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COMPARATIVE STUDY OF SHORT VIDEO AND E-BOOKLET MEDIA IN ENHANCING STUDENTS' UNDERSTANDING OF TRAFFIC SAFETY

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Abstract

This study aims to analyze the effectiveness of learning media in the form of short videos and e-booklets in improving students' understanding of traffic safety among ninth-grade students at SMP Negeri 7 Samarinda. This study employs a quantitative approach using a quasi-experimental method and a pre-test and posttest control group design. Data were collected through comprehension tests administered before and after the intervention, supplemented by interviews, observations, and documentation as primary data. Additionally, secondary data were gathered through relevant literature reviews to strengthen the theoretical foundation and analysis. The population in this study consisted of 871 students, and 60 students were selected as samples using purposive sampling. The samples were divided into two equal groups, the first group using short video media and the second group using e-booklet media in learning. Data were analyzed using the Liliefors normality test and the Independent Samples T-Test. The results of the study indicate that both media contribute positively to improving student understanding. Although the difference between the two media is not statistically significant, the average understanding score of students in the short video group is higher than that of the e-booklet group. Thus, it can be concluded that short video media tends to be more effective in practice in improving students' understanding of traffic safety compared to e-booklets. Therefore, teachers and educators are advised to optimize the use of short videos as an attractive, concise, and interactive learning medium.

Keywords

E-Booklet, Learning Media, Short Video, Student Comperhension, Traffic Safety.



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INTRODUCTION

Traffic provides easy access for people to carry out various activities, such as going to work or doing road-related activities (Fadila & Sari, 2017). Traffic safety and smoothness play an important role in ensuring the welfare of the community and the country as a whole (Hadi, 2020). Traffic problems include congestion, accidents, and violations that often occur on the road (Sasambe, 2016). Many traffic violations occur on the road due to a lack of driver awareness (Suryaningsih, 2020). Drivers' low awareness of traffic regulations is reflected in their lack of discipline in driving (Sadono, 2016).

WHO (World Health Organization) launched World Safety Day in 2004 with the theme Road Safety is No Accident (Sidjabat et al., 2022). Traffic safety is an important program to reduce accidents (Fajrah et al., 2022). The community plays a role in implementing traffic safety standards and socializing safe driving (Jalal et al., 2023). Lack of traffic safety awareness causes conflicts between road users and hampers community activities (Ady & Susanto, 2014). High awareness among motorists will improve traffic safety on the highway (Kurniawati et al., 2017). Road users' attitudes affect compliance with traffic rules and driving safety (Anas & Manullang, 2017).

Traffic violators are dominated by students on the highway (Kadir et al., 2024). Students and the productive age often commit traffic violations because they have high curiosity (I. Putri et al., 2023). Unstable psychological factors affect teenagers' driving ethics in traffic (Utami et al., 2023). Students who are not yet fit to drive disturb other road users with actions that are not in accordance with traffic ethics (Desril et al., 2018). Traffic awareness must be instilled early in students through intensive education (Darodjat et al., 2024). The education on traffic safety is carried out through the delivery of information, education, and campaigns to the public and students (Shofiah et al., 2023).

The education that can be done is to provide understanding and socialization of driving safety (Siswanto et al., 2023). Understanding traffic order needs to be instilled from a young age because it has strategic value in the concept of Long Life for Education (Samsiar et al., 2022). The mindset of traffic ethics must also be instilled as a positive character in children (Amir et al., 2023). The awareness of obeying traffic rules must be taught to students from an early age in order to gain knowledge and understanding of the importance of obeying these rules (Samsiar et al., 2022). Students who have an understanding of traffic are expected to participate in sharing their mindset or knowledge in the place where they study (Nurhadi & Rahimudin, 2024). Traffic safety education

programs in schools are very helpful in improving students' understanding (Fadilla Putri et al., 2024).

Lack of understanding of traffic safety makes adolescents less responsive to dangerous situations (Setyowati et al., 2018). Students who have less understanding are at risk of having an accident 1.966 times greater (Sukmandari & Subekti, 2020). The lack of socialization and awareness to learn traffic rules causes students' low understanding (Wulandari, 2015). Lack of knowledge and understanding of traffic safety leads to low awareness and compliance of students in traffic on the highway (Maizuar et al., 2022). Lack of understanding of traffic safety will cause many traffic violations (Nurfauziah & Krisnani, 2021). A very minimal understanding of traffic safety will have an impact on the high number of traffic accidents (Rahmawati & Adly, 2021).

