



Ethnomathematical perspectives on *Galah Asin*: Investigating the mathematical and cultural significance of a traditional game

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Abstract

Traditional game (TG) *Galah Asin* has been played for generations—a game cultivated from generation to generation for Timor Tengah Selatan residents, Indonesia-Timor Leste Border Area. People must be aware that *Galah Asin*'s TG and activities contain mathematics concepts that can be employed in math study. This study examines ethnomathematics in *Galah Asin*, a conventional game in Mnelalete Village, West Amanuban District, South Central Timor Regency, NTT Province, Indonesia. An ethnographic approach was used to investigate the data. Ethnomathematics emphasizes understanding a culture's concepts, methods, and practices from its members' perspectives. The study collects data through observation, interviews, and documentation. This study analyzed data using taxonomy, domain, componential, and cultural theme analysis. The study results found flat, translational, reflecting, line, angle, and congruence geometry ideas in the game arena, body movement, and player position of *Galah Asin*. *Galah Asin* also has addition, subtraction, multiplication, and division in gameplay. The implication of exploring ethnomathematics study is that understanding cultural activities can be integrated into school mathematics instruction. In addition, the ethnomathematics exploration of TG impacts the preservation of local culture.

Keywords: ethnomathematics exploration; *Galah Asin*; local culture; traditional game

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Introduction

The cultural practices of traditional games (TG) date back to the early days of humankind, are replete with the virtues of traditional knowledge and experience and have many benefits for early childhood development (Puspitasari et al., 2021). Cultural variety, mental health, strong relationships, and intelligent decision-making are all boosted by conventional recreation and the game (Lavega-Burgués et al., 2021). TG in Indonesia started to disappear due to changes in society and religion, and the government documented it between 1980 and 2000 (Irawan et al., 2018). Nowadays, traditional games are disappearing.

Galah Asin, also called Gobak Sodor, a traditional game from Central Java, is popular in Indonesia. It is played with a group and promotes togetherness (Putri et al., 2016). Galah Asin is also one of the TGs in Mnelalete Village on Pulau Timor, Indonesia; it has become an ancestral heritage often played by children (Putri et al., 2016). This game is usually played in a large courtyard or a field with a rectangular shape with silver patches. Two groups play a foreign gala game. Each group consists of three to five people. The field used is divided into four parts. Each part of the plot is restricted to chalk or outlined using wood and then sprinkled with kitchen ash.

However, children rarely play traditional games, particularly in the village of Mnelalete, South Central Timor. They are replaced by modern games, affecting their physical fitness and interest in modern games (AshShiddiqi et al., 2020). Additionally, TG has profound philosophical significance in the nation's battle for independence, but online games have displaced them, making various groups, including children and young people, unfamiliar with them (Widodo et al., 2020). The impact of traditional games rarely played and replaced with online games is that one day, classic games will only be a memory (Amsikan et al., 2023).

Some researchers have preserved traditional games by exploring ethnomathematics in conventional games. The quality of mathematics education can be improved by incorporating game and culture mathematics into practices through Ethnomathematics in TG, such as Java Jiting-Jitingan (Ningsih et al., 2020). Next, Sundanese Ethnomathematics learning through traditional games can develop mathematical, social, and physical abilities in elementary school students (Supriadi et al., 2019). Besides, ethnomathematics based on classic crank games increases students' understanding of shape material (Sahara & Fitriani, 2022), and folk games, puzzles, familial relationships, and divination systems are only a few examples of African indigenous knowledge systems that have a strong foundation in ethnomathematical concepts (Chahine, 2020).

Several previous explorations of the ethnomathematics of traditional games in the Indonesia-Timor Leste border region were conducted. They are exploring the TG of Kaneker (Uskono et al., 2023), Congklak (Taus et al., 2022), Patok Lele or Lote (Benyamin et al., 2023), and Siki Doka (Deda & Disnawati, 2024).

However, exploring the traditional game of *Galah Asin* is essential because it can be used to improve Creative Thinking Ability (Arga et al., 2020). It can attract students' interest in learning math (Kamid et al., 2022). In addition, it can Improve Early Childhood Emotional

Intelligence (Manda et al., 2022), foster early numerical competencies (Gasteiger & Moeller, 2021), and improve children's problem-solving skills (Iswinarti & Suminar, 2019).

