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## The Development of Preparedness Board Game as A Learning Media for Natural Disaster

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### Abstract

*This study was aimed to develop the preparedness board game for natural disaster. The method used was research and development (R & D) with ADDIE model which was included five steps, i.e., (i) Analyses, (ii) Design, (iii) Development, (iv) Implementation, and (v) Evaluation. Samples of this study were students of grade VI in MIN Ulee Kareng, Banda Aceh, Indonesia. The quality of the board game was based on the validation results. The validation aspects included were (i) media format, (ii) visual aspects, (iii) media function, and (iv) the clarity of the concepts. Due to the validation aspects, therefore the validation of developed board game were found to be 97.2; 91.7; 88.9; and 100.9 percents, respectively. The results of this study indicated that developed preparedness board game was worth based characteristics of students. Meanwhile, the average assessment of the feasibility assessment aspects of the media was found to be 94.4 percent, which could be decided to very good. It was concluded that learning media preparedness board game could be used in the learning process in the natural disaster material.*

**Key words:** development, board game, and natural disaster

### Introduction

Natural disasters is an event threaten and disrupt the lives and livelihoods make a losses of life and damage. Frequent of natural disaster are earthquakes, tsunamis, flood, landslide and volcanic eruptions. Natural disaster is not inevitable but can be minimized by a knowledge. Therefore, the knowledge of disaster risk reduction is necessary to be known by all levels especially children of primary school age. One of the creativity that can be done in the learning process is to choose the media. Learning by using the game as media can enhance the creativity of the learners in learning. Yumarlin, (2013) the used of the media can be generate interest in the learning, attention, and creativity of the students learn in fun condition.

Survey had been done in MIN Ulee Kareng, which located on Jalan Masjid Tuha No. 02 Ie Masen, Ulee Kareng Banda Aceh. Based on interviews with the teachers of Social Sciences concerning natural disaster material, they said that media never used in the learning process for the simulated in the form of learning. Based on the explanation, therefore it is needed to create a media for motivate the students in the learning process like games. This study therefore develop the game, called board game. The purpose of this game was as a preparedness game in natural disaster material as make a ware and care for disaster.

The types of game was very simple that resembles another board games those often found in our daily life, such as game ludo, monopoly, and chess. This designed of the game was adopted from another board games. The preparednes board game did not follow the rules of the game 100 percent like board game rules our known in daily life. However, the rules of this game changed in accordance with the function of learning media in sosial subject. In preparedness board game, it has provided material books and question cards. So that they can answer the question easily and more motivated in learning process by using preparedness board game. The development preparedness board game would be improved the students

motivation in the learning process up to natural disaster material as a disaster risk reduction (DRR).

### Literature Review

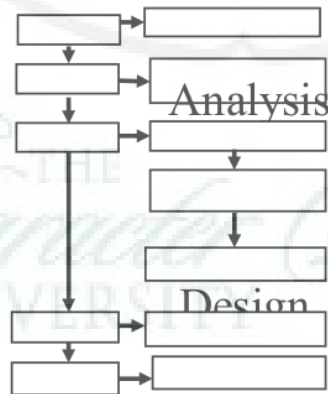
The word of "media" is derived from the Latin as the plural of "medium". The word literally meaning the media have intermediate or introduction. From the National Education Association (NEA), is defined media as of communication in print or audio-visual technology including hardware (Susilana, 2009). Learning by using media is as introductory or intermediate message to the recipient, which carries the information or learning resources that aim to facilitate achieving the goal of learning. It could be concluded that the media is a tool used in learning as an intermediary in the process of learning, making learning conditions become attractive and cultivate students' interest in learning (Wiyani, 2012).

Sanjaya, (2010) suggested the types of media that were used in teaching and learning, namely, graphic media, audio media, and the media silent projection. Graphic media was media that included a media silence because used images, diagrams and posters. Audio media was media that contained messages that stimulation of thought and feeling to the listener. A media projection silence was the media used with a toy for the helped like a projector in the delivery of the message to the recipient. Based on the types of media mentioned above, the study focused on graphic medium. Graphic medium was silent form of used in learning. In addition, the types of graphic medium, namely, images, diagrams, cards, maps and board (Sadiman, 2006).

