



INCREASING KNOWLEDGE OF THE EARTHQUAKE PREPAREDNESS THROUGH QUANTUM TEACHING MODEL ON STATE PRIMARY SCHOOL 19 BANDA ACEH

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Abstract

The aim of this study was to find the ways to increase earthquake preparedness knowledge through quantum teaching model on students of State Primary School (SDN) 19 Banda Aceh. The samples were the seventeen students in grade 5. The methodology used in this study was classroom action research, which divided into planning, action, observation, and reflection, with two cycles by the quantum teaching model using hopscotch and snakes and ladders games. The results showed that student learning outcomes was reached 82.4% and increased to be 94.1% on the first and second cycles, respectively. In addition, about 97.1% of students were agreed that the learning model had been successful and 89.7% of students were agreed that the preparedness could be increased by applied hopscotch and snakes and ladder games. It has been concluded that knowledge, attitudes and action of the earthquake preparedness of students could be increased through quantum teaching model.

Keywords: *knowledge of the earthquake preparedness, quantum teaching model.*

Introduction

Learning model is a model that applied/selected by teachers to deliver lessons to students in a systematic and adjust the material that will be taught to achieve the learning objectives. This requires learner models to suit the environment and the age of the student learning model quantum teaching (QT). Halimah, *et al.*, (2007) stated that the QT learning model can develop the student intelligence. Johan, (2012) stated that the QT is able to improve cognitive outcomes in order to increase student learning in the subjects taught. Some education experts stated that QT can change the various interactions that exist in the surrounding environment. It gives students a comfortable and enjoyable learning (Jaelani, 2010). This learning process occurs active, creative and fun to use the hopscotch and snakes and ladders games so as to educate elementary school students to develop their understanding. This learning model is in accordance with the character of elementary age students on the subjects of science, as well as in disaster education, especially learning about preparedness materials. Preparedness requires reliable availability of resources in the face of

disaster. Asiandi, *et al.*, (2010) stated that students need to be nurtured and trained in the areas affected by the disaster.

One of areas was affected by the tsunami disaster SDN 19 Banda Aceh at rukoh village, Syiah Kuala District. The location of the school is closed to the sea \pm 3.6 kilo meters and been hit by the earthquake and tsunami of 2004 year. Based on the initial survey conducted in fifth grade students in SDN 19 Banda Aceh are still lacks of understanding of the students so as to reduce the level of disaster preparedness. Disaster preparedness is to reduce the impact and specific fatalities elementary students. Hidayati, (2008) stated that the number of fatalities illustrates preparedness remains low, mainly due to lack of knowledge and awareness of the natural phenomena and disasters they cause. This suggests that preparedness efforts have not done well. Therefore, this study was aimed to increase the knowledge earthquake preparedness of SDN 19 students through quantum teaching learning model.

Methodology

The methodology used in this study was classroom action research (CAR) conducted by two cycles that include stages of planning, action, observation, and reflection. Each cycle was implemented in



accordance with the changes to be achieved as a factor that has been designed to be observed, so that

the cycle of action research can be seen in Fig. 1 below:

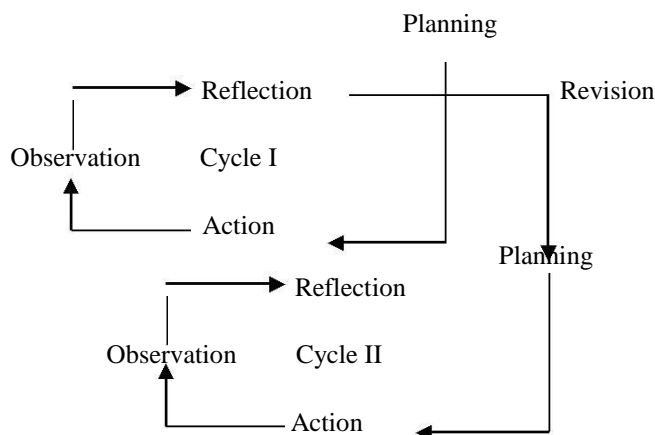


Figure 1 Classroom action research cycle

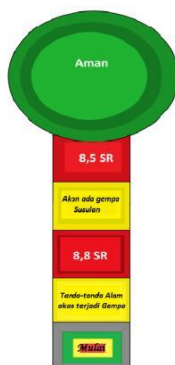
The quantum teaching models applied were included:

- i. Enrolling by bring some pictures (Fig. 2a) that relates to the disaster topic that would be covered in class. Students were let to see or hear the stimulus, and they were asked about some related questions.
- ii. Experiencing, where students were put into pairs. The role play scenario about

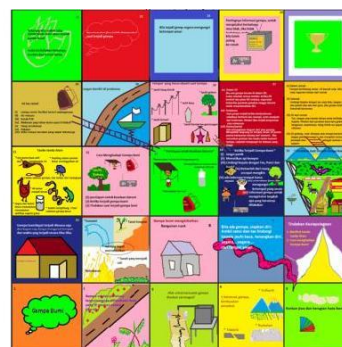
hopscotch and snakes and ladders games (Fig 2.b & c) that relates to the lesson was given. Followed up by asking a few students to give some feedback on how the role play went. The visualization exercise were given so that they could imagine themselves in a relevant situation was realised.



(a)



(b)



(c)

Figure 2 (a) Picture of earthquake effect, (b) hopscotch game, (c) snakes and ladders game

- iii. Learning and labelling, where students were introduced with new vocabularies

- iv. Demonstrating by providing activities that and relating it to things they have learned in previous lessons.

gives students an opportunity to practice the new knowledge.

- v. Reviewing and reflecting by giving quiz to students to see what they have learned and also by asking them to quiz each other.
- vi. Celebrating by praise students on their progress and playing some upbeat music.

