p-ISSN: 2962-276X | e-ISSN: 2962-3499

The Effect of Animated Videos on Flood Disaster Mitigation Knowledge in Children Aged 5-6 Years

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ABSTRACT

This study aims to: (1) examine the effect of animated videos on flood disaster mitigation knowledge in children aged 5-6 years; (2) compare the effectiveness of animated videos versus conventional learning methods in enhancing flood disaster mitigation knowledge and personal safety among this age group. This quasi-experimental study employed a non-equivalent control group design with a sample of 21 children from PKK 94 Kindergarten and 18 children from Adi Siswa Kindergarten in Bantul Regency. Data were collected through observation and documentation and analyzed using Paired Sample t-test and Independent Sample t-test at a 0.05 significance level. The results indicate that (1) there is a significant improvement in flood disaster mitigation knowledge following the use of animated videos, as evidenced by a Paired Sample t-Test ($p = 0.001$); and (2) animated videos were more effective than conventional methods, as indicated by the Independent Sample t-Test ($p = 0.001$). These findings suggest that animated videos are a beneficial tool for teaching flood disaster mitigation to young children.

Keywords: Video Animation, Flood Disaster Mitigation, Early Childhood.

INTRODUCTION

A disaster is an event caused by natural phenomena or human activities, resulting in loss of life, economic losses, and environmental damage (Chaudhary & Piracha, 2021; Jha, 2010). Law Number 24 of 2007 concerning disaster management, flood disasters are a phenomenon of inundation of an area caused by extreme rainfall and dam infrastructure failure to handle water volumes, causing rivers to overflow. A disaster is an event that arises due to natural activities themselves or as a result of human actions that cause casualties, loss of property, and environmental damage. United Nations International Strategy for Disaster Reduction (UNISDR).

Floods are one of the natural disasters that often occur in Indonesia. Flood incidents throughout 2020 have increased again, namely 1,138 incidents. Previously, flood events in Indonesia had decreased since 2017. As of April 6, 2021, there have been 481 flood incidents spread across all provinces. In the last almost decade, the most flood disasters in Indonesia occurred in 2020, namely 1,531 incidents. The number of flood events decreased in 2021 to 1,181 incidents in 2021. Then, the number of flood events decreased again to 585 incidents in 2022. (Indonesia Disaster Geoportal, BNPB).

This condition is caused by the position of the Indonesian territory located on the line of Indonesia's Territory astronomically located at 6o N (North Latitude) - 11o S (South Latitude) and 95o E (East Longitude) - 141o E (East Longitude). This position makes Indonesia almost certain to have a flood disaster every time the rainy season comes. From the data listed in the

p-ISSN: 2962-276X | e-ISSN: 2962-3499

Indonesia Disaster Risk Index 2013 (IRBI 2013) issued by BNPB, there are 80% of Indonesia's regions are at high risk of disasters, including 205 million people exposed to disaster risk, with 170 million people of school age.

Bantul Regency is one of the districts in Yogyakarta Province that experienced flood disasters and is estimated to suffer physical losses and economic losses. The economic loss of Bantul Regency is Rp. 186,031 million, while the physical loss experienced is Rp. 18,820 million. Bantul Regency is one of the districts prone to flooding; the number of flood disasters that occurred in Bantul Regency in 2019 has occurred flood disasters with the distribution of events in 8 sub-districts in the Bantul Regency area, namely, Srandakan, Kretek, Kasihan, Dlingo, Pajangan, Banguntapan, Pleret, and Imogiri (BPBD, 2019). There is a need for disaster mitigation based on some evidence regarding the problem of flood disasters that occurred in Bantul Regency, West Imogiri District.