Based on the results of observations and initial interviews with teachers and ninth-grade students at SMP Negeri 7 Samarinda, it was found that students' understanding of traffic safety is still relatively low. Many students come to school on their own motorcycles, even though they do not have a driver's license (SIM) and do not wear helmets. This disorderly behavior reflects a lack of awareness of the importance of traffic ethics (Barus et al., 2024). From observations of the school environment, it was found that there is no public transportation available around the school, forcing students to use private vehicles. In fact, in an interview with one of the students, it was revealed that an accident had occurred in front of the school while he was crossing the road, due to heavy traffic and a lack of awareness of road conditions.

This lack of understanding among students is reinforced by the suboptimal traffic safety education in schools (Soimun et al., 2020). Based on documentation and statements from students and teachers, traffic safety education has only been conducted once, namely by the Samarinda City Transportation Agency in the form of a briefing during the morning assembly. There are no structured, ongoing lessons or campaigns in school activities. The media used in the socialization efforts were also passive, such as leaflets and posters, which were uninteresting and not suited to the learning characteristics of today's students. Teachers and students also mentioned that students were more interested in interactive visual and digital media than in conventional one-way communication.

As a form of concern for student safety, the school has taken several steps, one of which is prohibiting students from bringing and parking motorcycles within the school premises. However, this policy has not yet addressed the deeper understanding of students regarding traffic safety (Nastiti & Maskur, 2024). Therefore, a more innovative learning approach is needed, such as the use of digital media like short videos and e-booklets (Aisyah et al., 2025). Short videos can convey information concisely and engagingly (Octatya & Ayuningrum, 2025). E-Booklets present structured material that is easily accessible anytime (Ayunda et al., 2024). Since the utilization of these two media has not been maximized at SMP Negeri 7 Samarinda, further research is needed to analyze the effectiveness of each medium in improving students' understanding of traffic safety.

Several relevant previous studies have been conducted in the context of the use of digital learning media. The first study by Lukman et al. (2025) showed that video media was more effective than leaflets in increasing adolescent girls' knowledge about anemia, as it was considered more interesting and easier to understand. Hermansyah et al. (2024) demonstrated that a combination of educational videos and booklets significantly improved families' knowledge and attitudes toward COVID-19 prevention compared to leaflets. Utomo and Muna (2024) found that short videos were more effective than e-booklets in improving students' analytical thinking skills in science education. Giannini et al. (2013) highlighted that the use of traffic accident videos accompanied by narration can increase emotional activation and traffic awareness among training participants. Meanwhile, Gounaridou et al. (2021) found that digital educational media based on traffic simulations are effective in increasing road users' awareness and safety behavior through interactive learning experiences.

Although these five studies make important contributions to the development of learning media, there are still gaps that have not been extensively researched. The studies by Lukman and Hermansyah did not address the context of traffic safety and did not directly compare videos with e-booklets, but rather physical media such as booklets and leaflets, and were not conducted in a formal educational setting. Utomo and Muna did compare short videos and e-booklets, but their focus was on science subjects, not on the formation of ethical driving understanding. Giannini emphasizes emotional aspects rather than the effectiveness of structured learning. Meanwhile, Gounaridou uses digital game media that may not be implementable in various school conditions. Therefore, this study is novel in its specific focus on analyzing the traffic safety understanding of ninth-grade junior high school students after using learning media in the form of short videos and e-booklets, which are tailored to the characteristics and conditions of the school. The purpose of this study is to analyze the comparison of students' understanding of traffic safety using short video and e-booklet media at SMP Negeri 7 Samarinda.

METHOD

This study uses a quantitative approach with a quasi-experimental method that aims to analyze the effectiveness of short video media and e-booklets in improving the understanding of traffic safety among students. The research design used was a pre-test and post-test control group design. The research was conducted at SMP N 7 Samarinda, which was chosen because it is located in an accident-prone area and has the characteristics of students who are still under the age of driving.

