THE EFFECT OF VIDEO ANIMATIONS ON PREPAREDNESS OF SMP STUDENTS IN FACING EARTHQUAKE DISASTER IN LEMBANG DISTRICT

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Abstract, Background: The disaster vulnerability index map released by BNPB shows that West Java is the province with the highest level of vulnerability in Indonesia. The Lembang active fault is classified as a normal fault and holds the potential threat of an earthquake with a magnitude of 6-7 SR. The group that is most vulnerable to disasters is children. Students spend an average of about 7 hours in school. So the school can be categorized as a disaster-prone place. Students must have knowledge and skills in dealing with disaster threats. So that students participate actively in the learning process about disasters, learning media are needed. Animated video is one of the relevant media in growing disaster preparedness. This study aims to determine the effect of animated videos on the preparedness of junior high school students in dealing with disasters in Lembang District, West Bandung Regency.
Methods: The research design used a quasi-experimental approach with a Pre Post-test control group design approach. The sample of this research is students of class VII/VIII junior high school in Lembang district. The sample is 32 people for each group, using a random sampling technique. The intervention was given in 7 meetings. Intervention activities include: providing material on earthquake disasters, skills/actions before and after earthquake disasters through animated videos. The data in this study were not normally distributed. The data was analyzed for the paired group using Wilcoxon, while the unpaired group used Mann Whitney.
Results: Statistic analysis results in the intervention group is (p=0.000).
Conclusion: Showed an effect of animated video on the preparedness of junior high school students in dealing with earthquakes. Therefore, it is recommended that the person in charge of the school health program use animated videos to foster student preparedness to reduce disaster risk in the school community.

Keywords**:** Animated Video, Disaster Preparedness, Junior High School Students, Earthquakes

Background

Based on the National Disaster Management Agency, there were 2334 disasters recorded in Indonesia in 2016, with 578 people dying and missing and increasing in 2017 to 2862 disasters[1]. According to the United Nations International Strategy for Disaster Reduction (UN-ISDR), Indonesia is ranked as the third most earthquake-prone in the world[2]. Based on the disaster vulnerability index map released by BNPB, West Java Province is the province with the highest

vulnerability level in Indonesia[3]. The Lembang active fault stretches for 22 Kilometers (Km) from Maribaya, Cibodas to Cisarua in the north of Padalarang District, West Bandung Regency. The Lembang active fault is classified as a normal fault and holds the potential threat of an earthquake with a magnitude of 6-7 SR. Earthquakes originating from the Lembang active fault can cause damage to the Lembang area and have the potential to cause damage to the Bandung Regency and Bandung City areas. Disasters come without warning; they can happen anytime and anywhere.

Disasters are a series of events that threaten and disrupt people's lives and livelihoods caused by natural and non-natural factors. Disasters can result in loss of life, damage to the environment, property loss, and psychological impact.

Based on Oxfam's study in Inayah (2014), 60% of disaster victims are women, children, and the elderly. At the 2010 volcanic disaster, more than 300,000 residents were affected by the event, and around 100,000 were children (Fima H.A, 2012). One-third of the 200,000 victims who died in the Aceh tsunami were children (Andina, 2010). That is emphasized by Sudaryono (2012) that children are the most vulnerable group in disaster situations because they have limited abilities. Some of the main factors causing many victims due to disasters are lack of knowledge about disasters and lack of preparedness in anticipating these disasters[4].

The involvement of children in disaster preparedness in their schools is a practical, dynamic, and sustainable strategy from an early age. Children can recognize signs of natural disasters that occur around them and build a culture of safety and resilience, especially for children, through a briefing on disaster prevention and management efforts delivered by using the school setting as a community.

