

Disaster Mitigation Game Model Used For Circuit Game of Liquefaction as a Children's Learning Resource in West Palu District

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ABSTRACT

This study aims to determine and describe the circuit play model of the liquefaction disaster mitigation as a source of child learning. Playing this circuit is able to be one of the learning resources that could recognize and understand children's environment so that children have a readiness and to be responsive to face the natural disasters in the future. The research used qualitative descriptive. The data obtained by conducting observations, interviews and study documentation which involved 93 children. Then, data were analyzed through several steps such as data reduction, data display and data conclusions/verifications. The finding showed that the learning resources came from environment which could be used to introduce the learning material through enjoyable learning experiences. It assisted the children to understand of what they learned through inside and outside activities. During the learning process, teachers could apply disaster mitigation game model using circuit game. Circuit game required outdoor space which had facilities to do different five kinds activities. It aimed to provide chances for children to explore resources from surroundings.

Keywords: Model circuit play, disaster mitigation, liquefaction, learning resources

1. INTRODUCTION

The incidence of earthquake, tsunami, and liquefaction happened on 28 September 2018 by 06.00 p.m. in Palu, Sigi, Donggala, and surrounding areas. It left a traumatic experience for everyone who has lived at location that directly affected by those natural disasters. The incident was marked by 7.4- magnitude earthquake, causing a tsunami around the Talise coastline to Donggala. Meanwhile, the citizens in Palu did not think there would be another natural disaster that occurred. In fact, another disaster occurred in Balaroa and Petebo as known as liquefaction which the land went up and down and buried houses, gardens, and fields.

This incident gave a serious impact for children who experienced it in regard to their development. It means that they had a deep traumatic and anxiety, for instance, to play or learn with a safe and comfortable condition. After the disaster, the teacher should sooth them if there was a thunder since the sounds made them scared and hysterical. Thus, the teachers need to find other activities to redirect them from fear, anxiety, or sadness.

Adaptation to a new environment makes children feel uncomfortable and insecure, it is needed to reduce trauma and anxiety of loud sounds or thundering. Yet, to create a great atmosphere for children to be more comfortable in learning is a challenge for the teachers. The school environment and infrastructure around the school can be

one of the learning environment for children to become more familiar with it in the new location, for example, the school distance in Balaroa with the liquidity location is about three kilometers.

One way of reducing the children's trauma and anxiety is playing activities. According to Karmila (2016) mentioned that play activities are a form of interaction performed by peers among children. It is a reflection of physical, intellectual, emotional, and social abilities. As well as it is also a good medium to learn because by playing children are able to enrich the vocabulary, learn to adapt with the environment, and know the time, distance and sound. Meanwhile, Maxim in Gustiana (2014) emphasizes the function of playing as a child's ability development function which includes:

- 1) Physical development: Rough motor development such as lifting, stacking, pushing, pulling and climbing. They have contributed to crude motor growth and coordination.
- 2) Intellectual development: Paying attention to the relationship between size and weight, counting, pairing, sorting, connecting with friends and understanding symbols is an important tangible evidence of the learning experience.
- 3) Social development: Sharing responsibilities, coordinating with groups, cooperation, making friendship is an effort to build confidence and individual responsibility.

- 4) Emotional development: Fun activities, encouraging interest, overcoming frustration and expressing feelings openly (frustration and excitement) accompany the use and mastery of the beam play.

Playing is an activity to provide a challenge for children to be more active by following the pictures and numbers sequentially. The circuit game of liquefaction in disaster mitigation game model created by the researcher. It is a game on mat that combines several tasks and posts that must be passed by the child from post one to nine with various task of each post. There are three main reasons for doing this: 1) To reduce children's anxiety during play, 2) to challenge the child's ability, 3) To explore environment well, safely, and relax. Those activities given to improve their focus.

According to explanation above, this paper tried to unpack the implementation of disaster mitigation game model using circuit games as the children's learning material West Palu district.

2. LITERATURE REVIEW

2.1. The Circuit Game of the Liquefaction Disaster Mitigation Game Model

Circuit is a spot used by athletes or sportsmen for exercising their physical fitness. Harsono (1988) said Thecircuit training can improve the overall fitness of the body simultaneously, i.e. power components, durability, speed, flexibility, and other components. Meanwhile, Kumar (2013) mentioned that circuit training can be defined as the training programm in which an athlete goes from one exercise station to another in a sequence in the shortest time.