The research subjects were 60 ninth-grade students who were divided into two groups, each consisting of 30 students. The first group was given socialization using short video media, while the second group used e-booklets. Both groups were given a pre-test before socialization and a post-test afterwards to measure changes in the level of understanding. The sampling technique used in this study is non-probability sampling. In research, non-probability sampling is a method of sampling that is not random, so that not all members of the population have an equal chance of being selected (Asrulla et al., 2023). The type of non-probability sampling used is purposive sampling. Purposive sampling is a sampling technique applied when researchers have specific criteria for selecting respondents for specific research purposes (Santina et al., 2021). This sampling technique was chosen based on the consideration that the characteristics of the students were almost the same.

The data sources in this study are divided into two types, namely primary data and secondary data. Primary data collection in this study was conducted through pre-tests and post-tests, which were then reinforced with interviews, observations, and documentation. Tests were used as quantitative measurement tools to assess students' level of understanding of the material or learning (Adri, 2020). Meanwhile, interviews were conducted with several parties, including students, teachers, the vice principal, and school administrative staff, to explore their views and experiences regarding the use of short videos and e-booklets as learning media. These interviews aimed to gain deeper insights into students' engagement, interest, and the perceived effectiveness of each medium used during the learning process. Observations were carried out on January 06-February 06, 2025, during the implementation of learning activities in the classroom and school environment. The focus of the observations was on student behavior related to traffic safety, such as attentiveness during the delivery of materials, discussions about traffic ethics, and students' awareness of safe behavior. This observational data was used to support and complement the quantitative findings obtained from the pre-test and post-test. Secondary data was obtained from

literature studies covering books, journals, scientific articles, and other documents relevant to the themes of traffic safety, learning media, and quantitative approaches in educational research.

The pre-test and post-test data collected were analyzed using a quantitative approach through several stages. The initial stage involved conducting a normality test. The normality test was used to determine whether the variables were normally distributed or approximately normal (Difinubun et al., 2023). The normality test using the Lilliefors test method is a non-parametric normality test that is an improvement on the Kolmogorov-Smirnov method (Usmadi, 2020). This test is important to ensure that the data meets the requirements for parametric testing. Once it is known that the data is normally distributed, the next step is to conduct a hypothesis test to test the validity of the preliminary assumptions based on the data from the research sample (Anuraga et al., 2021).

The hypothesis in this study states that students who receive traffic safety education through short videos have a better understanding than students who learn through e-booklets. To test this hypothesis, a t-test was used. The t-test is used by researchers to compare the sample means for two groups (A. D. Putri et al., 2023). The type of t-test used in this study is the Independent Samples T-Test, which is one form of t-test intended for two independent or unrelated data groups (Paisal et al., 2021). This test is not only used to determine whether there is a significant difference between the two groups, but also to determine which medium is more effective in improving student understanding. If the significance value (Sig. 2-tailed) obtained is less than 0.05, it can be concluded that there is a significant difference between the two groups, and the medium with the higher post-test average score is considered more effective in improving students' understanding of traffic safety.

FINDINGS AND DISCUSSION

Findings

This research was conducted at SMP N 7 Samarinda. The research involved 60 students in grade 9 of Junior High School (SMP), which was divided into two classes. The classes used were class 9-E as the short video class and 9-C as the e-booklet class.

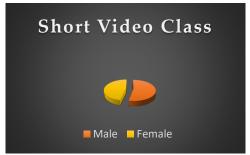


Figure 1. Percentage of Audience by Gender in the Short Video Class



Figure 2. Percentage of Audience by Gender in the E-Booklet Class

Based on the two figures above, the two classes have different percentages. The short video class, as shown in Figure 1, had a total of 30 participants, with 16 males (53.33%) and 14 females (46.67%). This percentage shows that the number of men is slightly more dominant than women in this class. Whereas in the e-booklet class, as shown in Figure 2, the total number of participants was 30 people, with a composition of 19 men (63.33%) and 11 women (36.67%). It can be seen that the percentage of men in this class is higher than in the short video class, while the number of women is smaller. The distribution of students between males and females in each class varies.