So that students participate actively in the learning process about disasters, learning media are needed. Media is a device that helps students understand the material presented. The benefit of learning media is to facilitate the learning process to be more effective and efficient with learning objectives[5]. Based on Desti Ratnasari's research, flipchart learning media can increase knowledge, with the results of the t-test showing a p-value of 0.000. Likewise, the media module can increase the difference in the pre-test score compared to the post-test by 1.34. According to Prasetya (2014), the ability to remember is based on the use of learning media: writing (20%), audio-only (10%), visual only (20%), audiovisual (50%). Yudianto (2017) said that video media has text, images, and sound (audio)[6]. Therefore, animated video media was used in this study to achieve student preparedness to face an earthquake disaster.

Animated video is one of the relevant media in growing disaster preparedness. Animated videos are beneficial in explaining procedures and sequences of events. The presentation of animated videos containing preparedness for earthquake disasters from pre-disaster to post-disaster can increase knowledge and actions in dealing with earthquake disasters. The research results conducted by Hanna Puji M (2015) show that the use of video media can significantly increase disaster knowledge, namely 42.86%. That is confirmed by Fajar Wulandari's research results, namely that the use of video media can increase students' preparedness to face earthquake disasters with a p-value of 0.000[7].

Mobile phones are currently one of the trends that teenagers follow. Following the trend is a teenager's style of socializing. Teenagers will feel more confident and social by having a cellphone/smartphone. The results of Dinnie Ratri Desiningrum's research[8] show that almost 100% of teenagers have their gadgets. The positive impact of the existence of smartphones for teenagers is that it is easier to get or share information every time. Animated videos add to the learning experience for adolescent students, create interest, increase memory and strengthen visualization. Animated videos provide a more significant stimulus than textbooks.

Based on the results of a preliminary study conducted by schools in the Lembang District, they are in an area that is crossed by the Lembang fault line. Therefore, this sub-district is prone to earthquake disasters caused by the shifting of the fault. Based on the description above, researchers are interested in researching the Effect of Animated Videos on Preparedness for Junior High School Students in Facing Earthquake Disasters in Lembang District, West Bandung Regency in 2020.

Methods

The research design used in this study was a Quasy Experimental study, pretest-posttest control group design. This design is appropriate for comparing outcomes of health program interventions. In this design, the grouping of sample members in the intervention group and the control group is not done randomly or randomly.

The variables in this study consisted of independent variables, namely: animated video media, while the dependent variable was earthquake disaster preparedness.

This research was carried out in junior high schools in the Lembang sub-district, West Bandung regency, namely at SMPN 1 Lembang and SMPN 3 Lembang. This research was conducted from January to December 2020.

The population in this study were students of SMPN 1 and SMPN 3 Lembang class VII/VIII in the Lembang sub-district. The number of samples was taken using the sample size formula to test the average difference between of 2 hypotheses. The sample size for this study was 29 people, plus the anticipated dropout of 10%, which was three people (Sastroasmoro, 2011, Using the sample size correction formula, it was obtained large a total sample of 32 people, for each group, both in the intervention sample and the control sample. A lottery will be carried out to determine the intervention and control groups. The sampling technique in this study was carried out by random sampling with predetermined inclusion and exclusion criteria.

Data collection is done by filling out a questionnaire. The instrument used in this study is an instrument to measure school community preparedness: the level of student preparedness developed by LIPI in collaboration with UNESCO / ISDR in 2006[9] which Deny Hidayati has compiled (2011)[10] and modified by researchers—adapted to the conditions of the city of Bandung and students. The research instrument is a questionnaire (S3) for preparedness LIPI and UNESCO/ISDR, which has been tested for validity with a corrected item value of total correlation > 0.4 and reliability of Cronbach's alpha value > 0.7 (Lia, 2019). The instrument was modified by the researchers adapted to the earthquake disaster, which had been tested for content by Sehabudin interested in disaster science.

The intervention was given in 7 meetings. Intervention activities include: providing material on earthquake disasters, skills/actions before and after earthquake disasters through animated videos. The data in this study were not normally distributed. The data was analyzed for the paired group using Wilcoxon, while the unpaired group used Mann Whitney.