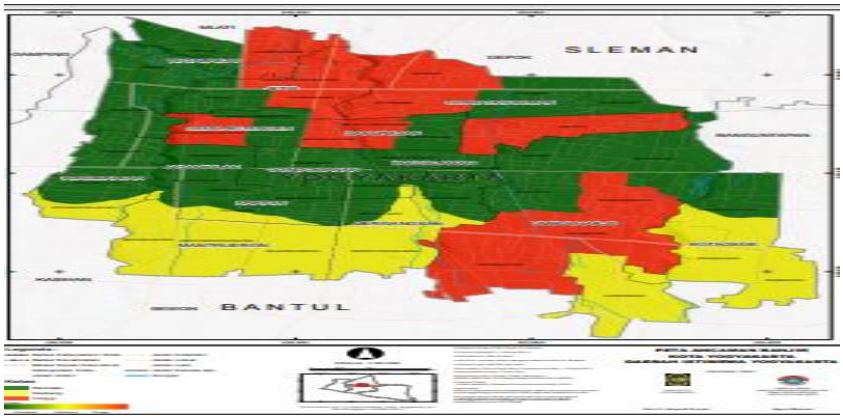

Figure 1. Map of Flood-prone Areas in Bantul Regency
Source: Map of Flood-prone Areas in Bantul Regency

Education must be carried out in an integrated and continuous manner, one of which is that the community needs to be given knowledge about disaster mitigation or disaster management, including early childhood. Providing activities that consist of increasing knowledge about the understanding, impact, causes, and skills of flood disaster mitigation, it will have an impact on awareness. Therefore, children in Bantul Regency need to be provided with knowledge-based reading resources for flood disaster mitigation. Education is one of the strategic and effective efforts to provide knowledge and disaster management to make people aware of disasters (Tilaar et al., 2012; Winarni et al., 2020).

Disaster mitigation is a series of efforts made to reduce disaster risk, and disaster mitigation is very important to be carried out as early as possible because in the event of a disaster, children are included in the disaster-prone community. This group is a member of the community who needs help because of the circumstances they carry. This includes the elderly, people with disabilities, as well as pregnant and lactating women (Rahma &4th, 2019).

Disaster mitigation knowledge, in general, is far from attention; not all individuals are equipped with disaster mitigation knowledge well, so it is difficult for them to handle the disasters around them. Disaster mitigation knowledge is about a series of efforts to reduce

p-ISSN: 2962-276X | e-ISSN: 2962-3499

disaster risk that can endanger one's safety, including flood disasters. Every individual should be equipped with flood disaster mitigation knowledge from an early age to protect themselves from various kinds of disaster hazards that come at any time, especially in areas that are prone to disasters (Kusumastuti et al., 2018; Munadi & Ernawati, 2019; Nasution et al., 2022; Purwanto, 2019; Sitorus et al., 2019).

Knowledge of early childhood flood disaster mitigation must be developed and improved, one way is to take advantage of technological developments by providing animated videos as a learning medium. It is hoped that with the animated video learning media provided to children, children will gain knowledge about disaster mitigation as expected. Learning media is everything that can help channel information from sources to information recipients to achieve certain learning goals that have been designed by Hairudin, et al (Guslinda, 2018).

Learning media delivers a learning message between the giver of the message and the recipient of the message. Daryanto. (Nihwan & Mudianti, 2023)that the use of learning media will greatly help the effectiveness of the learning process and the delivery of subject matter in the classroom. Media use is also prioritized to improve the quality of teaching and learning. To achieve the goals of the learning curriculum in the teaching and learning process, it needs to be supported by good media and teaching materials and be able to attract students' interest. This study focuses on audio-visual media in the form of animated videos (Rosdiana, 2022).

Based on the results of initial observations of kindergarten children in group B which showed the low cognitive ability of children aged 5-6 years in Bantul Regency regarding baniir disaster mitigation knowledge. Based on the researcher's observations and interviews conducted with children aged 5-6 years, some information related to flood disaster mitigation knowledge and children's personal safety is the main problem in this study, namely 1). Some children still do not know what a flood disaster is 2). Some children do not know the impact and causes of the floods. 3). some children do not know how to reduce the risk of flood disasters. Knowledge of flood disaster mitigation for children aged 5-6 years is still low and not in accordance with the level of child development.

This research is focused on children's flood disaster mitigation knowledge using animated videos. It is hoped that through this research, children can be prepared, alert, and know how to reduce the risk of flood disasters from an early age, knowing the right response when faced with a disaster situation that can occur anytime and anywhere.

