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The Analysis Concept of Integers Counting Operations in Traditional Toraja Games *Si Goal* and *Si Patte*'

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Abstract. Play is one of the characteristics of elementary school children ((elementary school) . This is because elementary school age children have unlimited energy to be involved in playing. By utilizing the game in learning can make students learn while playing. Games that can be applied in learning are games that contain elements of learning. One example of a game that contains elements of learning is the traditional game of *Si Goal* and *Si Patte*'. Thus, this study aims to analyze: (1) the concept of integer counting operations contained in the traditional game of the goal, and (2) the concept of integer counting operation contained in the traditional game *Si Patte*. This research is qualitative research with ethnographic approach. Informant (data source) in this study is a community located in Bori Ranteletok. The data in this study was obtained from the data of interviews with informants, field records made during the study and documentation in the form of photos of children playing traditional games of the *Goal* and the *Patte*'. The results of this study show that: (1) there is a concept of integer counting operations, i.e. multiplication, division, addition and subtraction in the game of the goal, and (2) there is the concept of integer counting operations, i.e. multiplication, summing and subtraction in the game *Si Patte*'. So that with the concept of integer counting operations contained in the traditional game of *Si Goal* and *Si Patte*', then the traditional game can be used as a strategi in teaching the concept of integer operations in elementary school children to make learning more enjoyable. Learning mathematics by utilizing culture is called ethnomatematics. Teaching culture-based mathematics needs to be done by the teacher, because in addition to helping students to learn more meaningfully through real actions this activity can also help students to better know and love their own culture.

INTRODUCTION

Play is one of the characteristics of elementary school age children who can interact directly with the environment [1]. Compared to learning, elementary school age children tend to prefer to play. This is because elementary school children have unlimited energy to be involved in playing. In order for elementary school-age children, especially in grade 1 where there is a transition from kindergarten to elementary school, learning should be fun and not make students feel bored quickly. Integrating learning processing games, helping students learn while playing so that students become active and happy in learning [2]. As learning progresses in the game, students take part and are focused on their role in the game. When playing, students feel happy when they have won the game. That is when there is a learning process that makes students active and happy in learning. Games that can be applied in learning are games that contain elements of learning. One example of a game that contains learning elements is traditional games [3]. However, over time technological advances make traditional games no longer in demand by children today. Today children tend to prefer to play 'modern' types of games that focus more on thinking patterns or brain intelligence [4]. There are many types of traditional games in Toraja, among which are the *Goal* and the *Patte*'. This traditional game is known by various names in every region in Indonesia.

The *Goal* is a game played by two teams equally many and each team makes a mark on its base. The commonly used mark is wood or they draw it on the ground. When playing a group of friends must touch members of the opposing group so that those who are set up are considered dead and move to the place of the opposing group that has touched it. Members of the fallen group can play again if the group can touch them again. The group that managed to get a mark or step on the opposing group's image then the group was declared victorious. While the *Patte*' is a game that is played individually. This game is played by firing rubber towards other rubber that has been collected above the place like a plastic bottle that is used as a container. When the child manages to fire rubber at the other rubber and falls, then the rubber in the container is reduced and the fallen rubber can be owned by the shooter.

If carefully observed both games are all poured in the operation of counting integers. For example, in the game of the *Goal*, dividing the player's members into two teams is equally much a concept of division. Then, during the game and there are members touched by the opponent then the team members are reduced and the opposing team increases is the concept of addition and subtraction. In the game *Si Patte*' each player collects the same rubber, when the rubber is collected by each player there is a concept of multiplication that is the amount of rubber collected by each player at times the number of players. Then, during the game and there is rubber that falls when fired by one of the players then the rubber in the container is reduced and the rubber owned by the shooter increases is the concept of summing and draining. Unwittingly when children play the game they are also learning. It is just that the children still do not understand the mathematical concept contained in it.

