
THE EFFECTIVENESS OF SHORT FILMS IN IMPROVING ADOLESCENTS' KNOWLEDGE OF EARTHQUAKE DISASTER PREPAREDNESS

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ABSTRACT

Adolescents are a vulnerable group at risk of being affected by disasters due to their lack of preparedness. One way to increase students' disaster preparedness knowledge is to provide education. This study aims to determine the impact of short film on earthquake disaster preparedness knowledge among junior high school students. This quasi-experimental research design involved 82 junior high school students (treatment group = 41; control group = 41) from SMP Muhammadiyah 14 Paciran, Lamongan Regency, who were selected using a simple random sampling. The treatment group received education through short films, while the control group received education through lectures. Disaster preparedness knowledge was measured using a questionnaire and analyzed using Wilcoxon and Mann-Whitney tests ($\alpha \leq 0.05$). The results showed that 85.4% of students in the treatment group had good knowledge after short film education, compared to 63.4% in the control group after the lecture method. Statistical tests showed that short film media education increased student knowledge in the treatment group ($p = 0.000$), with an increase in the mean value of 92.32. The lecture method had an effect on the level of knowledge in the control group ($p = 0.000$), increasing the mean value by 73.93. After receiving education, there was a difference in preparedness knowledge between the treatment and control groups ($p=0.000$; $p=0.000$). Using short films as an educational medium was more effective than lectures at increasing students' knowledge of disaster preparedness because short films stimulate the senses of hearing and vision with moving images and sound effects, making them easier to understand. Therefore, short films can be used to educate students in disaster preparedness.

Keywords: *Education, earthquake, preparedness knowledge, short film*

INTRODUCTION

Earthquakes are the sixth most common disaster in Indonesia after drought. Geographically, Indonesia is located at the confluence of four tectonic plates: the Asian continental plate, the Australian continental plate, the Indian Ocean plate, and the Pacific Ocean plate. This location on the Ring of Fire causes many disasters, such as earthquakes and volcanoes, to occur (Rosyida et al., 2024). Adolescents are among the most vulnerable groups at risk of being affected by disasters. However, a study by Nurdiawati et al. (2024), showed that the level of disaster preparedness knowledge among students at MTsN 3 Cilegon City was moderate. This demonstrates the importance of instilling disaster preparedness knowledge from an early age.

According to the National Disaster Management Agency (BNPB), Indonesia has experienced 4,728 earthquakes over the past 10 years. These earthquakes have spread throughout the country. Of the 52,902 schools in Indonesia, 27,451 are located in earthquake-prone areas (Koswara et al., 2019). West Java had the highest number of earthquake events in

the last year, with 13. In East Java, there were 40 earthquakes in the last two years. Pasuruan district had the highest number of earthquake events with 19. Nurhaliza et al. (2023) found that the level of earthquake disaster preparedness knowledge among students at SMPN 1 Cisarua in Bandung Regency was moderate (58.8%). This is because most students received earthquake-related information or materials at school in the form of books. However, research by Dhohirrobbi et al. (2024) found that the level of preparedness knowledge among students at SMPIT Al Uswah Bangil in Pasuruan was still in the low category (36.00%). Previously, students had received disaster preparedness materials, yet many still lacked sufficient knowledge about earthquake disaster preparedness when the materials were given to them.

On March 22, 2024, the Java Sea earthquake impacted Lamongan Regency, as felt by students at SMP Muhammadiyah 14 Paciran in Lamongan Regency, due to the school's proximity to the earthquake's epicenter. Research conducted by Hidayati et al. (2024) showed that junior high school students in Lamongan had moderate knowledge and preparedness regarding natural disasters, including fire, flood, and tornado disasters; however, earthquake disasters were not included. A preliminary survey of 10 students at SMP Muhammadiyah 14 Paciran in Lamongan Regency on June 8, 2024, revealed that three students (30%) said they understood earthquake preparedness, while seven students (70%) said they did not. It can be concluded that teenagers still have low knowledge of earthquake disaster preparedness.

According to Law Number 21 of 2008 concerning disaster management implementation, teenagers are vulnerable to disasters due to their limitations and lack of preparedness knowledge in the face of natural disasters (Nabila et al., 2024). Students who are not prepared early on in terms of disaster preparedness knowledge do not know what to do or what to avoid when a disaster strikes, nor do they know how to save themselves if a natural disaster occurs at any time. In fact, when an earthquake occurs, teenagers tend to panic and do things that endanger them rather than prioritize their safety (Nabila et al., 2024).

Efforts to increase earthquake disaster preparedness knowledge include learning, education, training, and discussions at regional, national, and international levels (Rofifah, 2019). Disaster preparedness education begins early through conventional learning methods, such as lectures, and using various relevant educational media, such as leaflets, flyers, posters, animated videos, and short films. Research by Sakinah et al. (2024) revealed differences in the knowledge and attitudes of adolescents before and after receiving nutrition education via short films. Films are intermediaries that convey various messages or ideas to audiences through stories that are as interesting as possible, of course, while keeping up with the times. Short films

are effective enough to be watched by all groups without the need to determine a specific place or time. In the digital age, short films can be displayed on devices through various platforms, such as Instagram, Facebook, YouTube, and Telegram. Short films are efficient at conveying messages because they are short and have simple plots that are easily understood by all groups (Alawiyyah, 2023).