Table 1. Previous Research

Description	Result	Equation	Difference
Laras Septiani (2020) The Effect of Animated Videos on the Introduction of Number Concepts for Children Aged 4-5 Years	This study uses an experimental method with a one-group pretest posttest design with a sample of 15 children and uses a saturated sampling technique. The data	The similarity with this study is that the media used is an animated video media to introduce the concept of numbers in children aged 4-5 years, then the researcher will	However, the difference lies in the research design, the researcher previously used a one-group pretest postest design while the researcher used a

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	collection technique in this study is by observation technique. The data analysis technique uses a t-test using the SPSS 23 program. The results of data analysis can be obtained t count 10.990 greater than t table t 2.145 with a significance of 0.000<0.05.	observe whether there is an influence of the animated video media that has been given to children on the introduction of the concept of numbers in children.	nonequivalent research design.
Elviati Riana (2020)	Feasibility of animated videos The average assessment of material expert validators received a feasibility percentage of 82.2% so that the assessment achieved by material expert validators received the category of "Very Feasible". Meanwhile, the average assessment of media expert validators received a feasibility percentage of 79%, so that the assessment achieved from media expert validators received the "Feasible" category. Then the average results of the assessment from 5 teachers each received a feasibility percentage of	The similarity with this study is that it uses the same media as the researcher, namely the animation video media in the research	The difference lies in the research design, the previous researcher used the R&D research design while the researcher used a nonequivalent research design.

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	88.4%, 85.6%, 82.8%, 85.6%, and 82.8% with the overall average of 5 teachers having a feasibility percentage of 85.04% of the assessment percentage to 5 teachers getting the category of "Very Feasible"		
Ines, Permata, Sari Tarigan (2021) "Development of Knowledge-Based Picture Storybook Media for Personal Safety Flood Disaster for Children Aged 5-6 Years at Melati Kindergarten, Kampar Regency"	This is supported by the results of the validation of a team of material experts, media experts, educator responses and limited trials. Based on the validation of material experts, a result of 76% was obtained. The validation of media experts obtained a result of 79%. Educator validation obtained 84% results. The results of the limited trial obtained a result of 86%.	The similarity in this study is to discuss personal safety and disasters in early childhood using media as a tool in learning	There are differences in this study, namely the difference in the research design used and the type of learning media used

RESEARCH METHODS

The method used in this study applies a nonequivalent control group design (Abraham & Supriyati, 2022)research design. Two groups of classes became the focus of the research, namely the experimental class that received intervention in the form of the application of animated videos. In contrast, the control class followed conventional learning without using animated videos. Pretest and posttest are used as indicators of experimental results to compare results between the experimental class and the control class. The purpose of establishing the experimental and control classes was to assess the impact of different treatments on the research subjects, with the control class not using animated videos and the experimental class using animated videos. This study involved 39 children as a sample, consisting of 21 children from group B in PKK Kindergarten and 18 children from group B in Adi Siswa Kindergarten, which

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were selected based on certain considerations by the researcher. (Rahman et al., 2020)Data collection techniques are carried out through observation, interviews and documentation. The data collection instrument used is a research instrument based on expert judgment and then consulted. Using descriptive and inferential statistical data analysis techniques.

RESULTS AND DISCUSSION

The prerequisite test is used as a requirement in the research analysis. The tests carried out in this study consisted of normality tests. After the normality test is met, then a paired sample t-test and an independent sample t-test can be carried out to prove between the experimental groups using animated videos on flood disaster mitigation knowledge and see if there is a significant difference in flood disaster mitigation knowledge and personal safety using conventional learning.

The normality test of flood disaster mitigation aims to assess whether the distribution of research data is normal or not. Understanding this has to do with the accuracy in choosing the statistical test to be used. The normality test calculation process uses SPSS version 27 software for Windows. The significance level criterion (α) is 0.05 with decision-making if the pretest and posttest scores > 0.05. The results of the analysis of the pretest and posttest normality test were carried out with the help of SPSS 27 for Windows. The results of the analysis of the pretest and posttest normality test were carried out with the help of SPSS 27 for Windows.

Table 2. Results of pretest and posttest normality tests for flood disaster mitigation

Variable	Class	Sig.	P	Ket
Flood disaster mitigation	Pre-test experiments	0.073	>0.05	Usual
	Post-test experiments	0.061	>0.05	Usual
	Pretest Control	0.155	>0.05	Usual
	Posttest Control	0.060	>0.05	Usual

The results of the pretest significance level on flood disaster mitigation knowledge have a value exceeding 0.05. Therefore, the null hypothesis (Ho) is accepted. As a result, it can be extracted that before the treatment, the two variables in the study data showed a normal distribution. In the posttest data, a normality test was also carried out to assess whether the data, after receiving the treatment, continued to follow the normal distribution or not. Below is a summary of the normality test results using the Shapiro-Wilk method on post-test data related to flood disaster mitigation knowledge.

