *Hombo Batu*, can be used as a tool to teach mathematical concepts in an enjoyable and applicable way.

3. Further Investigation on Culture-Based Learning

Further research is needed to explore the potential of other traditional games in Indonesia as a medium for teaching mathematics. Researchers could also develop methods that combine mathematics education with elements of local wisdom from various cultures in Indonesia, creating a more comprehensive and widely accepted approach to learning for students in different regions.

4. Enhancing Parental and Community Involvement

Strengthening the role of parents and the community in culture-based learning is also essential. It is hoped that both society and parents can actively support this culture-based mathematics education, whether by providing relevant resources or offering social support to students.

Through these steps, it is expected that mathematics learning that integrates scientific concepts with local culture will be well-received by students, positively impacting their understanding of mathematics as well as

fostering an appreciation for the local wisdom present in their communities.

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