Exploring ethnomathematics in the traditional game of Galah Asin is very important because it allows educators to use the traditional game of *Galah Asin* to preserve local culture, especially in Mnelalete Village, TTS Regency. In the past, children were heavily involved with traditional games, but with the advent of gadget-based games, there has been a noticeable shift from traditional to mobile games. This change has reduced children's understanding of the mathematical concepts in the traditional game of *Galah Asin*.

Therefore, it is essential to reintroduce and explore the traditional game of Galah Asin to preserve local culture, especially in Mnelalete Village, West Amanuban District, South Central Timor (TTS) Regency, Indonesia. This approach encourages cultural preservation and is innovative in teaching math concepts through culturally relevant activities. By reconnecting with traditional games, educators can offer a more engaging learning experience while reviving cultural practices on the verge of extinction.

Methods

An ethnographic approach was applied to the investigation (Hammersley, 2018; Orey & Rosa, 2020; Prahmana & D'Ambrosio, 2020). This study used ethnography because it aligns with Ethnomathematics' goal of studying a culture's concepts, procedures, and practices from its members' perspectives (Prahmana et al., 2021). This research was held in July 2023 in Mnelalete Village, West Amanuban District, South Central Timor Regency, Indonesia. The research subject was one of the 43-year-old women, and eight children aged between 7 and 16 years old, which consists of 3 girls and five boys. One adult aims to provide information on traditional games in her childhood and help the children identify the current pattern of Galah Asin classic games. Therefore, the sample size for this investigation consisted of nine individuals. The research procedure consists of 5 stages (Deda & Disnawati, 2024; Dornschneider, 2021; Seligmann & Estes, 2020), such as creating interview guidelines and observation sheets, observations, interviews, data analysis, and conclusion.

The first stage is setting up the observation and interview guidelines for the research. The next step was the observation stage. At the observation stage, researchers made initial observations, namely visiting the TTS district to see the existing traditional game *Galah Asin* as part of local culture. Next, the research subjects and locations were determined: children aged 7-16 and community leaders over 40. Next, participant observation was conducted to examine the traditional game *Galah Asin*, focusing on its mathematical principles. It included studying the playing arena, the rules and techniques of the game, the positions of the players during gameplay, and the specific movements made by the players.

Moreover, comprehensive interviews were conducted with each study participant individually and in group settings. The researcher interviewed community leaders, and eight children aged 7 to 16 to collect the required data. The interview instrument utilized was an interview guide sheet that included indicators of the *Galah Asin* TG, such as the *Galah Asin*

playing arena, the rules and techniques of playing the *Galah Asin*, and the players' positions throughout the game, as provided in Table 1.

Table 1. The interview instrument

Aspects	Interview Question	Indicators
Area to play <i>Galah Asin</i> TG	“What is the form of the arena in the <i>Galah Asin</i> game?” “Has an official standard been adopted?”	Geometry shapes and measurements used
How to play <i>Galah Asin</i>	“What is the usual procedure for performing <i>Galah Asin</i> TG? “Is there a standardized and officially specified method of engaged in play?” Are there any special rules in the <i>Galah Asin</i> game? How are the tasks or roles of the players organized?”	<i>Galah Asin</i> traditional game procedure
Position of the player during the <i>Galah Asin</i> game	“What are the players' positions when participating in the game of <i>Galah Asin</i> ?” b. "Is there a specially assigned position in the game?"	Predicts playing positions and tactics
In <i>Galah Asin</i> , players move their body parts correctly	"What is the function of the players' movements while playing the <i>Galah Asin</i> ?" "Are there any specific skill movements during gameplay?"	
Mathematics idea when playing <i>Galah Asin</i>	How is the integration of the <i>Galah Asin</i> game in mathematics?	Mathematics idea were used

The study collects supporting data through documentation. Due to the complexity of the game arena architecture, player positions, and hand actions during gameplay require substantial data collection to reveal this information. The next step is data analysis. Methods used to analyze the data in this study included taxonomic analysis, domain analysis, componential analysis, and cultural theme analysis (Ahn et al., 2020; Dornschneider, 2021; Seligmann & Estes, 2020).

Domain analysis was done using the collected data to help researchers filter study data and identify ethnomathematics domains or activities. Additionally, information is retrieved through documentation, interviews, and observation to concentrate the research on the features researched by the selected field. Researchers use data validity using triangulation (Greyson, 2018; Santos et al., 2020). Method triangulation comprises documenting, in-depth interviewing, and participatory observation to verify study data (McGranahan, 2018). The last stage is making a conclusion and reporting.