In general, the board game is often encountered in daily life, namely, monopoly, ludo, chess and checkers. Aliyanto and Ishak, (2013) suggested board game was a well-known game a media in daily life such as ludo, snakes and ladders that had a lot of potential in informing effectively. Tendean, (2013) defined board game as a tool to provide a hands-on and heads-on skills and knowledge development for the people of all ages on all subjects. Based on the definition, therefore it could be concluded the board game is a game using the skills possessed by each individual in the boost knowledge and clarify information delivery.

### Methods

This study was done in Madrasah Ibtida'iyah Negeri (MIN) Ulee Kareng, from February 2 March 2015. The type used of this study was the Research and Development (R&D) with ADDIE (Analysis, Design, Development, Implementation and Evaluation) model (Wiyani, 2013), as shown in Fig.1. The approach of this study was descriptive qualitative and quantitative. Samples were 30 students of grade VI MIN Ulee Kareng.



**Figure 1.** Flowchart of ADDIE

The instrumentations were assessed by experts. The data collection techniques used in this study were test and questionnaires. The data were analyzed by means of descriptive

## Development

statistical analysis. Descriptive analysis is used to obtained eligibility media by giving a score on the questionnaire eligibility. Analysis using the equation according (Arikunto, (2013).

$$\text{Values} = \frac{\text{Total score gains}}{\text{Total maximum score}} \times 100 \text{ percent}$$

## Results and Discussion

### The analysis stage

Analysis of the needs was done before designing the media. It had been done by doing field studies to identify the instructional information about possible solutions overried the problems. Based on the analysis, therefore it was decided to develop a learning media, such as preparedness board game. Instructional a media was designed to increase the motivation and interests of students in learning by doing playing. Therefore, a concept of fun in learning was produced. As dictated by Melissa, (2014) that the used the media in the form of games in learning was very suitable for children because a lot of things could be taught to children. An atmosphere of fun could be created and it might helped students to understand what they learn (Moursund, 2007). The used a media in learning like as a the form of game could motivated students to learn in improving knowledge in the conditions of learning by doing.

### The designed stage

The first design stage was the instructional of preparedness board game. Sketched a story board as a draft in describing all the functions of media, such as board game, pawn, token, book material, guidebooks game, set about the card and failure card.

### The development stage

The development stage was done by do translation or move the design to the actual displayed performance preparedness board game, as shown in Fig. 2.



**Figure 2.** The board of preparedness game

Preparedness board game comprised 20 plots which was consisted of:

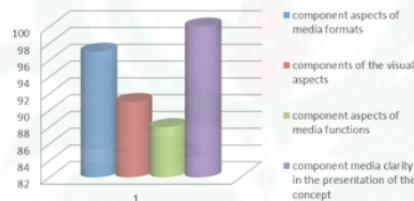
- 1 (one) plot the start as a beginner in the playing
- 5 (five) plots the types of disasters, namely, (i) the tsunami, (ii) volcano, (iii) soil landslides, (iv) flood and (v) the earthquake,
- 10 (ten) plots of disasters in general,
- 3 (three) plots of disaster preparedness, and
- 1 (one) plot finish.

Each plot on the board game was equipped with an image, a matter, and all the words of disaster preparedness to make students interested in playing. In addition, the preparedness board game had several components that have been developed, such as a board games, pawn, token, materials book, guide books, and set about the card and the failure card, as shown in Fig. 3.



**Figure 3.** Preparedness board game components

The developed board game was then validated by the experts. Validation indicators were referred to the indicators designed by Susanta, *et al.*, (2012). The results of the feasibility assessment of media preparedness board game can be seen in Fig. 4.



**Figure 4.** Feasibility Assessment of Media

Based on Fig. 4, the results of a feasibility assessment on every aspects of the media were found to be 97.2; 91.7; 88.9 and 100.0% respectively for media formats, visual aspects, media functions, and clarity of the concept. Meanwhile, the average assessment of the feasibility assessment aspects of the media was found to be 94.4% and it could be categorized to very well. Based on the results obtained, a preparedness board game was very worthy to be used as a learning media. According to Novita, (2013) the instructional media that had been developed with the very well criteria could be used as in learning process.