Based on the above explanation, no research has employed short films in the field of disaster preparedness. Therefore, researchers are interested in studying the impact of short films on adolescent students' knowledge of disaster preparedness. The study aims to determine the effect of short film media education on junior high school students' knowledge of earthquake disaster preparedness.

METHOD

This quantitative study used a quasi-experimental two-group pretest-posttest design. It was conducted at SMP Muhammadiyah 14 Paciran, Lamongan Regency on February 27, 2025. The study population consisted of 99 eighth-grade students. The sample included 82 eighth-grade students who met the inclusion and exclusion criteria. They were selected using a simple random sampling technique. Inclusion criteria included being an 8th grade student at SMP 14 Muhammadiyah Paciran and willing to participate. The exclusion criteria were 8th grade students of SMP 14 Muhammadiyah Paciran who were absent or sick at the time of the study.

The research instrument was a knowledge questionnaire about earthquake preparedness adapted from Wihayati (2018). The questionnaire contained statement items with correct and incorrect answer options and had a total of four indicators. Indicator 1 (knowledge and attitudes/skills) had 10 statements; indicator 2 (emergency response planning) had three statements; indicator 3 (disaster warning) had three statements; and indicator 4 (resource mobilization) had four statements. The questionnaire contains 11 positive and 10 negative statements. For positive statements, the correct score is 1 for "yes" and 0 for "no"; for negative statements, the correct score is 1 for "no" and 0 for "yes".

Prior to data collection, the ethics committee of Universitas Muhammadiyah Lamongan declared this study ethically sound (No. 089/EC/KEPK-S1/02/2025, February 26, 2025). Data were collected by selecting prospective respondents from the school. A total of 99 names were collected and divided into four classes: 13 students in class 8A, 35 students in class 8B, 21 students in class 8C, and 30 students in class 8D. Then, 82 students were selected and divided into two groups: the treatment group, which was taken from the top 41 odd-numbered names;

and the control group, which was taken from the top 41 even-numbered names. Nine names from the treatment group and eight names from the control group were excluded.

Data collection was carried out over the course of one day, divided into two batches. Batch 1, the control group, took place at 10:00 a.m., and Batch 2, the treatment group, took place at 11:00 a.m. Both batches were conducted in the hall building of SMP Muhammadiyah 14 Paciran. Each batch lasted 56 minutes. For the control group, Batch 1 involved giving respondents a pre-test questionnaire to fill out. Then, they received a lecture without media. After that, they took a post-test and watched a short film. For the treatment group, the pre-test questionnaire was administered before the intervention. Then, there was a 10-minute question and answer session after the first of two 8-minute screenings of a short film. After the short film screening, a post-test questionnaire was distributed to measure their knowledge after the intervention.

The data were tested for distribution using the Shapiro-Wilk test, which showed normal distribution in post-test data for the treatment and control groups ($p = 0.086$ and 0.192 , respectively) and abnormal distribution in pre-test data for both groups ($p = 0.000$ and 0.018 , respectively). The Wilcoxon test was used to compare pre-posttest knowledge values within each group, while the Mann-Whitney test was used to compare knowledge between groups on the post-test data with an error rate of $\alpha \leq 0.05$.

RESULTS

A total of 99 students were selected, consisting of 13 students from class 8A, 35 students from class 8B, 21 students from class 8C, and 30 students from class 8D. None of the students were absent or dropped out.

Table 1. Students Demographic Data (n=41)

Variable	Characteristics	Intervention Group		Control Group	
		f	%	f	%
Age (Years)	12	0	0.0	0	0.0
	13	12	29.3	8	19.5
	14	29	70.7	33	80.5
	Total	41	100.0	41	100.0
Gender	Male	20	48.8	20	48.8

Female	21	51.2	21	51.2
Total	41	100.0	41	100.0

As shown in Table 1, 70.7% of students in the treatment group and 80.5% of students in the control group were 14 years old. Fifty-one-point two percent (51.2%) of students were female in both groups.

Table 2. Students' Knowledge before and after Intervention (n=82)

Group	Knowledge	Pre-Test		Post Test	
		f	%	f	%
Intervention	Good	3	7.3	35	85.4
	Fair	34	82.9	5	12.2
	Poor	4	9.8	1	2.4
	Total	41	100	41	100
Control	Good	4	9.8	10	24.4
	Fair	29	70.7	26	63.4
	Poor	8	19.5	5	12.2
	Total	41	100	41	100

Based on Table 3, 82.9% of students had sufficient knowledge before receiving short film media education. After receiving short film media education, 85.4% of students had sufficient knowledge. Before receiving lecture-based education, 70.7% of students had sufficient knowledge, whereas after receiving lecture-based education, 63.4% of students had sufficient knowledge.