Results

The interview study results are presented as questions and answers below. The answers to the Questions: What is the arena's shape for the TG of *Galah Asin*? The game arena is usually rectangular and divided into equal parts. The boundaries are drawn using a stick to draw the

line and sprinkled with white whitewash to clarify the boundaries; four to six rectangles are often used to play Galah Asin. There are four rectangles when there are eight players from two teams; when there are ten, six rectangles are used. So, the number of rectangles depends on the number of players playing. Then, for the area of the game arena, children in Mnelalete Village usually use the size of the footsteps adjusted to the area of the game arena or by player agreement. The length of the arena (center line from front to back) is 15 footsteps, seven footsteps perpendicular to the center line for small children to walk.

The answers to the next question, "Can you describe the steps, or have they been formally decided?" were a preliminary step; each participant had to choose an offensive and a defending side. With the help of Galah Asin, the four-player teams will decide who will play on offense and defense. The Galah Asin playing area must be guarded by the guard team, who must either step or defend the dividing line below its location. The next step is for the offensive side to split the defense in half, going around the perimeter and back up the other way. The scoring team will gain one point if they are successful. The game will end, nevertheless, if a defensive player touches an offensive player. The essential thing in the Galah Asin game is that players must be able to play and know the rules in the Galah Asin game, must be agile when playing, and must concentrate when playing so as not to be caught by the guard team and the guard team trying to touch the attacking player. In addition, it must be honest in playing; if the guard team touches the body without being seen by other players, it must admit that it was touched and lost. Teamwork is needed when playing Galah Asin.

In addition, the answers to the next question, "Are there any special rules in the Galah Asin game?" were the rules in the Galah Asin game that have mathematical elements that when in one box/square, there are three players from the playing team, one of the three must lift one of his legs until one person moves to another box and then the leg can be lowered. Another rule is if one of the playing teams successfully crosses all the lines and returns to the starting line. Still, one of the playing teams has yet to enter yet to enter the arena; the playing team is considered defeated, and the position of the playing team and the guard team changes. The value of mathematics is that each player must be good at counting so that everything will be correct when playing.

The answer to the following question, "How are the tasks or roles of the players organized?" was that the minimum number of players in the Galah Asin game is eight people. Then, the players are divided into two teams, namely the guard team and the main team ($8 \div 2 = 4$), so that each player totals four people. Furthermore, each guard team occupies a guard line: one player guards the front line, two guards the center line (vertical and horizontal lines), and one more person defends the back line. Next, the answers to the following questions are as follows: "When playing Galah Asin, what is the position of each player? Has a particular role been stated?"

There are typically limitations placed on players' positions on a defensive squad. Their only possible movement is going to the right, left, or front. On the other hand, the position of the players on the offensive team is superior since they can go to the front, to the rear, to the left, or the right within the same rectangle because they can avoid being touched by the player on the defensive. In the game of Galah Asin, the players' positions are constantly shifting. The

answers to the next question, "When playing Galah Asin, how do the players' bodies move? Is there an established strategy to move the hands?" were, in most cases, the players on the defending team will stretch their arms and gently lift either their left or right arm while extending their hands forward. At the same time, the players on the offensive are bringing their hands forward to burst through the defense without being touched.

The answer to the final question, "How is the integration of the Galah Asin game in mathematics?" was Mathematics in the Galah Asin traditional game, namely the shape of the foreign Galah Asin game arena (rectangular and there are four boxes/squares, there are horizontal and vertical lines), the number of players (for example, the number of players is eight people then divided into two teams, namely the player team and the opposing team, each team totaling four people), the rules of the foreign gala game (if in one box/square, there are three players then one of the players must lift a leg), and when scoring points are added up.

Based on interviews conducted with children in Soe (Oekamusa), foreign Gala Asin games are generally related to mathematics. The elements of mathematics contained in foreign gala games are seen from the foreign gala game arena, the number of players and the division of tasks, the rules of the game, and the scoring of foreign gala games. The interview results also mentioned that foreign gala games can improve affective and psychomotor abilities. Based on the results of the research, it was found that the elements of mathematics found in foreign gala games include geometry, such as flat shapes, shifting (translation), mirroring (reflection), relationships between lines, and congruence. In addition, number concepts include addition, subtraction, multiplication, and division operations. Ethnomathematics elements in foreign gala games can be seen from the Galah Asin game arena, the number of players and the division of tasks, and game rules and scoring in Galah Asin. The following are the four aspects that are focused on the observation.