In kindergartens, the circuit training could be modified to fulfill the children's development such as motoric aspects, included to create learning activities that are interesting, fun, challenging, and diverse. This activity is provided to enhance physical motor, cognitive, language, social emotions, personality, and others development. The circuit play is designed by considering the time and activities which are suitable for children.

Circuit game is designed for children with several posts and various pictures that can be followed based on the instruction andpassed one by one to improve the physical ability of children, including: strength, agility, flexibility, accuracy, and balance. The circuit games combined with several tools or media in order to improve their balance, hand and eye coordination, and basic strength of the body. This could be done repeatedly from one post to another, thus their body and mental endurance, such as courage and confidence improved. Moreover, this is helpful for them to be more alert and responsive to natural disasters in the future.

Comyns (2014) explains circuit training is a training program developed by Morgan and Anderson in the University of Leeds in the UK. This was originally

compiled for physical education programs at school. Circuit training is developed to increase strength, power, muscular cardiovascular endurance, speed, agility, and flexibility which is a combination of cardio and strengthening exercises. Morgan and Adamson (Comyns, 2014) suggested the development of the circuit training: "It is a versatile training method as it can be adapted for many different situations, sections of the population and fitness requirements, and can be used at any time of the year. While the exercises are normally laid out in a circular pattern, the pattern can be varied for motivational purposes to that of a star, square, semi-circle, V-shape, line or zigzag".

2.2. Liquefaction Disaster Mitigation

The perspectives on mitigation are expressed by Wardyaningrum (2014) as every on-going action is undertaken to reduce or eliminate long-term risks to the human property and soul. Related to mitigation, it can be said that mitigation is a mechanism for people to avoid the impact of potential disasters. It is also supported by Sunarto (2012) who mentioned that based on catastrophic event data in some areas, disasters occurred in schools' hours, so that the importance of disaster knowledge and risk reduction is given early to provide understandings and directions when there will be threat surroundings. Furthermore, Yunanto (2004) argues that learning resources are materials that include learning media, props, games tools used through writing, painting, or drawing activities to provide information and various skills for children and parents during learning process.

2.3. Learning Resource

Sudono (2000, p. 5) formulates learning resources are materials including game tools to provide information and skills to children and teachers, such as reference books, storybooks, posters, magazines, games in the classroom, games outside the classroom, photographs, images, speakers, natural objects, or cultural outcomes.

Meanwhile, Januszewski and Molendsa clarify the term learning source is understood as a device, material (material), equipment, arrangement, and people where learners can interact with it that aims to facilitate learning and improving performance (Azhar, 2007).

Zaman, Hernawan, and Eliyawati (2008) claim that there are values or benefits that can be gained from the use of the environment as a learning resource, as follows:

- 1) The environment provides a variety of things children can learn. The number of learning resources available in the environment is not limited, although it is generally not designed intentionally for the sake of learning, but it can be useful to further optimize the achievement of learning objectives of early childhood (by utilization).

- 2) The use of the environment allows a more meaningful learning process (the meaningful learning) because the child is faced with the actual circumstances and situations. This will fulfill the principle of familiarly learning as one of the principles of early childhood learning.
- 3) By understanding and interning aspects of life in the child's environment, it can be possible to process the personality formation of the child in a better direction, such as a child's love of the environment, participate in maintaining the environment, and not damaging the environment (vandalism).
- 4) Learning activities are likely to be more attractive to children because the environment provides a very diverse learning resource and many choices. Thus, children are spared from the boring learning process.
- 5) Environmental utilization grows learning activities. The use of various learning methods, such as observing, asking, proving something, doing something will be able to grow children's learning activities.

2.4. Previous Research

Based on some of these explanations, it is understandable that one of the approaches selected in this research was the circuit games of the liquifaction disaster mitigation game model that can be explored indoor and outdoor and can be a source of learning environment for children to practise and prepare various abilities and potential of children, especially the physical ability. The results of the research that has been done by Ningtyas and Risina (2018) showed that circuit mitigation game used to help children dealing with a disaster response such as earthquakes. This game can be given to the ones in Indonesia and can be applied in all regions that have the same geographic state, which aims to increase the self awarenees of children against disasters. This model was significant, effective and feasible which validated by experts.

