



THE DISASTER PREPAREDNESS EDUCATION THROUGH TRIANGLE ALERT GAME TO INCREASE CHILDREN'S INDEPENDENCE IN TUNAS BANGSA KINDERGARTEN IN DEALING WITH DISASTERS IN COASTAL AREA

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Abstract

Disasters cannot be avoided but can be muted if the community has sufficient information about disaster prevention. The lack of information had about what should be done when a disaster occurs, especially for children, makes them vulnerable to disasters. Therefore, education about disaster preparedness is very necessary for early childhood. The purpose of this study is to determine whether there is an influence on the implementation of disaster education through a triangle alert game on children's independence when facing disasters in the coastal area of Bonang District, Demak Regency. Through the triangle alert game, it can be seen whether there are differences in the level of independence of children when facing a disaster.

The research method in this research is an experiment. The study uses the one-group pretest-posttest design method. An experiment is carried out in one group without a comparison group. The research instrument with the parameters of independence uses a Likert scale with answers "Strongly Agree", "Agree", "Disagree", and "Disagree". The population in this study is the children in Tunas Bangsa Kindergarten of Morodemak Village Bonang District Demak Regency. The sample in this study is 33 children of Kindergarten B in Tunas Bangsa Kindergarten. The data analysis techniques in this study are descriptive analysis, normality test, and hypothesis testing with Paired Sample t-Test. The hypothesis test states that H_0 is rejected and H_a is accepted. The results of the t-test calculation between the pretest and posttest of the experimental group are $t_{count} = -12,419$ with value of sig (2-tailed) < 0.05 . The average value at the pretest stage is 68.00 and at the posttest stage is 93.55. So, there is a significant difference between children's independence in facing disasters before and after being given disaster preparedness education.

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INTRODUCTION

Indonesia is the largest archipelago country in the world, which has a wealth of abundant coastal natural resources and also has a high potential for natural disasters (Dahuri, 1996) in Ruswandi, et al (2008). The Unitary State of the Republic of Indonesia (NKRI) is an area that has unique and special features in the world. With more than 17.000 islands and a coastline of more than 80.000 km, it is the largest and longest coastline in the world (Suhardjo, 2011).

Coastal issues that occur in Indonesia become a serious problem due to the disaster. Disasters that occur in coastal areas are caused by threats that occur from land and processes that occur from the ocean such as floods, tsunamis, earthquakes, and others (Marfai, 2014). Disasters that occur bring a consequence and affect human life and its environment. Vulnerability to disasters is caused by a lack of knowledge of disasters. Losses faced during a disaster depending on the resilience capacity of a community. The Asian region is at the top of the list due to natural disasters. The report from ESCAP also detailed the list of countries in the Asia Pacific region experiencing natural disasters during the 1980-2009. Indonesia ranked second on the list of the highest number of deaths due to natural disasters in the Asia-Pacific. In the past 20 years, various natural disasters in this country have also caused economic losses of at least US \$ 22.5 billion. This data is contained in The 2010 Asia Pacific Disaster Report compiled by The Economic and Social Commission for Asia and the Pacific (ESCAP) and the UN International Strategy for Disaster Reduction (UNISDR). This is the first time the UN has prepared a special report on natural disasters in the Asia-Pacific region which is published on October 26, 2010. Indonesia is also one of the countries that are vulnerable to a variety of natural disasters, especially flooding. Floods are common in Indonesia, especially during the rainy season. This has a very bad impact on human life, the economy and the environment (Ulum, 2013).

One of the main factors causing the emergence of many victims due to disasters such as earthquakes is due to the lack of public

knowledge about disasters and their preparedness in anticipating these disasters. According to BNPB (2012) in Febriana, et al (2015) preparedness is a series of activities carried out to anticipate disasters through organizing as well as through effective and efficient steps. Therefore, preparing knowledge about disaster early on for people who are vulnerable to disasters and their preparedness is very important to avoid or minimize the risk of becoming a victim. Disaster preparedness training needs to be developed starting at the level of basic education to build a culture of safety and resilience especially for children and young people. Learning from experience on the many natural disasters and various hazards that occur in Indonesia, the training is very much needed which includes the right way to save them when disasters occur and also how to avoid accidents that should not need to occur in daily life (Daud et al, 2014).