***Galah Asin* game arena**

In the *Galah Asin* game area (see Figure 1), the mathematical components that can be discovered include the two-dimensional figure, division and multiplication, reflection, lines, and congruency. Measurement and counting are two mathematics-related tasks that are included in creating the game area. These activities should always be carried out if children are interested in playing *Galah Asin*.



Figure 1. *Galah Asin* game arena

The *Galah Asin* game is played in a rectangular arena divided into four sections with a front-to-back and left-to-right line length of 7 footsteps, while the width of the square is four footsteps. The traditional *Galah Asin* game arena consists of several rectangles of the same size. The total size of the *Galah Asin* playing area is 14 x 8 footsteps (approximately 12 m x 6 m), which consists of 4 rectangles of the same size of 7 x 4 footsteps.

In the area of the traditional game *Galah Asin*, the visible math concepts are as follows:

1. Two-dimensional planar shapes are a fundamental notion in geometry, and they are documented in the *Galah Asin* game arena (Figure 6). The *Galah Asin* game arena is constructed in a rectangular area of 14 by eight paces. The rectangle is partitioned into smaller rectangles, each measuring 7 x 4 paces.
2. Arithmetic operations involving division and multiplication. The *Galah Asin* game field consists of a rectangular shape with dimensions of 14 x 8 footsteps, as previously mentioned. Next, the rectangle is partitioned into four congruent rectangles by dividing its length by two and width by 2. Consequently, the size of each square is calculated by dividing 14 footsteps by 2, resulting in 7 footsteps. Similarly, the width of each square is determined by dividing eight footsteps by 2, yielding four footsteps. Alternatively, counting can incorporate multiplication, which serves as the reciprocal division process.
3. Reflection. The playground at *Galah Asin* also has reflective components. The symmetrical configuration of the play area evidences this. Figure 2 illustrates the presence of a symmetrical axis that divides the *Galah Asin* play area into two identical halves.

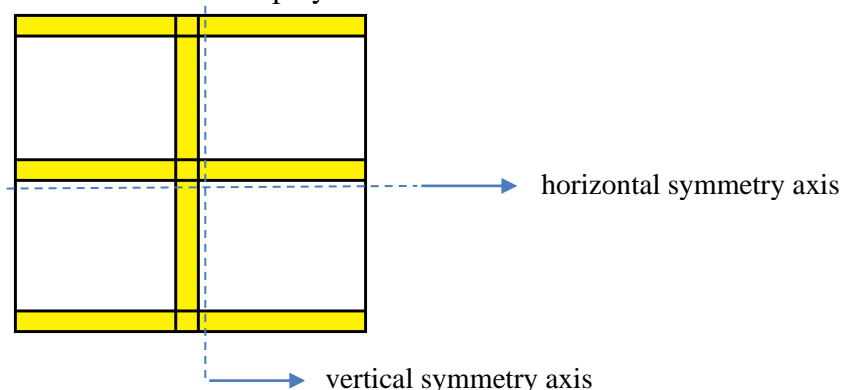


Figure 2. The Illustration of reflection on the square of *Galah Asin*

4. Lines are indefinite groups of nodes. The playing area of *Galah Asin* further displays an arrangement of lines, including parallel (Figure 3 left side), crossing, and perpendicular lines (Figure 3 right side).

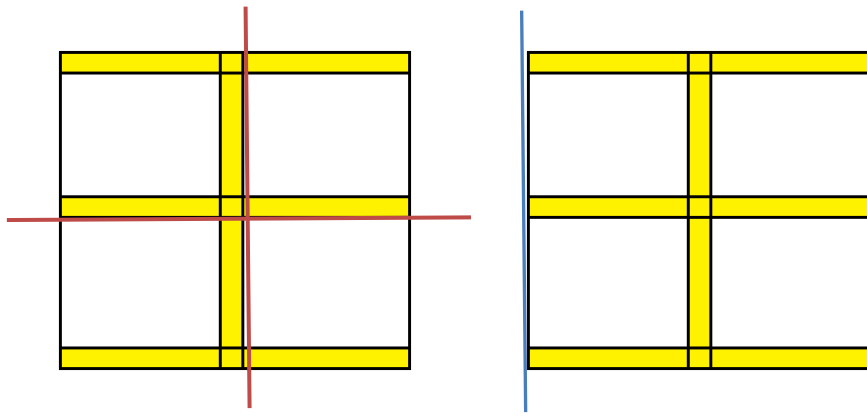


Figure 3. Illustration of line parallel, crossing, and perpendicular lines

5. Congruence. The boxes in *Galah Asin* have an element of congruence. The concept of congruence can be seen from the four boxes of the *Galah Asin* game arena which have the same size and shape (Figure 4).

