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Braille Monopoly Game as a Tool of Disaster Mitigation Education for Visual Disabilities

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Abstract. Disaster mitigation is a series of efforts to reduce disaster risk, through physical development and capacity building to face disaster threats. This effort is important, especially in Aceh Province, which is a disaster-prone area. People with visual disabilities are vulnerable to disaster threat. Special facilities are needed to educate them about disaster mitigation. This program designs "Monopoli Bencana (Monca)" as a disaster mitigation learning media for people with visual disabilities. Monca aims to increase their awareness, knowledge and understanding related to disaster mitigation. Program implementation uses the one shoot pretest-posttest method. This program covers three important things, starting with socialization, direct discussion, and the practice of playing Monca. The target of this program is the people with visual disabilities in the UPTD Rumoh Seujahtera Beujroh Meukarya (RSBM). This program has three final results, namely: 1) Monca as an educational game equipped with braille; 2) Disaster mitigation pocket book printed in braille; 3) There is an increase in knowledge and awareness of the importance of disaster mitigation for at least 11 children who participated in the program.

1. Introduction

Aceh Province is one of the disaster prone areas. Stretching an area of 5,677,081 ha, Aceh Province is crossed by at least two active fault lines, from around 1900 km of the Sumatra Fault system [1]. As a result, Aceh is vulnerable to repeated earthquakes, landslides, and tsunamis [2]. Structuring buildings in Aceh that have not implemented the disaster preparedness principle also increases the likelihood of casualties if at any time a disaster occurs. Such conditions make it difficult for Aceh to be free from disaster threats.



Disaster mitigation education becomes an irreplaceable need [3]. Disaster mitigation is not only operational standards and procedures for handling disasters, but also an overall effort to minimize losses and casualties caused by disasters. Disaster mitigation education should be obtained by all groups, not only adults, but also children. In addition, people living in disaster-prone areas, as well as people with disabilities should be the main target of disaster mitigation education due to their vulnerability.

One community group that is difficult to get access to disaster mitigation education is people with visual disabilities [4]. They are a group of people with an inability to see partially or fully, so they cannot receive education normally. Need special approaches and facilities to educate them about disaster mitigation [5]. This program aims to introduce disaster mitigation to people with disabilities and increase public awareness about the importance of disaster mitigation education for all people. The introduction of mitigation is pursued through socialization and game practice. The game is chosen because it can present material in interesting and fun way.

2. Methodology

Based on its final results, this program uses research and technological development methods. However, the main purpose of this program emphasizes the educational aspect. So, one shoot pre-test and post-test is selected as the implementation of the media. Therefore, this program involves two important stages, namely the design of the media and the implementation of media through socialization.

2.1. Design of the Media

The design of the media refers to the identification of needs and solutions. Identification is explored during the survey directly to locations before of the implementation of media. The identification steps are shown in Figure 1. After the needs and solutions are obtained, the design of the playing media is carried out according to the steps shown in Figure 2.