Test Result Analysis

a. Categorization of Students' Level of Understanding

This study used a pre-test and a post-test to measure the increase in understanding of the respondents. As for the results of the pre-test and post-test, the students were categorized into several categories. The classification of the categories is as follows:

Table 1. Level of Comprehension

No.	Level of Comperhension	Category
1.	81-100	Very High
2.	61-80	High
3.	41-60	Medium
4.	21-41	Low
5.	0-20	Very Low

b. Short Video Class Test Results

Table 2. Short Video Class Test Results

Test Type	Mean	Max	Min	Total
Pre-Test	66,042	81,25	56,25	1981,25
Post-test	91,042	100	81,25	2731,25

Based on Table 2. Short Video Class Test Results, the pre-test and post-test data in the short video class show that there is an increase in understanding from respondents after completing the treatment. In the pre-test section, the average test score was 66.042, with a maximum score of 81.25 and a minimum score of 56.25. The total score of the short video class pre-test is 1981.25. Based on the comprehension classification table, the average pre-test score in the short video class is classified into the high category. In the post-test section, the average score obtained was 91.042 with a maximum score of 100 and a minimum score of 81.25. The total value of the post-test of the short video class is 2731.25. From Table 2, the average score of the post-test is classified as very high.

c. E-Book Class Test Results

Table 3. E-Book Class Test Results

Test Type	Mean	Max	Min	Total
Pre-Test	68,542	87,5	56,25	2056,3
Post-test	90,625	100	81,25	2718,75

Based on Table 3, the pre-test and post-test data in the e-booklet class also show that there is an increase in understanding from respondents after completing the treatment. In the pre-test section, the average test score was 68.542 with a maximum value of 87.5 and a minimum value of 56.25. The total score of the short video class pre-test was 1981.25. The average pre-test score in the short video class is classified into the high category based on the category of comprehension level. In the post-test section, the average score obtained was 90.625 with a maximum score of 100 and a minimum score of 81.25. The total post-test score of the short video class was 2718.75. From the data above, it is shown that the average score of the post-test results falls into the very high category. Based on the pre-test and post-test data in the e-booklet and short video classes, there was a significant increase in participants' understanding after the treatment. The average score on the post-test in both classes increased compared to the pre-test, demonstrating the effectiveness of the applied learning method.

Normality Test

The normality test aims to ascertain whether the sample data is normally distributed, so that parametric statistical techniques can be validly applied. In this study, normality testing was carried out by utilizing the Lilliefors method. The significance value used in this Liliefors test is 0.05. The data in the Liliefors test is categorized as normal if the value of L count < L table.

Table 4. Liliefors Test Result Table

Test Type	L-Count	L-Table	Description
Pre-Test (Short Video)	0,885	0.886	Normal
Post-Test (Short Video)	0,885	0.886	Normal
Pre-Test (E-Booklet)	0,880	0.886	Normal
Pre-Test (E-Booklet)	0,884	0.886	Normal

The normality test of the pre-test and post-test data of the short video and e-booklet classes using the Lilliefors test showed the calculated L values of 0.885 and 0.885 in the short video class, respectively, and 0.880 and 0.884 in the e-booklet class. All of these values are below the Lilliefors table value of 0.886. Thus, it can be concluded that the data in both classes and each of the two types of tests are normally distributed. This shows that the normality assumption is met, so that parametric statistical analysis can be used for further data analysis.

Hypothesis Test

The type of hypothesis test used to analyze the data is the Independent Sample T-Test.

Independent Sample T-Test

Figure 5. Independent Sample Test Results

		Leven's Test for Equality of Variances					T-test for Equality of Means		95% Confidence Internal of the Difference	
		F	Sig.	t	df	Sig. (2- tailed)	Mean Difference	Std. Error Difference	Lower	Upper
Score	Equal Variances Assumed	1.327	.254	1.239	58	.220	2.91667	2.35448	- 1.7963 4	7.6296 7
	Equal Variances Not Assumed			1.239	54.2 34	.221	2.91667	2.35448	1.8033 2	7.6366 5

Table 6. Group Statistic

		N	Mean	Std. Deviation	Std.Error Mean
Score	Gainscore Short Video	30	25.0000	10.25011	1.87140
	Gainscore e-booket	30	22.0833	7.82578	1.42879

Based on table 6, the result of sig. (2-tailed) of 0.220 <0.05, then in accordance with the hypothesis requirements in the independent sample t test, it means that there is no significant difference between the two classes. But, according to Figure 5, although there is no very significant impact, the short video class has a higher average. So, based on the average increase in knowledge, the short video media is better.