The results of the prerequisite test are in the form of a normality test, which shows that the data used is normal. Therefore, the following hypothesis tests are carried out:

Paired Sample t-test flood disaster mitigation test

The paired sample t test was used to evaluate the impact of the use of animated video media on the understanding of flood disaster mitigation in children. The

p-ISSN: 2962-276X | e-ISSN: 2962-3499

significance adopted in this study is 0.05 with the help of the SPSS 27 for Windows program. The testing of the first and second hypotheses is detailed as follows:

a. Ho: The use of animated video media does not positively and significantly influence flood disaster mitigation knowledge in children.
b. Hα: The use of animated video media has a positive and significant influence on flood disaster mitigation knowledge in children.

Table 3. Results of the paired sample t-test for flood disaster mitigation

Variable	T	Dfi	Mr. (2-tailed)
Pretest Disaster Mitigation Experiment Postest Experimental Disaster Mitigation	-12,090	20	<0.001

The significance level of pretest and posttest to flood disaster mitigation knowledge has a value exceeding 0.05. Therefore, the null hypothesis (Ho) is accepted. As a result, it can be extracted that before the treatment, the two variables in the study data showed a normal distribution. The pretest and posttest data were used to evaluate the impact of animated video media on the understanding of flood disaster mitigation in children.

Independent sample t-test for flood disaster mitigation

The independent sample t-test was conducted in order to evaluate the difference in the influence between the use of animated video media and conventional learning on the understanding of flood disaster mitigation in children. The significance level applied in this study is 0.05. The third and fourth hypothesis tests are described as follows:

a. Ho: There was no significant and positive difference in understanding flood disaster mitigation between the group that used animated videos and the group that received conventional learning.
b. Ha: There are significant and positive differences in understanding flood disaster mitigation between the group that uses animated videos and the group that receives conventional learning.

Table 4. Results of the independent sample t-test flood disaster mitigation test

Variable	T	Df	Sig. (2-tailed)
Post-tested experiment	4,850	.37	<0.001
Posttest Control	4,913	36	<0.001

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It was found that the significance level of the pretest to flood disaster mitigation knowledge exceeded 0.05. Therefore, the null hypothesis (Ho) is accepted. This step was taken to be able to evaluate the difference in the influence between the use of animated video media and conventional learning on the understanding of flood disaster mitigation in children.

Discussion

This study aims to evaluate the impact of the use of animated video media on knowledge about flood disaster mitigation and personal safety in children aged 5-6 years. Another objective is to assess the influence of animated video media on understanding flood disaster mitigation and its impact on children's knowledge in general. This research involves the application of learning using animation video media in experimental classes at PKK 94 Karangtengah Kindergarten and Adi Siswa Kindergarten, two schools located in Imogiri district, Bantul district, with an environment that is vulnerable to the Opak River flood.

Efforts to increase knowledge of flood disaster mitigation and personal safety in children have not been implemented specifically in these schools. Through this learning, it is hoped that children can more easily understand, imagine, observe, and practice directly related to how to mitigate flood disasters and maintain their own safety during disasters.

This research uses instruments that have gone through a validation process and validity tests by experts in the field of instrumentation. The data collection methods applied are observation and documentation. The observation results were then analyzed using the analysis prerequisite test technique with the help of SPSS version 27 software after analyzing the hypothesis test, namely by comparing the data and seeing a significance (α) of 0.05.

The Effect of Animated Videos on Flood Disaster Mitigation Knowledge

Mentioning the theme of learning, next, the researcher will show an animated video and ask the child to watch and pay attention to the video. The video presents flood disaster mitigation which discusses what a flood disaster is, what causes a flood disaster, what is the impact of a flood disaster, and how to prevent a flood disaster from occurring. At the end of the learning activity, a question and answer activity will be held between the teacher and the child to repeat the video that the child has watched, the teacher will also provides a final simulation to the child so that the child can do various things such as how to prevent flood disasters by throwing garbage in its place and protecting the environment.