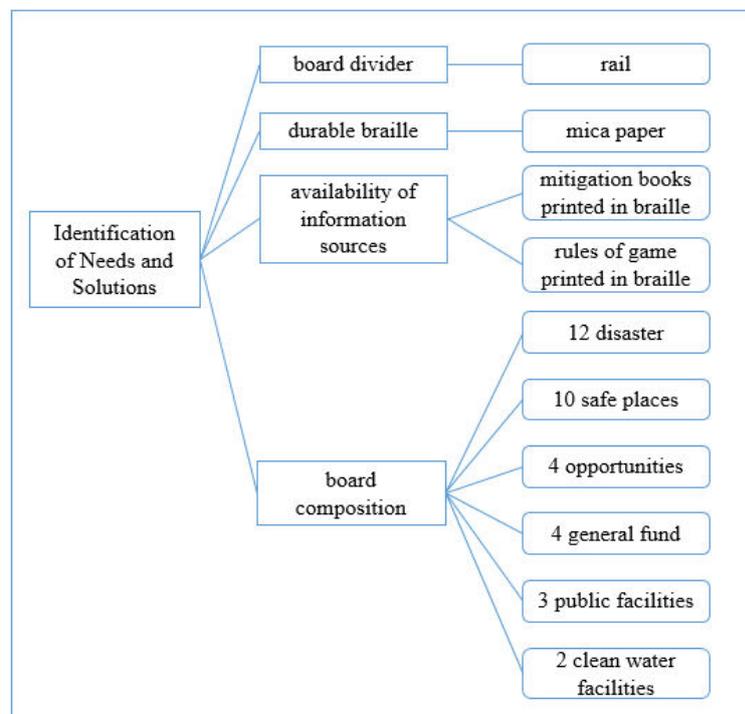


Figure 1. Identification of needs and solution.

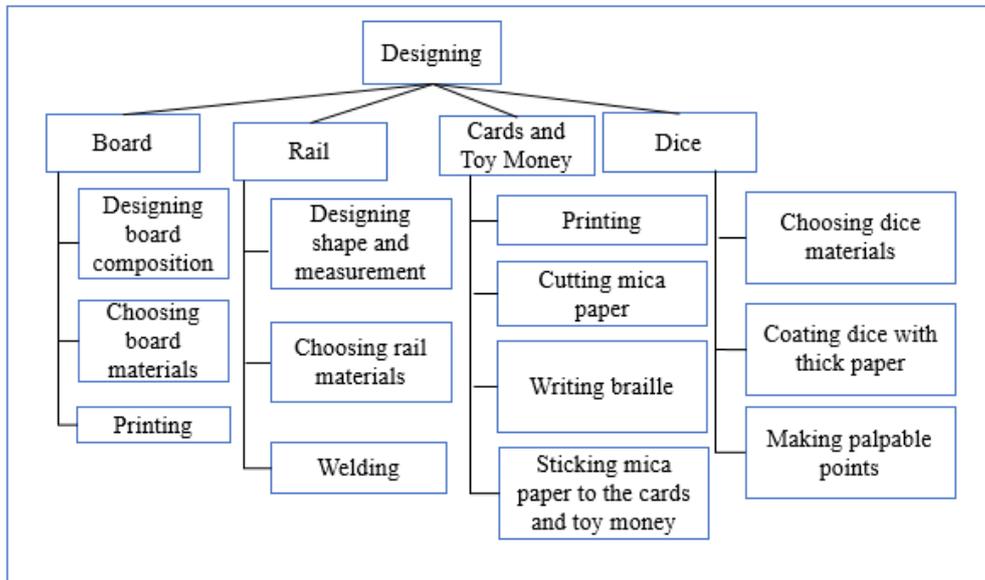


Figure 2. Designing entire media.

The media consists of 36 boxes containing 12 disasters along with anticipation and countermeasures, general fund boxes and opportunities that equipped with braille. Each box is given instructions about disasters which are found, orders to buy certain items, or evacuate to the certain location. It also introduces important items, such as clean water, logistics, first aid kits, masks, and fire extinguisher tanks. The philosophy of sharing is also introduced through a shared spending system and humanitarian donations. This media is designed to present practical, effective and enjoyable disaster mitigation learning for people with visual disabilities. The prototype of media is presented in Figure 3.



Figure 3. Monca's prototype.

The game can be played by four people in every round. Each player may have an assistant. The game lasts for approximately 30 minutes, or according to the agreement. After the time is up, the player is declared defeated if he is in a disaster box or hospital. At start time, each player is provided with Rp.790 worth of money with details 8 sheets of Rp.5, 8 sheets of Rp.10, 6 sheets of Rp.20, 6 sheets of Rp.25, 4 sheets of Rp.50, and 2 sheets of Rp. 100. Each player is also provided with 2 points of clean water, and 1 point of logistics. If the player stops in the disaster box, the player must find a safe point and put his pawn as soon as possible, or the player must enter the hospital and pass one turn. On the next turn, the player returns to the original disaster box and continues the game from that point.