LITERATURE REVIEW

Ethnomatematics

The term ethnomatematics was coined by D'Ambrosio to describe mathematical practices in identifiable cultural groups and is considered a study of mathematical ideas found in every culture [5]. The statement states that in every culture there are mathematical concepts that can be used to study mathematics [6]. Ethnomatematika is an approach that can be used to explain the reality of the relationship between environmental culture and mathematics as a family of sciences [7]. The reality of the relationship between environmental culture and mathematics is the daily activities in which the process of abstracting in real experience occurs. The purpose of ethnomatematics is to recognize that there are different ways of doing mathematics taking into account the knowledge of academic mathematics developed by different sectors of society as well as taking into account different modes in which different cultures negotiate their mathematical practices (how to group, count, measure, design buildings or tools, play and others) [8]. Ethnomatematika brings up cultural wisdom so as to motivate students in mathematics learning [9]. In mathematics learning, there are several abilities that affect students' learning achievements.

Traditional Toraja Games

Si Goal is a traditional Toraja game played by two teams, see Fig. 1 for illustration. Each team has a base that is usually marked with wood or they draw it on the ground. When playing a group of friends must touch members of the opposing group so that those who are set up are considered dead and move to the opposing group that has touched them. Members of the fallen group can play again if the group can touch them again. The group that managed to get a mark or step on the opposing group's image then the group was declared victorious.



FIGURE 1. *Si Goal*.

Si Patte' game is a traditional game that can be found in Toraja area. This game is usually played by children during the day and evening. *Si Patte'* is a game played individually by children, see Fig. 2 for illustration. This game is played by firing rubber towards other rubber that has been collected above the place like a plastic bottle that is used as a container. When the child manages to fire rubber at the other rubber and falls, then the rubber in the container is reduced and the fallen rubber can be owned by the shooter. The rubber used as a shooter is made by collecting as much rubber as possible and then wrapped around to make it easier for the player to shoot his target. The main objective of the game is to collect as much rubber as you can. In this game of *Patte'* there is a benefit that can train concentration in children. This type of game is also similar to other rubber band games that also make use of rubber bands.



FIGURE 2. *Si Patte'*.

METHODS

This study uses an ethnographic approach. In this case, an ethnographic approach is used to describe, explain and analyze traditional Toraja games. research instruments used are interview guidelines and documentation. In conducting data analysis, researchers use miles and huberman model data analysis which has several stages, namely Data Reduction, Data Presentation, Data Verification, Conclusion.

RESULT AND DISCUSSION

Based on the results of the research that I have described it can be understood that there is a concept of integer counting operations in the traditional game of the *Goal*. This is clearly seen during the game there are a number of stages that must be passed by each player in which there is the concept of integer counting operations. With the concept of integer counting operation, this game can be used as a medium in learning in elementary school. By paying attention to the characteristics of elementary school children who still love to play, then by utilizing traditional games can make the learning process fun so that children can be motivated in learning, especially learning mathematics [10]. Integrating learning processing games, helping students learn while playing so that students become active and happy in learning [1]. By applying traditional games in learning can help students in learning to be more active and learning to be not monotonous [11].

The results of interviews that have been conducted by researchers to children about their feelings after playing the game of the *Goal* stated that they are very happy in playing. Thus, the pleasure they experience makes them become more active in learning. Traditional games have the values of local wisdom to the value of learning for children [12]. The value of learning for children in traditional games is not only about lessons but teaching children in terms of cooperation. Cooperation teaches children to grow up to be children who have a high sense of care.

Based on the results of research on the concept of integer counting operations in the game *Si Patte'* shows that it is true that there is a concept of integer counting operations in this game. Similarly, the game of the *Goal* of the concept of integer counting operations in question is the summation, subtraction, multiplication and division. Because this game contains mathematical concepts, it is suitable for applied in mathematics learning, especially elementary school. Utilizing local culture, especially traditional games in learning, can help students in preserving their culture. In addition to preserving culture, traditional games can also give children an understanding that mathematics exists in daily life, including in local culture. Because mathematics exists in the local culture of Toraja, which is a traditional game, it can be said to be part of ethnomatematics. Ethnomatematika is an approach that can be used to explain the reality of the relationship between environmental culture and mathematics. This reveals that a culture or habit of

society unwittingly has a mathematical concept. Unknowingly, people have applied mathematics in their daily lives.

2 CONCLUSION

Based on the results of research and discussion that has been described by researchers, it can be concluded several things as follows:

1. The concept of integer counting operations contained in the game si gol is the summation, subtraction, multiplication and division.
2. The concept of integer counting operations contained in the game *Si Patte* is the addition, subtraction and multiplication.

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