Based on the analysis of paired test samples of t-test in pretest and posttest knowledge about flood disaster mitigation using animated videos, a significance value of 0.001 was obtained. From these results, it can be concluded that there is a significant difference in flood disaster mitigation knowledge before and after the treatment using animated videos.

The study's findings show that the use of animated videos significantly influences knowledge about flood disaster mitigation in children. Therefore, it is recommended that teachers use learning media that are safe, interesting, and in accordance with current digital developments so that they can have a positive impact on children's cognitive development, especially in terms of knowledge about flood disaster mitigation.

The use of animated video media can increase the attractiveness of learning. Research reveals that the use of animated videos positively impacts children's

p-ISSN: 2962-276X | e-ISSN: 2962-3499

understanding of the concept of numbers, showing a significant improvement. These findings align with the study's results, which noted that the use of animated video media has a positive and significant influence on the listening and speaking skills of grade IV elementary school students (Enjela et al., 2024; Wahyudi et al., 2023).

In addition, there is a significant difference between the use of animated video media and conventional learning in the context of listening and speaking skills of grade IV elementary school students. In line, the research by emphasizes that animated videos are a relevant medium in conveying knowledge about flood disaster mitigation to children. The development of flood disaster mitigation programs in the form of digital learning videos has proven to be effective in increasing early childhood knowledge and attitudes toward disaster response from an early age. The implementation of disaster mitigation programs through video learning has advantages such as ease of access, practical usability, and general nature, and can be used in various locations (Nasrodin et al., 2023).

Differences in the Influence of Animated Video Media Compared to Conventional Learning on Flood Disaster Mitigation Knowledge

Media is defined as a means, both physical and non-physical, that are deliberately used as intermediaries between teachers and students in the learning process with the aim of achieving effectiveness and efficiency. This concept is in line with the view that emphasizes that the use of learning media can significantly improve the effectiveness of the delivery of subject matter in the classroom and the overall quality of teaching and learning activities (Muakhiroh, 2020; Rosdiana, 2022)

The integration of video and animation aims to maximize the effectiveness of the use of video media by providing dynamic visual representation. As a form of media, animated videos present moving images to attract students' attention during the learning process. Teachers can guide the use of animated videos to ensure that the messages conveyed through the media attract attention and are well understood by students so that the learning process can take place effectively (Fitri & Ardipal, 2021; Rosdiana, 2022).

In the context of achieving curriculum goals, the importance of support from the media and teaching materials that are effective and able to attract students' interest. This research focuses on audio-visual media in the form of animated videos. In the context of learning, media is not just a tool, but also an element used in order to achieve learning goals with optimal and maximum results.

Animated videos are used to convey content about flood disaster mitigation knowledge to children. The use of animated videos is expected to be an effective strategy to increase children's understanding of flood disaster mitigation and personal safety. Therefore, the role of teachers as facilitators is crucial in finding innovations and strategies that are interesting for children in the learning process, especially related to flood disaster mitigation knowledge.

The independent sample t-test on the knowledge of child flood disaster mitigation found that the value of Sig.(2-tailed) was 0.001 > 0.05. Therefore, it can be concluded that the alternative hypothesis (Ha) is accepted, while the null hypothesis (Ho) is rejected.

p-ISSN: 2962-276X | e-ISSN: 2962-3499

This indicates that there is a significant and positive difference in children's flood disaster mitigation knowledge between the group that uses animated videos and the group that follows conventional learning.

In addition, the pretest and posttest results showed significant differences in flood disaster mitigation knowledge between the experimental class (using animated videos) and the control class (using conventional learning).

CONCLUSION

The study concludes that animated video media is effective in enhancing flood disaster mitigation knowledge in children aged 5-6 years, as evidenced by their increased enthusiasm, joy, and interest in learning. The use of animated videos not only improves their understanding of how to reduce flood risks but also positively impacts cognitive development, making the learning process more effective, efficient, and flexible. The findings show a significant effect of animated videos on flood disaster mitigation knowledge, supported by the paired sample t-test results with a significance value (Sig.) of 0.001, leading to the rejection of the null hypothesis (Ho). Additionally, significant positive differences in knowledge were observed between the experimental and control groups, confirmed by a posttest significance value of 0.001 < 0.05, validating that animated videos have a substantial and positive impact on children's flood disaster mitigation knowledge.

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