### **The Implementation stage**

In this step, the preparedness board game was implemented to 30 students of MIN Ulee Kareng. It can be seen in Fig. 5. The application is in the early stages of testing that has resulted in a product after the design to be used at certain times as a learning medium (Susanta, *et al.*, 2014). Application of media that have been designed through a trial to determine the like or do not like a medium to be used as a medium of learning at a particular time. Media trials conducted at Government Elementary School (MIN) Banda Aceh to Ulee Kareng V1 A grade students who serve as class experiment with a number of 30 students.

At the time of the test in advance to explain to the students related to learning which will be implemented in accordance with the condition class learning expected. Researchers set up the equipment required preparedness board games during the learning process. Before starting the first learning activity provided incentives to students in the form of some questions related to the material to be learned. The response was in getting not all students who responded to the question by giving an answer that regard. Then the researchers continued to provide an answer with regard to the question. Thus the researchers went on to give a test to students in the form of a pretest to determine

students' prior knowledge to understand the material. Furthermore, the process of learning by using media preparedness board games. By first explaining the material to be studied as motivate students to understand the sense of learning materials using the media.



**Figure 5.** The Implementation Stage

The learning process continued by giving the task group. Students were divided on 6 (six) groups with each group consisted of 5 (five) students only one group comprising six members because the number of students 30. Each group received one media device preparedness board game that had been prepared. Then explains all the functions of media equipment and procedures for preparedness board games idle before used. Once students understood and knew how to play board alert system, researchers asked students to start using the media that had been distributed to each group. Then, researcher observed any activity undertaken students in the group. Each group was observed which one observer consisting of researchers, two observers who participated in the study and two observers' teachers in schools MIN Ulee Kareng Banda Aceh. In observation of the student looked really participate and be active in using the media board game idle all students work together peer group. Before ending the implementation of learning to use the media preparedness board game, each student written the acquisition value of each student in the group submitted to the researchers to determine the student's knowledge.

#### **The evaluation stage**

The final stage was evaluation stage. In this stage, the function of the media was evaluated. Evaluation served as a perfect media that was designed based on input from experts to make revisions. After the learning process using the board game was finished, the researchers gave some of the questions that must be answered by the students to know the students' knowledge in understanding the nature of material events after using the preparedness board games with the concept of learning while playing. Then proceed with giving post test to determine the student's knowledge.

Student learning outcomes in experimental class average pre test and post test were found to be 60 and 80, respectively. In the control class average value was of 56 for pre test and post test was of 72. The mean value of learning outcomes in the experimental class of 70, while the control group 64 based on the value minimum completeness criteria (KKM) of 70. So the learning outcomes of students in the control class 21 students were achieved KKM only 9 students did not reach KKM. In the experimental class of 29 students reached a value of KKM, however only two students did not reach the value of KKM.

Chen and Liu, (2013) suggested an increase in student learning outcomes after using media such as games (board games) which was used as a learning facility could assisted students in understanding the material and created a more active approach. Learning to use the media play a game of (educational) could assisted students in understanding the material (Tendean, 2013). Learning using learning media in the form of a boardgame was able to deliver positive results in achieving the learning outcomes (Asniar, 2009). Thus, it could be concluded that an increase in student learning outcomes after using the media.

Instructional media used as a support in the transmitter of the material to the students. The use of media in learning the form of the game with the condition fun, easy, and can meaningfully assist students in improving student learning outcomes in understanding the material.

### Conclusions

The development of preparedness boardgame as a media had been developed with the ADDIE model. ADDIE model selection was based on simple and systematic in the design with multiple stages, namely (i) analysis, (ii) design, (iii) development, (iv) implementation and (v) evaluation. The feasibility preparedness board game was found to be 94.4%. It means that the feasibility was very well in aspects of formats, visual, functions and aspects of media clarity in the presentation of the concept. Media developed a decent was worthy in learning to increases the activity students in learning.

### Acknowledgements

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