The circuit game of of disaster mitigation game model is developed model conducted by Zuama, Suwika, and

Fitriana (2019) titled "Development of Model Circuit Play disaster mitigation of liquifaction for increased resiliency of Kindergarten children in Petobo District South Palu City Palu". The finding showed that children were enjoyable to join the games which proved by Guttman scale regarding children's responses. It was proved that they repeated the games many times.

According to Zuama, Suwika, and Fitriana (2019) stated that the circuit game was worthy so that re-use of the model was tested in Balaroa to prove it.

3. METHODS

The research used qualitative descriptive which consisted of pre-activity, main activity, and post-activity which involved 41children from Al Iqra Kindergarten and 52 children from Qurrota A'yun Kindergarten. The data obtained through observation, study documentation and interview. The observation aimed to observe the children's activities with two models, were Model 1 (M1) that used mattress that sized 4 x 4 meters, weighting 3.5 kg, made from the Flexi China material whereas Model 2 (M2) used mattress of circuit game of disaster mitigation of liquifaction that has been tested in the area Petobo.

4. RESEARCH RESULTS AND IMPLICATIONS

The results of research conducted in Al Iqra Kindergarten and Qurrota A'yun Kindergarten Balaroa West Palu Sub-district, by implementing circuit game as a source of child's learning. Both kindergartens showed a different way to implement the games. However, the children could follow the instructions well and it made them very interested to play and become curios to learn. It can be seen that the children put attention of each pictures with various tasks of each post. The overview of learning resources from both kindergartens can be seen below.

Table 1 Overview of environmental learning resources

LEARNING RESOURCES	AL- IQRA KINDERGARTEN	QURROTA A'YUN KINDERGARTEN
Outdoor environment learning resources that children can use when they arrive in Kindergarten, at rest, and when returning school.	 <p>School yard al- iqra kindergarten</p>	 <p>School yard qurrota a'yun kindergarten</p>

<p>One of the activities in the play mat prepared by researchers that can be played by children</p>	 <p style="text-align: center;">Play Physical Motor Mattress-M1</p>	
<p>Results of children's observations in the first week</p>	<p>There are 15 children of 41 children</p>	<p>There are 27 children of 52 children</p>
<p>Results of children's in the third week</p>	<p>There are 6 children of 41 children</p>	<p>There are 16 children of 52 children</p>
<p>One of the activities in the circuit games that has been designed by researchers</p>	 <p style="text-align: center;">Circuit play disaster mitigation liquefaction - M2</p>	
<p>Results of children's observations the first week</p>	<p>There are 8 children of 41 children</p>	<p>There are 12 children of 52 children</p>
<p>Results of children's in the third week</p>	<p>There are 4 children of 41 children</p>	<p>There are 6 children of 52 children</p>

Table 1 shows that the children could able to explore the learning resources from surroundings. During the observations, children from Al Iqra Kindergarten were enjoyable to play at the school yard. Furthermore, it happened also in Qurrota A'yun Kindergarten. Sometimes, boys were very impatient for playing.

Before implementing the game, children were rigid and could not pay attention to the instructions and pictures on mat provided. During the game implemented, they slightly comprehended the instructions. In addition, it can be concluded that the game was able to accommodate the physical needs of children.

Table 2 Stages of the circuit play model liquefaction disaster mitigation- model 2 (M2)

STAGES	DESCRIPTION	VIEW IMAGES
Start	Stand up right position and the child is asked to see the picture in front	 <p>Mattress of circuit game of liquefaction disaster mitigation game model - Model 2 (M2)</p>
Post 1	Stepping in numbers from number 1 to number 9, continue circling in circles	
Post 2	Crouching with hands and feet to mimic style the frog	
Post 3	Jumping	
Post 4	Rotating as per line drawing long line	

Post 5	Moving on through wooden bridge pictures	 <p>Circuit game: children are playing in the post 7</p>
Post 6	Walking according to the right foot and left foot	
Post 7	Walking according to the wooden pieces of the Alphabet letter from A to Z	
Post 8	Swimming like a fish	
Post 9	Doing a rocket- style: take off and run	
Finish	Gliding like a rocket towards this part. Game Over	

As table 2, the child was asked to follow the picture presented in the circuit game model, starting from post 1 to post 9. Each post has different tasks and challenges to play that requires concentration and focus when playing. There were two models prepared by the researcher, namely 1) The game mat model that focused on the physical ability so that each image was connected by another image that must be followed according to the instruction (in Figure 3 above), called Model 1 (M1). Meanwhile, the second model (M2) is 2) was circuit game that was made with additional posts that allowed the child to rest or pause for a moment before proceeding to the next post. It was good for the children to consider the child's speed, strength, endurance, and balance while playing.