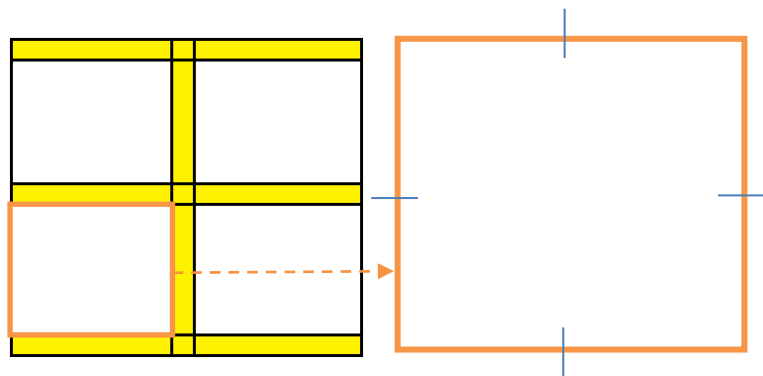


Figure 4. The Illustration of Congruency over the Square of *Galah Asin*

6. Measuring and numbering activities are also found in the *Galah Asin* game because the *Galah Asin* game arena must be measured using footsteps and numbered first.

***Galah Asin* game play**

The *Galah Asin* game involves dividing and subtracting numbers and additional activities involving counting or determining the number of players and assigning them to teams. In addition, the offensive team and defensive team are decided using *Hom Pim Pa* (Figure 5).



Figure 5. *Hom Pim Pa* in *Galah Asin* game

Procedure in the game of *Galah Asin*

At least six people are needed to play *Galah Asin*, and those six players are split into two groups: one to attack and one to defend. *Hompimpa* separates the categories. Dividing, lowering, numbering, and counting the players are activities related to the number of participants in *Galah Asin* and the division of jobs among these players.

The field sequence and the number of defensive players that the attacking player must pass further show that the *Galah Asin* field involves a calculating aspect. A player can keep track of each square and whether the opponent passed or not passed in this situation. The *Galah Asin* score, on the other hand, has exposed calculation as its mathematical component. Score one for every offensive player who makes it across the line, from front to back to front again. The phrase reveals addition as the mathematical ingredient, which combines individual player scores into a team score. So, the game's victor will be the squad that finishes with the highest score.

Player position during *Galah Asin*

The defensive players have limited positioning based on the player's position during *Galah Asin* (see Figure 6). They are limited to only three directions of movement: left, right, and forward. The offensive players, in contrast, have more leeway in how they place themselves. Any direction—forward, backward, left, or right—is open to them. *Galah Asin's* mathematical components include movement/translation and reflection, as learned from the movement.



Figure 6. Player position during *Galah Asin*

Based on the player positions during the *Galah Asin* game, the defender's position is limited as they can only move to the right, left, or forward (Figure 7). Meanwhile, the attacking players' positions are more flexible as they can move forward, backward, left, or right. The movement contains the concept of geometry transformation (Figure 8).

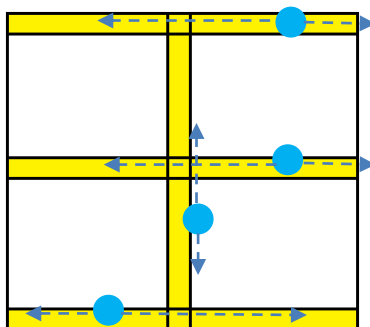


Figure 7. The translation of *Galah Asin* defensive players

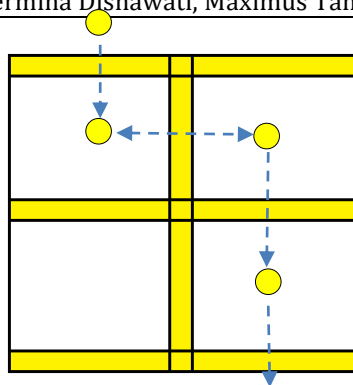


Figure 8. The illustration of reflection on *Galah Asin* offensive players

Body movement during *Galah Asin* game

It is essential to pay attention to the defensive players' movements based on their hand movements during the game. The defensive players raise one or both arms slightly and extend them toward the front to protect their base. All angles—right, acute, obtuse, and straight—can be formed this way. We found several findings in this study based on the interviews, observations, and documentation results.