Table 3. Statistical Analysis of the Effect of Short Film Educational Media on Intervention and Control Groups (n=82)

Knowledge	N	Min-Max	Mean $\pm$ S.D	<i>p</i>
Pre-Test Intervention	41	45-85	67.56 $\pm$ 7.836	0.000
Post Test Intervention	41	55-100	92.32 $\pm$ 10.671	
Pre-Test Control	41	45-85	66.10 $\pm$ 9.651	0.000
Post Test Control	41	50-95	73.29 $\pm$ 9.657	
Mann Withney Test (posttest between intervention and control) P=0.000				

Based on Table 3, the average value of students in the treatment group was 67.56, with a minimum of 45 and a maximum of 85. After the short film media education, the average value increased to 92.32, with a minimum of 55 and a maximum of 100. The mean difference between the pre-test and post-test was 24.76. The Wilcoxon test results showed that short film media education had an effect on students' knowledge of earthquake disaster preparedness ($p = 0.000$).

In the control group, the average student score was 66.10, with a minimum score of 45 and a maximum score of 85. After the conventional learning media education, the average student score increased to 73.39, with a minimum score of 50 and a maximum score of 95. The mean difference between the pre-test and post-test was 7.19. The Wilcoxon test results showed that the lecture method had an effect on junior high school students' knowledge of earthquake disaster preparedness ($p = 0.000$). The Mann-Whitney test results show that junior high school students who received education using short film media had more knowledge about preparedness than those who received education using the lecture method ($p = 0.000$).

DISCUSSION

The results showed that educating students using short films had an effect on their knowledge of earthquake disaster preparedness. This aligns with Sakinah et al. (2024) research, which indicated that short film education affected adolescents' knowledge and attitudes about local food selection. Other studies using short films include Wulandari & Marlina (2025), who found that short films affect adolescents' eating habits and nutrition knowledge, and Dedah (2022), who found that short films affect adolescents' sex education knowledge. In addition to short films, lectures are often used to provide education, though they do not increase knowledge as much as short films do. This aligns with Jafar (2021) research, which showed that lectures affected junior high school students' interest in physics. Nurgiansah (2022) research also revealed that the lecture method can increase adolescents' interest in civic education.

Before receiving short film media education, both groups had similar characteristics, such as age and education level. The increase is interpreted as a result of the short film media education they received. According to the analysis, the average value of student knowledge increased, and it was greater in the treatment group than in the control group.

According to Notoadmodjo (2010) in Susilawati et al. (2019), knowledge is affected by several factors, including education, experience, age, economic status, and sociocultural factors. In this study, the increase in student knowledge was influenced by the method used to provide information. For example, lectures could use media such as leaflets, flyers, posters, animated videos, or short films that are up to date (Budiman & Riyanto, 2014 in Ayuni, 2022). Notoadmodjo (2010) in Susilawati et al. (2019), supports this statement by claiming that providing information through education can affect an individual's knowledge, but it will be most effective when supported by the appropriate methods and media.

Compared to lectures, short films increased knowledge more effectively because they engaged the senses of hearing and vision. This makes it easier to understand and remember the information, and the moving images and sound effects make it easier for students to understand the content, increasing knowledge compared to passive listening (Maulana, 2011 in Ayuni, 2022). Short films have several advantages, such as developing thoughts and opinions, attracting attention, fostering interest and motivation, and helping the learning process become more effective. What is seen and heard is more meaningful, easier to remember, and recalled faster (Wulandari & Marlina, 2025).

Compared to short films, lecture learning only conveyed information orally to a group of listeners. In classrooms, activities often include the teacher providing a stimulus in the form of a systematic and structured delivery of material. Students listen to the teacher's presentation, which includes examples using oral communication. Then, students respond by remembering and repeating the information. This process increases knowledge and is an effective learning method (Sahimin, 2017 in Nur'aini, 2021). However, the increase in knowledge using the lecture method was lower than using the short film method. This finding aligns with Aryandi et al. (2024) research that short film media was more effective than lecture learning in increasing adolescents' knowledge about preventing drug use. Islinda (2019) research also showed that short films were more effective than lectures at increasing adolescents' knowledge of moral values. Therefore, providing education through short films can be applied to junior high school students to increase their knowledge of earthquake disaster preparedness.

LIMITATION

This short film was created in a short period of time, and the pre- and post-tests were conducted on the same day. Therefore, it has not been possible to measure students' long-term knowledge. Therefore, it is necessary to repeat the process regularly (at least once a month) to provide ongoing updates about earthquake disaster preparedness.

CONCLUSION

Compared to the lecture method, the use of short films proved to be effective in increasing junior high school students' knowledge of earthquake disaster preparedness because short films involve the senses of hearing and vision, as well as the effects of moving images and sound. This makes it easier for students to understand the information than if they

were just listening without media aids. It is expected that the school will screen short films at least once a month to update students' knowledge. Future researchers are encouraged to accompany the use of short films with direct simulations about earthquake disaster preparedness.

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