As a country with various types of disasters, which of course often cause casualties, children are one of the most vulnerable groups affected by natural disasters. Children are vulnerable because they are still physically and mentally in growth and still dependent on adults. In early life, children learn from their closest people; they are parents (family environment) and educators (school environment) as the child's basic education to absorb knowledge. Therefore, it is very important to be involved in the process of child development (Hasibuan, 2013). Experiencing a very traumatic event can certainly cause psychological disorders for children and even adults who are affected by the disaster. The trauma experience that the child experiences, if not dealt with immediately, will have a negative impact on the child's mental and social development into adulthood. This situation can threaten the mental, moral and social development of children, so this country should begin disaster education in schools. Children are still weak and still very need guidance from those around them. The role of people around children is very important in shaping children's independence by creating positive involvement and developing positive behavior. Early childhood must be accustomed to using their own

abilities so that children can be independent and confident (Hasanah, 2015). Early childhood is the best opportunity to develop children's potential and independence. Independence is one of the most important aspects that every individual must have because it serves to help achieve his life goals. The independent character is shown by the ability to take initiative and overcome problems, full of perseverance, get satisfaction from their business, and want to do the assistance of others (Maulina, 2014). Independence must be owned because it is one of the tasks of development, but independence will not arise by itself without good guidance and conditioning from childhood. Fostering independence at the beginning of childhood is important for adults who are closest to the child. Children need adults to help assess the limits of shame and doubt so that they become independent. Fostering independence is the responsibility of parents/family, teachers/school and community (Yaswinda, 2013).

Based on the perspective of the integration of science, the disaster curriculum can be integrated into several learning materials in the classroom. By looking at various perspectives, disaster education can be inserted or included in related learning material (Absor, 2011). Disaster risk reduction activities as stated in Law No.24 of 2007 concerning Disaster Management must be included in the development program, including in the education sector. Also affirmed in the law, that education is one of the determining factors in disaster risk reduction activities. It is expected that after that students can manage disasters properly and intact so that disaster mitigation can be carried out properly and have an effect on others outside the school environment (Djali, 2012). In the context of disaster in Indonesia, disaster preparedness education for early childhood is still considered to be minimal. In fact, this need must be a common concern because of the high number of disasters occurring in Indonesia. Disaster education in schools can help children play an important role in saving lives and protecting community members. Providing education about disaster risk in the school curriculum is very helpful in building

awareness of disasters. Disaster preparedness education given must be packaged appealingly so that children are easy to capture disaster management materials provided. Teachers are also expected to be involved so that one day they can include disaster management training in children's learning, especially on environmental or universe themes.

This study uses standby triangle game media with the subject of this study are children aged 5-6 years. Characteristics of children aged 5-6 years suit the application of media play that will be used in research, among others: able to do physical play by the rules, explore with various media and activities, recognize the cause and effect of the environment, solve simple problems, understand the rules in an game, and answer more complex questions.

In this disaster preparedness education, the researcher focuses on Bonang District, Demak Regency, because Bonang District is one of the districts closest to the sea which is a coastal area. Moreover, it is very likely that tsunami and earthquake disasters are directly affected. Based on data from the Regional Disaster Management Agency (BPBD) Demak Regency, there are 4 major disasters that have occurred in the Demak area, they are floods, droughts, fires, and tornados. Flood prone points are in Sayung, Mranggen, Bonang, Kebon Agung, and Mijen Districts. Meanwhile, the drought-prone points are Wedung and Dempet Sub-districts, while hazardous fires occur in Sayung and Karangawen Districts because there are many factories and industries. Then a tornado disaster had occurred in Bonang District, Demak Regency (Imantara, 2018).