Discussion

The results of the study revealed that both short videos and e-booklets were equally effective in improving students' understanding of traffic safety. This study involved ninth-grade students at SMP Negeri 7 Samarinda, divided into two groups. The average pre-test score for the e-booklet group was 68.54, which increased to 90.625 on the post-test, while the short video group saw an increase from 66.04 to 91.042. Although the Independent Samples T-Test showed that the difference between the two groups was not statistically significant (p = 0.220), the gain score indicated that the short video group had a higher increase (25.00) compared to the e-booklet group (22.08). This suggests that short videos are more effective in practice, especially in conveying traffic safety material that requires real visualization and attitude-based understanding. Theoretically, this finding aligns with Mayer's Cognitive Theory of Multimedia Learning (2008), which states that learning is more effective when information is conveyed through two channels: visual and verbal. Short videos fulfill this principle by combining narration, images, movement, and sound, thereby stimulating dual information processing in students' brains. This facilitates the storage of information in long-term memory and accelerates conceptual understanding. Meanwhile, e-booklets rely more on text, which requires high literacy skills and strong reading concentration. For teenage students who tend to be more visual and easily bored, audiovisual media such as short videos are more engaging and help internalize the ethical and behavioral values of safe driving.

This research is also supported by previous findings. Ridwan (2021) stated that video media can overcome learning difficulties caused by overly abstract teacher explanations, as videos present information concretely and easily understood. Sukmawati et al. (2024) emphasized that short videos greatly support self-directed learning, allowing students to learn at their own pace and review material as needed. Farhan et al. (2024) even reported an N-gain of 0.72 in classes using interactive videos, indicating a significant improvement in understanding. Meanwhile, Krisna and Marga (2018) state that educational videos are highly effective in online environments because students can replay the material until they fully understand it. The findings of this study reinforce previous

results, showing that short videos not only capture students' attention but also enhance their understanding. However, this study also considers the critical notes from Riwayanto and Zahra (2024), who state that excessive consumption of short videos outside the learning context can reduce students' concentration and learning endurance. However, in this study, the videos used were educational, designed with clear learning objectives, and used in a controlled classroom setting, so these negative effects were not observed. On the other hand, e-booklets remain effective and relevant, especially for students with high reading interests or those needing access to learning materials without internet connectivity.

Thus, this study does not negate the benefits of e-booklets but shows that short videos have practical advantages in reaching more students with diverse learning styles. Based on these findings, it can be concluded that short videos have great potential as an alternative for traffic safety education at the junior high school level. This medium not only aligns with the characteristics of the digital generation, who prefer visual, fast-paced, and interactive content, but also effectively conveys behavioral material in a more concrete manner. Although both media are equally effective, short videos show a stronger tendency to enhance student understanding. Therefore, schools and educators are advised to consider incorporating short videos into their teaching, particularly for topics requiring deep comprehension and attitude change.

CONCLUSION

This study shows that both learning media, namely short videos and e-booklets, can contribute positively to improving the understanding of junior high school students. The pre-test and post-test result for both groups showed a significant increase in scores, with average scores falling into the high and very high categories. Based on the normality test using the Lilliefors test, the data were found to be normally distributed, so analysis using parametric statistical tests was deemed appropriate. The results of the analysis using the Independent Samples T-Test showed that there was no statistically significant difference between the improvement in understanding of students who used short videos and those who used e-booklets (p = 0.220 > 0.05). However, from a comparison of the average post-test scores, the group of students who used short videos obtained slightly higher scores than the e-booklet group. This indicates that although the difference is not statistically significant, short video media tends to be more effective in practice in helping to improve student understanding. Overall, both short video media and e-booklets can be used as effective and

relevant alternative learning media at the junior high school level. Based on these results, teachers and educators are advised to optimize the use of short videos in the learning process due to their engaging, concise, and easy-to-understand characteristics. Meanwhile, e-booklets remain recommended as a practical and flexible option to support students' independent learning processes. Further research is expected to develop other educational media and test their effectiveness on different topics and at broader educational levels to strengthen the findings of this study.

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