Results

The results animated video effects on the preparedness of junior high school students to face earthquake disasters in the form of tables and narratives. Preparedness is measured cumulatively from knowledge about disasters, activity plans in dealing with disasters, disaster warning signs, and provision of students in carrying out evacuations.

1. Normality test

Based on the normality test using Shapiro Wilk, p-value < 0.05, it can be concluded that the preparedness data in dealing with disasters before and after treatment in the intervention group and control group were not normally distributed. The normality test became the basis for determining the subsequent bivariate analysis.

Table 1. Normality Test Based on Preparedness of Middle School Students in Facing Earthquake Disasters Before and After Treatment in the Intervention Group and Control Group

Preparedness	Intervention group		Control group	
	p-value	Distribution	p-value	Distribution
Before intervention	0.000	Abnormal	0.000	Abnormal
After intervention	0.007	Abnormal	0.006	Abnormal

2. Preparedness of Junior High School Students in Facing Earthquake Disasters Before and After Treatment In the intervention group and control group in Lembang District, West Bandung Regency

The second table shows disaster preparedness in the intervention group (SMPN 3 Lembang), i.e., before treatment, 66.78 are included in the medium preparedness category and after treatment to 83.75 high preparedness categories. In the intervention group, there was an increase of 16.97. Readiness in the control group before treatment or at the initial measurement was 69.94 and at the final measurement 66.78. That shows a slight increase of 1.84 and is still in the category of moderate preparedness.

Table 2. Distribution of Preparedness of Junior High School Students in Facing Earthquake Disasters Before and After Treatment In the intervention group and control group in Lembang District, West Bandung Regency

Disaster Preparedness	Intervention group			Control Group		
	Mean	Min	Max	Mean	Min	Max
Before Preliminary Treatment / Measurement	66.78	19	83	64.94	19	60
After Final Treatment/Measurement	83.75	83	97	66.78	73	77
Change / difference	16.97	-	-	1,84	-	-

3. Effect of animated video on the preparedness of junior high school students to face earthquake disaster In the intervention group and the control group

The table below explains that The results of the Wilcoxon test show that in the intervention group, a p-value of 0.000 means that there is a significant effect on preparedness for earthquake disasters after being given disaster education using animated video media. The statistical analysis results in the control group showed a p-value of 0.66. That means that there is no significant difference in preparedness in dealing with earthquake disasters at the initial and final measurements in the control group.

Table 3. Preparedness of Junior High School Students in Facing Disasters Before and After Treatment In the intervention group and control group in Lembang District, West Bandung Regency

	95% Confidence Interval of the Difference		Z	*p-value*
	Lower	Upper		
Intervention Group Pre – Post	6.33	17.04	0.449	0.00
Control Group Pre - Post	11.25	13.75	0.432	0.66

4. Differences in Preparedness of Middle School Students in Facing Earthquake Disasters Before and After Treatment In the intervention group and the control group

To find out the difference in the preparedness of junior high school students after treatment: the provision of disaster education through animated videos in the intervention group and the final measurement in the control group can be seen in the table below:

Table 4. Preparedness of Junior High School Students in Facing Earthquake Disasters Before and After Treatment In the intervention group and control group in Lembang District, West Bandung Regency

Group		*N*	*Mean Rank*	*Sum of Ranks*	*p-value*
Different data	Intervention Group	32	46.17	1477.50	0.00
	Control Group	32	18.83	602.50	
	Total	64			

The table above provides information that using the Mann Withney statistical test, the p-value of 0.00 is smaller than the 0.05 alpha; this means that there is a difference in the increase in disaster preparedness in the intervention group and the control group.

5. Overview of Junior High School Students Preparedness in Facing Earthquake Disasters in the Initial Measurement of the Intervention Group and Control Group

Based on the initial measurement of the preparedness of junior high school students in dealing with earthquake disasters, the intervention group showed an average of 66.78 and 64.94 in the control group. This value is in the medium preparedness category. The results of interviews with teachers and students are probably because the earthquake disaster material has been given to social studies subjects in class VII. Most of the disaster subject matter was given using lecture and question and answer methods so that it was not optimal to internalize the material provided. There are no books, comics, leaflets and videos, and posters related to disasters that students can read as information material in the school library. There are no facilities/facilities, such as evacuation routes, disaster warning signs, and no special training on disaster for students.

