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STUDENTS' PERCEPTION OF THE IMPLEMENTATION OF TRADING GAME IN LEARNING MULTIPLICATION

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Abstract

Students' perception of a teaching approach influences their engagement and class participation. This article reports a part of a study conducted to improve students' understanding of multiplication and their engagement in learning multiplication through the implementation of trading game where students played roles as buyers and sellers and simulated transactions. The focus of this article is on the students' perception of the implementation of the game in learning multiplication. The participants were 32 fourth-grade students at a primary school in Banda Aceh, Indonesia. The data was collected by using a survey and interview. The result shows that the students' perception of the implementation of trading game in learning multiplication was 91.45% favorable. Among the results, the majority of the students stated that the learning activity was enjoyable; the game improved their interest in learning multiplication, it helped them to understand more about the concept and the application of multiplication in real life, and that it promoted student collaboration.

Keywords: *multiplication, trading game.*

INTRODUCTION

Mathematics is a core subject in primary school curriculum around the world. In Indonesia, the subject is taught since primary school up to college level (Masykur, 2007). Education experts believe that mathematics is important for students' successfulness in their learning at school and in their daily life (Diez-Palomar, Simic & Varley, 2006). However, it has been a general consensus among students that mathematics is a difficult subject (Ismail et al., 2004; Masykur, 2007; Ramli, Shafie & Tarmizi, 2013). This negative attitude may have been caused by the abstractness of mathematics concepts (Ismail et al., 2004). The thinking level of primary school students is at concrete operational stage where students find it difficult to understand abstract symbols and ideas (Russefendi, 2006). Therefore, the teaching and learning of mathematics for primary school students need to be designed carefully incorporating contextual approach and appropriate teaching aids to help students make sense of the concepts. Contextual learning provides an opportunity for students to experience mathematics through everyday life settings (Johnson, 2009). In the teaching and learning of multiplication, contextual approach is a suitable strategy to introduce and reinforce the concept of multiplication through a familiar activity.

Students' perception is another factor that influences their successfulness in learning mathematics (Suprihatiningrum, 2016). When students are actively engaged in a teaching and learning process, they are likely to grasp the concept more easily (Berry, 2008; Riedy, Yu & Zhou, 2012). Therefore, it is important to have students enjoy a learning activity. This can be achieved by implementing a fun teaching strategy such as an educative game.

Trading game is an educative game that can be implemented to teach multiplication. Through the game, students learn the concept of multiplication by taking parts as buyers and sellers and imitating transactions. During the activity, the students learn to implement multiplication in their calculation of transactions. The concept of multiplication as a repetitive

addition (Van & Folk, 2008) is made clear through the game when students buy or sell, for example, three bars of chocolate. The familiarity of the context helps students to relate the concept with their pre-existing experience which makes it easier for them to understand multiplication.

Trading game is also an excellent strategy to grant students with an opportunity to interact with each other. According to Vygotsky, as cited in Lin (2015) and Darmadi (2017), learning happens when students interact and communicate with each other. Vygotsky argued that learning is not an individual activity, but it is social connectedness within a student's learning environment that enables the student to develop his or her understanding (Lin, 2015).

METHODS

The aim of this study was to investigate students' perception of the implementation of trading game in learning multiplication. The study was a part of an action research study conducted to improve students' understanding on multiplication through the implementation of trading game. 32 fourth-grade students of a primary school in Banda Aceh, Indonesia, participated in the study. The data was collected by using a survey containing 15 items using the 4-point Likert scale. The survey was divided into 3 sections exploring the students' perception about: 1) the students' interestedness to learn multiplication through trading game, 2) how the game helped them learn multiplication, and 3) how the game promoted their collaboration. Each section contained 5 questions. The students were asked to specify their level of agreement on the statements presented in the questionnaire. Each response was scored from 1 to 4 as shown in Table 1.

Table 1: **The scoring of students' responses**

Response	*Abbreviation*	*Score*
Strongly Agree	SA	4
Agree	A	3
Disagree	D	2
Strongly Disagree	SD	1

The responses were then presented in percentages. Finally the students' perception of the implementation of trading game was categorized as shown in the following table.

Table 2: **The scaling of students' perception of the implementation of trading game in learning multiplication**

Percentage	*Category*
0% - 25%	Very Negative
26% - 50%	Negative
51% - 75%	Positive
76% - 100%	Very Positive

The survey was conducted after three teaching and learning sessions. Additionally, 6 students representing high achiever, middle achiever, and low achiever students were interviewed to further gain information on the students' perception of the implementation of trading game in learning multiplication.