The problems above show that disaster preparedness education is an effort to increase children's independence in facing disasters. So, it is very important to conduct research on "Is There an Effect on the Implementation of Disaster Preparedness Education through the Triangle Alert Game on the Independence of Children when Dealing with Disasters?". The purpose of this study is to determine the effect of the implementation of disaster preparedness education on children's independence when

facing a disaster. The implementation of disaster preparedness education is still rarely used for research. Therefore this research is needed to determine the level of understanding of children related to disaster.

METHODS

This study uses a quantitative research approach with the type of experimental research approach. This study uses the One Group Pretest Posttest Design, which is an experiment carried out in a single group without a comparison group (Arikunto, 2010: 212). The dependent variable in this study is the level of independence of early childhood when facing a disaster, while the independent variable in this study is the application of disaster preparedness education. The population in this study is children in Tunas Bangsa Kindergarten, Morodemak Village, Bonang District, Demak Regency. The researcher takes samples of children in kindergarten B class at Tunas Bangsa Kindergarten with a total of 33 children. This research is conducted on May 8, 2019, to May 25, 2019. Data collection techniques in this study used a scale of early childhood independence.

RESULT AND DISCUSSION

This section contains an explanation of the results and discussion of research related to the application of the triangle alert education to improve children's independence when facing disasters in the coastal areas of Bonang District, Demak Regency.

Table 1. Pretest Results Data Table

Class Interval	Total	Percentage	Category
< 43,8%	8	24,24%	Very Low
43,8 % - 62,5 %	18	54,55%	Low
62,5 % - 81,3 %	7	21,21%	High
>81,3 %	0	0,00%	Very High

The table above shows the results of the pretest about the independence of children in

facing disasters in coastal areas and the percentage of the number of children in a range of classes with a certain score. Pretest results show the number of children in the very low category is 8 children with a percentage of 24.24%, 18 children with a percentage of 54.55% in the low category, in the high category is 7 children with a percentage of 21.21%, and in the very high category it is not there with a percentage of 0.00%.

Table 2. Posttest Results Data Table

Class Interval	Total	Percentage	Category
< 43,8%	1	3,03%	Very Low
43,8 % - 62,5 %	8	24,24%	Low
62,5 % - 81,3 %	10	30,30%	High
>81,3 %	14	42,42%	Very High

Based on the table the results of the posttest, the number of children in the very low category is 1 child with a percentage of 3.03%, 8 children with a percentage of 24.24% in the low category, in the high category 10 children with a percentage of 30.30%, and in the category very high 14 children with a percentage of 42.42%.

From the data above, it can be concluded that the results of this study are that there is an increase in children's independence when facing disasters in coastal areas. This is evidenced by the calculation of the Paired Sample t-Test as follows: Table 3. Paired Sample t-Test Results Table

Pair	T	df	Sig (2-tailed)
1	Pretest Posttest	-12,419 32	.000

Based on statistical calculations, the results obtained are t-Test test data through the Paired Sample t-Test in the SPSS 16.0 application program. T-Test results obtain $t_{count} < t_{table}$ ($-12,419 < -2,042$) with significant value (2-tailed) of $0,000 < 0,05$ then H_0 is rejected H_a accepted. This can be said that there are significant differences in the independence of children when facing a disaster after implementing disaster preparedness education.

Disaster preparedness education needs to be developed starting at the level of basic education to build a culture of safety and resilience especially for children and young people. Learning from experience about the many natural disasters and various hazards that occur in Indonesia, the training is very much needed which includes the right way to save them when a disaster occurs and also how to avoid accidents that should not need to occur in everyday life (David et al, 2014).

In Indonesia, disaster preparedness education is categorized as one of the activities of disaster risk reduction (DRR) as mandated by Law No. 24 of 2007 concerning Disaster Management. Under the Act, disaster preparedness education must be integrated into development programs, including in the education sector. That Law also stressed that education is one of the determining factors in disaster risk reduction activities.