6. Overview of Junior High School Students' Preparedness in Facing Earthquake Disasters in the Final Measurement of the Intervention Group and Control Group

The results of the univariate analysis on the final measurement of preparedness for junior high school students in dealing with earthquake disasters in the intervention group showed an average of 83.3 included in the category of high preparedness. In the intervention group, there was an increase of 16.97. That shows an increase in knowledge about disasters, activity plans in dealing with disasters, disaster warning signs, and debriefing students to carry out evacuations. The increase was due to the intervention group being given disaster education through animated videos. Based on the literature search, the factor that can improve disaster preparedness is disaster education. Disaster education through animated videos is one of the electronic learning media that combines audio and visual technology together[11,6]. According to Prasetya, the following is the ability to remember based on the use of learning media: writing (20%), audio-only (10%), visual only (20%), audiovisual (50%). Yudianto[11] said that video media has text, images, and sound (audio) elements that can help students clarify the learning process. The learning process is more exciting and interactive to understand better and apply the material being studied. Video has the function of attracting attention and directing the audience's concentration. Video also can arouse the emotions and attitudes of the audience. Cognitive function can accelerate learning objectives to understand and remember messages or information. At the same time, the compensatory function is to provide context to the audience whose ability is weak in organizing and recalling the information obtained. Video is very suitable for learning in class, in small groups, even one student[11].

Preparedness in the control group at the final measurement was 66,78. That shows a slight increase of 1.84, but it is still in the moderate preparedness category. That is

because this group is not given disaster education so that there is no additional information related to disasters.

The Wilcoxon test results from measurements before and after providing disaster education through animated videos in the intervention group showed a p-value of 0.000 < (0.05). The null hypothesis was rejected, meaning that there was a significant effect of animated video on the preparedness of junior high school students in dealing with earthquake disasters. Animated videos are beneficial in explaining procedures and sequences of events. Animation provides a more meaningful learning experience and a more significant stimulus than reading a textbook. The movement in the animated video gives an impressive impression to the audience so that students' understanding of the material presented will be more accessible, exciting, and fun. Therefore, students like it a lot. The presentation of animated videos on student preparedness for earthquake disasters is packaged in a simple and easy-to-use way to increase students' interest in learning it. Hanna Puji M also conducted a similar study (2015)[7] using video media to increase disaster knowledge, namely 42.86% significantly. Fajar Wulandari's research results confirm that the use of video media can increase students' preparedness to face earthquake disasters with a p-value of 0.000. Inform preparedness for students in dealing with earthquake disasters and appropriate learning media to know, understand, and use or apply them in real situations.

In the pre-treatment/pre-treatment measurement, there was no difference in disaster preparedness in the intervention and control groups. Both were in the moderate preparedness category with values of 66.78 and 64.94. That illustrates that the two groups have the same start in the study. However, the measurement after treatment/final analysis showed a significant difference in disaster preparedness in the intervention group and the control group (p-value 0.000). These results can be interpreted that the animated video media is meaningful or has an effect on students' preparedness in dealing with earthquake disasters. Tunak MT, Siti Romadoni, Imardiani (2019)[12] There is an effect of health education with animated

7. The effect of animated videos on the preparedness of junior high school students to face earthquake disasters

video media on knowledge about flood preparedness with p-value 0.000

Education by sharing animated videos via smartphones for teenagers is easier to get information every time. Animated videos give a learning experience for adolescent students, create interest, increase memory and strengthen visualization. Animated videos provide a more significant stimulus than textbooks. Learning media can overcome the limited experience of students.