5. DISCUSSION

According to the observation and description above, it can be explained that the circuit game could provide a pleasant experience to learn while playing. Children enjoyed a game process so that the children acquired the knowledge and developed the physical motor which were useful to face the natural disaster. In addition, this game encouraged children to have precious moments during learning since they played together with peers and had a great time. This was in line with Warwanto (2009) believed that learning resources can produce learning experiences for students, both inside or outside classroom. In addition, Zaman, Hernawan, and Eliyawati (2008) stated that learning resources can be distinguished into 2 types, namely:

- 1) **Designed learning resources:** Designed learning resources are all learning resources intentionally designed or designed for achieving specific learning objectives.
- 2) **Learning resources are utilized or used:** Learning resources utilized or used are learning resources that are not designed for the purpose of a learning activity, but can be used for learning purposes. This type of learning resources can be utilized to provide ease to someone in learning.

Guslinda and Kurnia (2018) described the functions and benefits of learning resources in early childhood learning, of course, based on its relationship with the usefulness of learning resources to optimize children learning. The child will learn optimally what if the child is attracted to what he learns. One way to optimize is providing a learning resource that attracts children's learning interests. This can be seen from the findings when the child played a circuit game (M2), they were more interesting than M1. Furthermore, Jalinus and Ambiyar (2016) stated some functions of learning resources, include: 1) Improve learning productivity, 2) provide more individualized learning, 3) provide a more scientific basis for learning, 4) allow for instantaneous learning, and 5) Enable broader learning, by presenting information that is capable of penetrating geographic boundaries.

Learning resources are beneficial to facilitate learning activities to be more effective and efficient. Siregar, Hara, and Jamludin (2010) explained it in detail, including: “1) Providing a more concrete and direct learning experience; 2) Presenting something that is unlikely to be held, visited, or viewed directly; 3) Adding and expanding the science horizons that are in the classroom; 4) Providing accurate and up-to-date information; 5) Helping solve the problem of education in the scope of macro and micro; 6) Providing positive motivation; and 7) Stimulating to think critically, stimulate to behave more positively and develop further”.

According to the findings, children enjoyed the process of playing circuits, even they asked and took to play again, because of the attractiveness of the game. The design of the game provided challenges in each post carried out sequentially and children can pause the game in order to prepare well before continuing the next post until the last post of the circuit. Circuit training is a training model that involves a series of different exercises that are carried out sequentially and continuously for one round or circuit. It means choosing specific exercises and moving quickly from station to station to maximize effectiveness and time efficiency.

Based on the results of these studies and discussions, it can be concluded that this liquefaction disaster mitigation game model using circuit game can be used as a source of

learning for early childhood, which has the potential to develop various aspects of children's abilities and developmental levels. In addition, it stimulates curiosity and explores environment as a fun learning experience.

6. CONCLUSIONS AND SUGGESTIONS

Based on these results, it can be concluded that learning resources are all things that have the potential to be learned and are in the children's environment that can be used, utilized, and explored to introduce a challenging and to provide enjoyable learning experiences. In addition, helping children to understanding of things in the teaching and learning process, both inside and outside the classroom. Learning resources that can be applied in kindergarten, for instance, liquefaction disaster mitigation game model using circuit game. It can be seen that the children who involved into a circuit game had more opportunities to explore and develop the physical development. Thus, they were more focused, agile and flexible when playing, as well as more enthusiasm.

Based on the conclusion above, several things can be suggested:

- 1) Children, should practice more often and move a lot in exploring the learning resources around them in order to develop and to strengthen their abilities and potentials, especially when playing the circuit game for liquefaction disaster mitigation game model.
- 2) Teachers, as role models who are actively involved, are passionate in demonstrating and showing the instructions when disaster mitigation circuit game model played.
- 3) The Head of Kindergarten or the Foundation, can make policies that are appropriate to the task and child's development. In addition, facilitating the learning process through circuit game is needed since it is an interesting and fun learning resource.

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