2.2. Socialization

The socialization was held at the UPTD Rumoh Seujahtera Beujroh Meukarya (RSBM), Ladong, Mesjid Raya, Aceh Besar. The targets of this program are children (under the age of 18) with visual disabilities who live there. The socialization lasted for seven sessions, with 90 until 120 minutes per session.

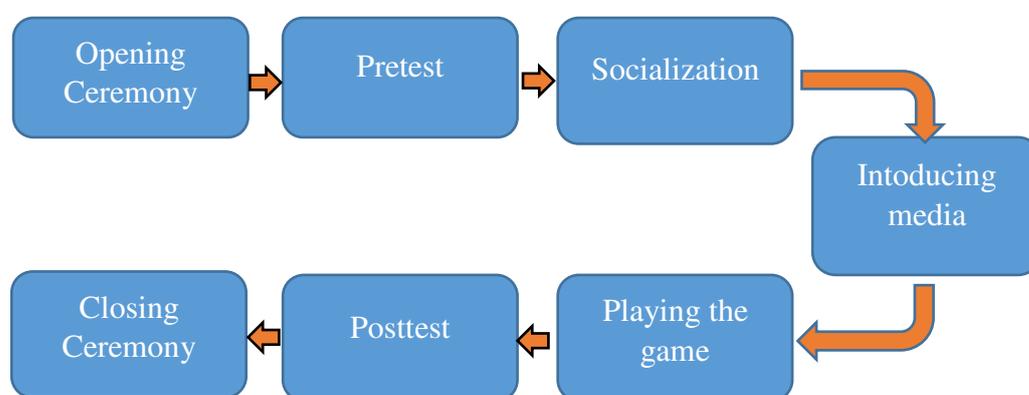


Figure 4. Rundown of implementation media trough msocialization.

As shown in Figure 4. The socialization activity began with an official opening by the head of the UPTD RSBM, followed by a pre-test to measure participants' initial knowledge about disaster mitigation. After that, socialization of disaster mitigation was carried out, as a basic understanding that is important for them. Strengthening participants' understanding is done through game sessions. So that participants will be aware of being a disaster resilient community. After socialization and playing the game, post test was conducted to measure participants' final knowledge of disaster mitigation. At the end of the program, all participants received an appreciation for their cooperation during the activity.

3. Result

3.1. Monca as Disaster Mitigation Learning Media

The details of the media that have been produced consist of a Monca ± 70 cm \times 70 cm game board equipped with ± 73 cm \times 73 cm playing rails. Media are equipped with six-edged dice, sliding pawns, toy money, cards, and game guides that are printed in braille. The information that printed on the board, card, and toy money is coated with mica paper that has been written in braille. The Monca game package can be used as a disaster mitigation education media for visual disability. The Monca circuit that has been assembled can be seen in Figure 5.



Figure 5. Entire media

3.2. *Disaster Mitigation Books and Monca Play Rules in Braille*

Disaster mitigation books printed in braille are summaries of the "Buku Saku Tanggap, Tangkas, Tangguh" National Disaster Management Agency (BNBP) 2012. The book contains a brief description of disasters, including causes, signs, and mitigation or risk reduction efforts. The disasters described included traffic accidents, floods, tsunamis, tidal waves, fires, earthquakes, landslides and volcanic eruptions. The availability of these reading materials can trigger participants' enthusiasm to improve their skills in mastering braille. It is also make them easier to obtain any information's about disaster mitigation. Books and rules of the game are presented in Figure 6.