Body movements of *Galah Asin* players from the observation: The group that gets the turn to play starts the game from the starting line. To guard their opponents, the defenders usually spread their arms with their left arm or right arm slightly raised while stretching both hands forward. Such hand movements will form right, acute, obtuse, and straight angles.



Figure 9. Body Movement during *Galah Asin*

Players guarding the horizontal line try as much as possible to prevent the playing group from crossing the predetermined boundary line to the finish line. The player guarding the vertical line, generally only one person, has space in all vertical boundary lines in the middle of the field and must be able to keep the opponent's movement from penetrating the horizontal space. The group playing tries to keep its body untouched by the team guarding and trying to reach the finish line. If you are playing and there are three players in a box, one of the players must lift one leg. The team can only be said to have won if one of the team members returns safely to the starting line. The team is said to lose, and there can only be a change of position if the guarding team touches someone. Moreover, In the *Galah Asin* game arena, the elements

of mathematics that can be seen through its shape are flat shapes, division and mirroring (reflection) operations, relationships between lines, and congruence.

Data analysis, the abovementioned findings on interviews, observations, and documentation have shown that *Galah Asin* offers numerous advantages. Not only does playing Galah Asin benefit the players, but it also helps preserve Indonesia's traditional history. Strength, focus, speed, flexibility, and endurance are psychomotor abilities that can be enhanced by playing this game. The results of the ethnomathematical study of the ancient game Galah Asin are summarized below.

Ethnomathematics study on *Galah Asin* Game Arena has two-dimensional flat mathematical elements. *Galah Asin*'s square has division, multiplication, reflection, lines, and congruence. Since the game arena must be measured, this area also involves measuring and counting. Measurement is also required to locate the game arena before playing—next, ethnomathematical study Game Procedures of *Galah Asin*. In *Galah Asin*, the number of players and their task distribution corresponds to division and subtraction. Counting participants and games is another interest. *Galah Asin*'s squares' size, order, and number of defensive players each attacking player must pass constitute a computation. Each offensive player who passes a defensive player from front to back to front gets a point. This implies that addition is the mathematical element in math operations. Summing each player's score yields a team score.

The *Galah Asin* game's mathematical elements are that when in one box/square, there are three players from the playing team, one of the three must lift one of his legs until one person moves to another box, and then the leg can be lowered. Another rule is if one of the playing teams successfully crosses all the lines and returns to the starting line. Still, one of the playing teams has not entered the arena; the playing team is considered defeated, and the position of the playing team and the guard team changes. The value of mathematics is that each player must be good at counting so that everything will be correct when playing. An ethnomathematics study on player position during *Galah Asin* showed that the minimum number of players in *Galah Asin* game was eight people. Then, the players are divided into two teams, namely the guard team and the primary team ($8 \div 2 = 4$), so each player totals four people.

Furthermore, each guard team occupies a guard line: one player guards the front line, two guards the center line (vertical and horizontal lines), and one more person defends the back line. In traditional *Galah Asin*, defensive and attacking players have separate positions. Defensive players can only move forward or backward left, proper, and center-line guards. Attacking players can switch boxes to the front, back, left, or right. The movement shows that *Galah Asin* uses geometry transformation-translation and reflection-mathematically. Next, body movement in traditional games separates attackers and defenders. Defenders frequently raise their left or right arm while the attacker's hands advance. Hand movement forms right, acute, obtuse, and straight angles. *Galah Asin* TG has character values, such as players appreciating socialization, honesty, anti-corruption, and collaboration.

Discussion

Various mathematical ideas are contained inside the *Galah Asin* TG. Table 2, in particular, shows many mathematical concepts embedded in the components of the classic game Galah Asin. As an example, the results regarding the idea of a two-dimensional figure are consistent with the theory put forth by Unaenah et al., which states that a two-dimensional figure is two-dimensional objects placed on planes that have been bounded by a straight or curved line, with the concepts of angle and liens in play (Jabar et al., 2022; Unaenah et al., 2020). Ulum (2018) stated that geometry is a subfield of mathematics investigating the interrelationships of various geometrical entities, including lines, nodes, angles, planes, two- and three-dimensional shapes, etc. This view is consistent with the ethnomathematical results concerning geometry transformation.