In this study, the treatment given is the provision of material about knowledge related to the earthquake and tsunami disaster. The given material included signs and causes, ways of saving themselves, and disaster risk reduction. As a supporter of the material, the researcher uses media in the form of videos, images, and other props. To give children an understanding of the material that has been given, researchers provide a game that is a standby triangle game. The triangle alert game can build children's knowledge related to the disaster that has been learned. Before giving disaster material to children, the researcher has previously conducted disaster simulations to measure the extent to which children understand about disaster. After being given treatment in the form of disaster preparedness education conducted by providing disaster material to children, then the researcher conducts a disaster simulation again to see children's knowledge about disaster after being given the material.

According to Arimbi (1993) in Edyanto (2014) in reducing the risk of disasters in coastal areas, community participation is needed. Community participation is defined as a way of interacting as a process whereby environmental

problems and needs are being analyzed by the responsible body, because the scope of this research is the school, the researcher collaborates with the teacher and head of Tunas Bangsa Kindergarten to be involved in the provision of disaster material, helping conditioning child and help observe the child. Provision of disaster material is done by using various media and games on triangle alert.

Triangle alert game is used as a medium in teaching children education about disasters. The reason for using the triangle alert game is because this game is a creation game in early childhood disaster preparedness education that aims to introduce various actions that can be taken to reduce the risk of disaster and preparedness during a disaster. This game contains questions, commands, and pictures provided will hone the child's ability to think and demonstrate appropriate actions (Adhitya, 2011).

Before being given treatment, the researcher conducts a pretest in advance to determine the level of independence of children when facing a disaster from respondents. The data that is obtained during the pretest, prior to treatment, there are 8 children in the very low category with a percentage of 24.24%, 18 children with a percentage of 54.55% in the low category, in the high category as many as 7 children with a percentage of 21.21% and in the very high category there is no percentage of 0.00%.

After being given a pretest activity, the researcher gives 12 times disaster preparedness education treatment. Then, the researcher gives a posttest activity that is carried out using the same method at the time of the pretest. The obtained data shows the results of 1 child with a percentage of 3.03% in the very low category, 8 children with a percentage of 24.24% in the low category, in the high category as many as 10 children with a percentage of 30.30%, and in the very high category 14 children with a percentage of 42.42%.

A similar study has also been conducted by Cahyani&Windiarti (2017), based on the results of the study obtained pretest results which amounted to 12 children in the low category with a percentage of 42.86%. In the medium category there are 16 children with a percentage of 57.14%,

and in the high category amounted to 0. While in the posttest results showed results in the low category amounted to 0 with a percentage of 0%, in the medium category amounted to 0 with a percentage of 0%, and in the high category there are 28 children with a percentage of 100%. Based on the explanation above, it can be concluded that there is an increase in children's preparedness from before and after the provision of disaster management training.

CONCLUSION

Based on the results of the study "Disaster Preparedness Education through the Triangle Alert Game to Increase Children's Independence at Tunas Bangsa Kindergarten in Dealing with Disasters in the Coastal District of Bonang District Demak Regency", the conclusion is the level of independence of children when facing a disaster after being given disaster preparedness education increases and there are significant differences. It can be said that the implementation of disaster preparedness education is effective in increasing children's independence when facing disasters in coastal areas. This is indicated by the independence of children when facing a disaster before being given disaster preparedness education shows children in the low category with a percentage of 54.55%. The independence of children when facing a disaster after being given disaster preparedness education shows that the children are in the very high category with a percentage of 42.42%. Based on the results of the paired sample t-test calculation, it is obtained ($-12,419 < -2,042$) with significant value (2-tailed) of $0,000 < 0,05$ then H_0 is rejected and H_a accepted. This can be said that there are significant differences in children's independence when facing a disaster after implementing disaster preparedness education.

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