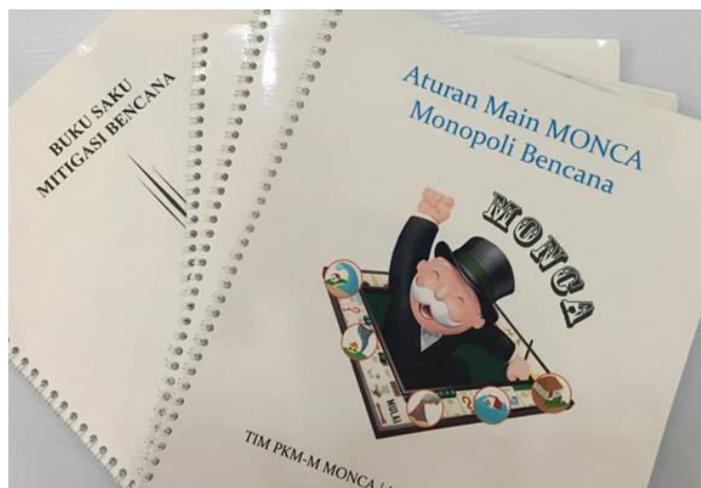


Figure 6. Mitigation books and rules of game printed in braille

3.3. Knowledge Improvement by The Participants

Knowledge improvement of the participants was measured by conducting pre-test and post-test through interviews. The results of the pre-test showed that seven out of eleven children who participated in the program did not have sufficient knowledge about disaster mitigation. After that, socialization about disaster mitigation and utilization of Monca were carried out to facilitate them to remember the material given. Then, evaluation of mitigation knowledge is carried out through post-test. At the time of the post-test, ten of the eleven children could reiterate the things taught during socialization and games. There was an increase in knowledge of disaster mitigation for about 54% of the participants. It shows that the implementation of this program can increase participants' knowledge about disaster mitigation. The pre-test and post-test results conducted at the UPTD RSBM can be seen in Figure 7.

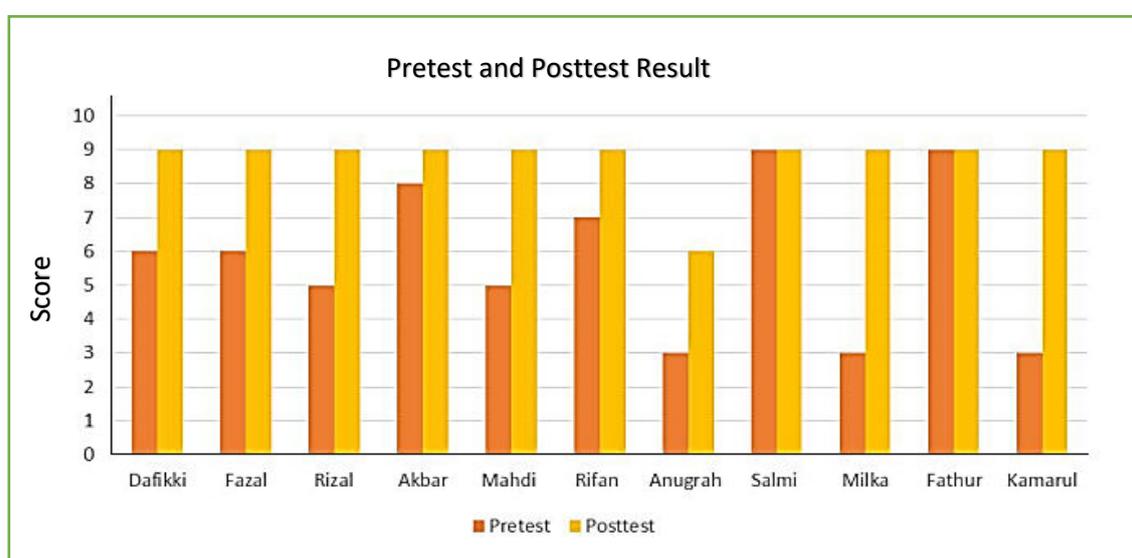


Figure 7. Result of pretest and posttest

4. Conclusions

After the entire series of activities carried out, the following conclusions are obtained:

- The Monca game tool is suitable to be used as a medium to socialize disaster mitigation.
- The disaster mitigation book that printed in braille can be used again by visual disabilities after the socialization session was held. The game and the books trigger the enthusiasm of participants to improve their skills in mastering braille.
- There is an increase in the knowledge of participants of the activity. The matters conveyed during the socialization session and the game can be delivered again by the participants at the post-test.

5. References

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