In addition, Sirate's theory (Umbara et al., 2021; Yunian et al., 2017) states that ethnomathematical aspects can be discovered in daily life, consistent with counting, determining place, and playing. Traditional games like Galah Asin have a mathematical component that is part of a larger body of knowledge called cultural-based mathematics, sometimes called ethnomathematics. In addition, traditional games from various cultures and geographical situations include scientific and mathematical content (Fernández-Oliveras et al., 2021). Next, we must figure out how to incorporate the numerous mathematical content relevant to the language into the learning process to make it more meaningful. Students can be motivated and stimulated by applying ethnomathematics, which can help them overcome boredom and learning challenges and make studying more relevant (Gazali, 2016; Sunzuma & Maharaj, 2020). In addition, traditional games can help develop numerical competence from an early age (Gasteiger & Moeller, 2021), and traditional games can also improve student learning performance (Trajkovik et al., 2018).

The *Galah Asin* game has many benefits, such as preserving Indonesian cultural heritage; the *Galah Asin* game is also beneficial for everyone who plays the game. According to the results of direct observation, when children play *Galah Asin*, they are happy, and when playing the game, they are forced to strategize so well to win the game; players also learn to be responsible, practice honesty, and build leadership skills when playing *Galah Asin*. The results of this observation are in line with the results of research by Susena et al., who claimed that *Galah Asin* TG is beneficial for motor skills, thinking ability, social skills, and the ability to control emotions (Goldstein & Lerner, 2018; Lavega-Burgués et al., 2023; Yoga et al. et al., 2021).

Furthermore, *Galah Asin* TG is useful for changing students' characters in daily life (Hidayati, 2021; Saputra et al., 2023; Suherman et al., 2021); *Galah Asin* game can also be used to build the character of nationalism (Izza et al., 2018; Nurfaidah, 2018). In addition, Traditional games also effectively build the understanding of honest character in early childhood, contributing to an anti-corruption mindset. Role-playing games can optimize learning strategies and reinforce self-control in children, helping them develop anti-corruption knowledge and habits (Hayati & Kurniawan, 2020; Pujiati et al., 2020). Traditional games

contain meaningful learning and experiences that lead children to improve themselves and become wiser, potentially forming an anti-corruption mentality from an early age (Justiana et al., 2021; Sriwati & Putro, 2022).

The *Galah Asin* game can also be developed in math learning to introduce mathematical concepts to anyone who plays the *Galah Asin* game, especially school children. *Galah Asin* also makes children, or anyone forget their boredom. Learning that appears in the game can improve understanding of mathematical concepts, such as solving problems and improving skills.

Conclusion

The mathematics concepts explored in *Galah Asin* TG are geometry and number concepts, found in the traditional game of *Galah Asin*. The elements of ethnomathematics for the concepts of geometry and numbers in the conventional game of *Galah Asin* can be seen in terms of the game, the number of players, the procedures of the game, and the scoring system. The geometry concepts in the traditional game *Galah Asin* are flat, translational, reflective, line, angle, and congruence. Meanwhile, the number concepts in *Galah Asin* are addition, subtraction, multiplication, and division. The results of this ethnomathematics research can be further developed when learning mathematics at school. Traditional games can be used as an introduction to math learning materials.

This research is limited to the location of Kampung Mnelalete TTS. It is also limited to exploring mathematical concepts that have not yet reached product development and implementation in mathematics learning. *Galah Asin* TG can be used as a starting point for learning mathematics and as a context for developing interactive electronic materials, especially for less proficient students.

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Conflicts of Interest

The authors declare no conflict of interest regarding the publication of this manuscript. In addition, the ethical issues, including plagiarism, misconduct, data fabrication and/or falsification, double publication and/or submission, and redundancies, have been completed by the authors.

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Author Contributions

Yohanis Ndapa Deda: Conceptualization, writing - original draft, editing, and visualization; **Milton Rosa:** Validation and supervision; **Hermina Disnawati:** Writing - review & editing, formal analysis, and methodology; **Maximus Tamur:** Validation and supervision.

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