The procedures of the snakes and ladders game were as follows :

1. Students were divided into 3 or 4 groups; each group had 4 or 5 members.
2. The game was started from group 1 by using dice (if the number of dice was 6, play again (have another turn) and then followed by other groups.
3. In one group plays consecutively.
4. If there was a snake, then student said "there was a danger!" as he/she dropped following the snake.
5. If there was a stair, then the student said "standby" as he/she climbed the stairs to follow.
6. Each box had the text where the student should read the text (read out by a member of the group).
7. The first group to reach the finish (number 25) then that group is the winner (the winning group students said: hurray! Means groups of 1,2 or 3 {winner group} .

The procedures of the hopscotch game were as follows:

1. Students were divided into 3 or 4 groups that consisted of 4 or 5 people.

2. In one group plays consecutively.
3. All groups' rocks placed in the first box, and then the group that had the turn throws the rock.
4. When a student was in a yellow box, that student must be said "be careful!" and read its text, (for posts that read: signs of an earthquake, the student in one group mentioned any natural signs when an earthquake will be happened consecutively, for which can mention it can continue, but if cannot mention then must stop).
5. When the rock was thrown on red box, the student must be said "earthquake!". Students should not be jumped in the red box so that students immediately jumped to the next box. If that fails (falls into the red box) then it must stop.
6. If students were in the green spot "Safe", the students stated "we were group (1, 2 or 3) were safe".
7. The first group to reach the safe place is the winner of the game.

Results and Discussion

The learning process using QT model was applied to create a pleasant classroom atmosphere by using hopscotch and snakes and ladders games as shown in Fig. 3(a) and (b). This study was completed by two cycles and conducted on April 2013. The level of knowledge of the students was measured by giving tests on the first and second cycles. The minimum completeness criteria were adjusted to be 79 and the learning outcomes were achieved if amounted of 85% students could be passed the test.



(a)



(b)

Figure 3 The student activities: (a) snakes and ladders, and (b) hopscotch games

It has been found that the average value of student learning outcomes in the first cycle was 82.4% and 84.7% in the second cycle as shown in Table 1.

Table 1 The Results of Students Learning Outcomes

Result Test	Frequency		Percentage (%)		Status
	Cycle I	Cycle II	Cycle I	Cycle II	
79 – 100	14	16	82.4	94.1	completed
0 – 78	3	1	17.6	5.9	uncompleted
Total	17		100		

This result agrees with study conducted by Rusilowati, (2010). She found that the disaster can be learned through integrated learning in some subjects in basic education. Education on students is the human resource that can be prepared, nurtured and taught as disaster risk reduction (DRR) so that students are prepared for disasters alert (Asiandi, *et al.*, 2010). Understand the potential disaster facing the natural disasters that may occur, it is necessary to step preventive proactive and pre-disaster preparedness (Ruswandi, *et al.*, 2008). This implies the need to be improved preparedness in an effort to prepare for a disaster. This shows the importance of preparedness for students in an effort to prepare the public face of the devastating earthquake that occurred unexpectedly.

Moreover, students were given questionnaires of preparedness attitudes. It has been found that 97.1% of students were agreed that the learning model has been successful at the second cycle and 83.1% at the first cycle. Attitudes were evaluative statements or judgments against the object, person or event (Wahyuni, 2008). Attitude was reacting to the learning process. In addition, the attitude was also a pattern to the feelings of someone, either in favor/favor or not favors the particular object (Florensia, 2013). Other experts said that attitude was a person's pattern of behavior which has a tendency to accept or reject an object based on its experience and norms (Mustofa, 2009). It was a reaction to a stimulus that has been conditioned by several components, namely affective aspects (feelings), cognitive (beliefs), and conative aspects or tendencies to behave in the form of real or inclination (Marhaini, 2008). Attitude was

not a trait, but rather the result of the interaction between the individual and his environment is dynamic because of the conditions and the influence exerted on an object. Attitude can be expressed as student learning outcomes that can not be formed by itself because the attitude was formed from the interaction of a person with a particular object (Murniati, 2011). Thus the students' attitudes could be influenced by knowledge about earthquake preparedness materials through QT, so the formation of students in school preparedness measures in case of an earthquake.

The preparedness was measured to determine the action of students to the learning process with 85% stating the results of actions well (agree) that the learning has been successful. The success of these actions could be seen in the results of study on the first cycle was 22.1% answered disagree, and about 77.9% of students were declared agree, means that in the first cycle, the action of students had not been good toward preparedness because they had not reached the success as much as 85% so it needs to be done to 2nd cycle. Learning outcomes for students' attitudes on the second cycle was found to be 10.3% answered disagree, and 89.7% of them were agree, then the action of the preparedness of students was found to be good because it had achieved success.

The action was a response action or actions that cause a person (Sunarto, 2004). The action was a behavior or action taken students to the learning process, creating an active learning, creative and fun on earthquake preparedness materials. Yetty, (2009) stated that learning was conducted in an interactive, inspiring, fun,



challenging, motivating students to participate actively. In addition, Nirmalawati, (2011) found that through education, especially in elementary school students in understanding the concept of disaster preparedness in order to change the attitudes and behavior of students in the face of disaster. Abdullah, *et al.*, (2010) agreed that the actions as acts committed against stimuli from outside himself. Besides efforts to increase the participation of a person, knowledge and attitude was paramount that the formation of one's actions (Suharyat, 2009). Thus knowledge and attitudes would be formed an earthquake preparedness through QT.

Conclusions

The knowledge, attitudes and action of the earthquake preparedness could be increased through quantum teaching model with snakes and ladders, and hopscotch games.

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