Much Hasyain Rifai (2018) There are differences in learning outcomes of disaster mitigation using audiovisual video media, with a p-value of 0.000[13]. Sulistyaningrum (2017) shows a significant difference in knowledge and actions for disaster preparedness after using animated video media (p-value of 0.000). Dangerous objects that must be avoided and safe places to take shelter in the event of a disaster, students make a map of their school environment with their creativity to remember the evacuation route[14]. Activities like this make children more quickly accept the material given.

Conclusions

The conclusions in this study are: Preparedness in dealing with disasters in the intervention group before treatment was 66.78, and the control group was 64.94. Preparedness in dealing with disasters in the intervention group after providing disaster education with animated video media became 83.75 and at the final measurement of the control group 66.78.

There is an effect of providing animated video media on preparedness in dealing with disasters in the intervention group with a p-value of 0.000. While in the control group, there was no difference in the initial and final measurements with a p-value of 0.66. Before treatment / initial measurement, there was no difference in preparedness in dealing with disasters in the intervention group and the control group. However, in the post-treatment/final measurement, there was a significant difference in the intervention group's disaster preparedness and the control group (p-value 0.000). Preparedness in

dealing with disasters before being given treatment in the intervention group had an average score of 66.78, and after being given treatment, the average score increased by 16.97 points to 83.75. Meanwhile, the control group's initial measurement of preparedness in the face of the disaster had an average score of 64.94. The last measurement increased by 1.84 points; the average score became 66.78.

References

1. Badan Nasional Penanggulangan Bencana (BNPB). (2012). *Potential Disaster Threats*. http://bnpb.go.id Accessed December 27, 2018.
2. United Nations International Disaster Reduction Strategy. (UNISDR). (2009). Terminology of Disaster Risk Reduction.
3. Heri & Muhammad Ridwan Caesar. (2018). *School-Based Disaster Preparedness. Journal of Academia* Academia Praja Volume I No 2 : 91-106
4. Sudaryono. (2012). Differences in Disaster Preparedness in View of the Level of Self Efficacy of Elementary School Children in the Mount Kelud Disaster Impact Area. http://journal.unair.ac.id. Retrieved 27 December 2018.
5. Hamdani. 2011. Teaching and Learning Strategies. Bandung: Faithful Library
6. Prasetya. PS (2014). Geography Learning Media. Yogyakarta; Wave
7. Hanna Puji Maleeva. (2015). Development of Learning Media Using Video Media for Mountains and Disasters for Class VII SMP Muhamadiyah Sambi Boyolali
8. D.R. Desiningrum, Indriana. Yeniar, Siswati. (2017). Intention to use gadgets and emotional intelligence in early teens. Proceedings of the X National Scientific Meeting of the Indonesian Developmental Psychology Association: Vol 1
9. LIPI-UNESCO/ISDR. (2006). Study of Community Preparedness in Anticipating Earthquake and Tsunami Disasters. Jakarta: Deputy of Earth Sciences Indonesian Institute of Sciences
10. Deny H, Widyatun, Puji H, Triyono, Titik K. (2011). A Guide to Measuring the Level of Preparedness of the Community and School Communities. English
11. Arif Yudianto. (2017). Application of Video as a Learning Media. National Seminar on Education
12. Tunak Meyla T, Siti Romadoni, Imardiani. (2019). The Effect of Using Animation Videos on Public Knowledge About Flood Preparedness in the Village of Silaberanti Lorong Dahlia Palembang. Indonesian Journal For Health Sciences. Vol 3,No 2, Pages 64-70, September 2019
13. Muh Hasyim R. (2018). The Effect of Using Audiovisual Media on Understanding the Concept of Disaster Mitigation in Geography Education Students. Journal of Education and Learning, V0l 3(1), 2018.
14. Ferawaty Sulistyaningrum. (2017). The Influence of the Use of Animated Video Media "Volcano Disaster Preparedness" on Student Preparedness. E-Journal of Educational Technology Study Program, Vol VI Number 7.