The game implemented in this study was developed based on the trading game described in USAID (2006). General description of the game was as follows: the students were divided into groups of sellers and buyers and were given a certain amount of fake money. The sellers were prepared with a price list and several items to sell, while the buyers were given a shopping list. In an allotted time, the students simulated trading exchanges. After that, they calculated their transactions and then discussed them in their group. Finally a representation of each group presented their work in front of the class.

RESULTS AND DISCUSSION

The students displayed generally positive attitude towards the implementation of trading game in learning multiplication. The following table shows the students' perception of the implementation of trading game in the teaching and learning of multiplication.

Table 3: **Students' perception of the implementation of trading game in learning multiplication**

No.	*Statements*	*Students' Responses*				*Score*	*Percentage (%)*
		SA	*A*	*D*	*SD*		
A. Students' interestedness							
1.	I enjoyed learning multiplication through trading game.	29	3			125	97.66
2.	Trading game was a new approach to me.	16	16			112	87.50
3.	Using this game, I was motivated to learn multiplication.	23	9			119	92.97
4.	I enjoyed the learning and I did not feel bored.	23	9			119	92.97
5.	I would like to learn other number operations using trading game.	22	9	1		117	91.41
B. Students' perception on how trading game helped in learning multiplication							
6.	Through trading game, I learned to be careful in carrying out calculations.	25	7			121	94.53
7.	The implementation of trading game helped me understand multiplication.	22	10			118	92.18
8.	The implementation of trading game made it easier for me to solve multiplication questions	21	10	1		116	90.62
9.	Through trading game, I felt the importance of learning mathematics	25	7			121	94.53
10.	Through trading game, I felt the application of multiplication in real life	19	11	2		113	88.28
C. Students' collaboration							
11.	Learning multiplication through trading game helped me to get closer with my friends	18	12		2	110	85.94
12.	Through the game, I	23	8	1		118	92.18

	learned to work together with my team-mates						
13.	Through the game, I learned to care about my friends who needed help with their multiplication	20	12			116	90.62
14.	Learning multiplication through trading game improved my self confidence in expressing my ideas and opinions	19	11		2	111	86.72
15.	Through the game, I learned to appreciate other people's opinions	24	8			120	93.75
						Average	91.45

It is shown in the table that students' responses on all of the questions were above 85%, which meant that the students had positive attitude towards the implementation of trading game in the teaching and learning of multiplication. As Buckley, Doyle, & Doyle (2017) suggested that the implementation of a game in teaching and learning increased student's motivation. As many as 97.66% students confessed that they enjoyed the teaching and learning activity by using trading game, 92.97% said that they were motivated to participate in the learning activity because it was fun and not boring. During the interview the students stated that the game was quite new for them in learning multiplication and it was enjoyable. The majority of students agreed that the game should be implemented in learning other number operations such as division and addition.

In terms of the students' perception of the effect of trading game on their multiplication skill, 94.53% of the students expressed that the game helped them improve their accuracy in conducting calculation. During the interview the students stated that it was really important to be accurate in counting to avoid losses. 92.18% students agreed that trading game helped them understand multiplication. They confessed that through the game, they could truly understand what it meant to multiply

numbers. The use of imitation money also helped them appreciate the concept of multiplication as repetitive addition.

94.53% of the students agreed that through the implementation of trading game they could see the importance of learning mathematics. 88.28% students testified that through the game they could see the application of multiplication in everyday life. This is in line with one of the findings of a study conducted by Diez-Palomar, Simic, and Varley (2006) that simulation games helped students to see the connections between mathematics and their daily life.

On the aspect of student collaboration during the learning activity, 85.94% of the students agreed that trading game helped them get closer with their friends because they spent a lot of time together negotiating and discussing their transactions. 93.75% of the students confessed that during the game they felt comfortable to give and receive advice or help those who made counting errors. As Diez-Palomar, Simic, and Varley (2006) suggested that discussions between students could improve their interest in analyzing their work. Some of the students even stated that they were happy if their friends alerted them of their mistakes. They agreed that it was important to be accurate in counting money and therefore they should not be angry when someone pointed out their errors.

CONCLUSION

Students' perception of the implementation of trading game in learning multiplication was very positive. The students' responses showed that they were interested to participate in the transaction activity. The students also stated that the game helped them understand the implementation of multiplication, and that the game promoted student collaboration.

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