



Technology Based Interactive Media Development

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Abstract. The aim of this work is to analyze and determine the influence of a technology-based learning environment using the Nearpod application. This research uses a type of quantitative experimental research. Additionally, they used Kirkpatrick's model to evaluate the use of the Nearpod application. This research was divided into two classes, namely the experimental class and the control class. 56 people participated in this study. They were then divided into two classes, each class numbering 112 participants. The practical contribution of this research is to create more technology-based learning environments among educators about the importance of media in learning. One of them is using the Nearpod application to improve student learning outcomes in Indonesia. The results of this research show the impact of a technology-based learning environment on the use of the Nearpod application. This was shown by the experimental class after receiving treatment getting the highest score of 95, while the control class got a score of 86 business continuity.

Keywords: creative industries, MSMEs, information technology, disaster risk mitigation

1 Introduction

Educational stages are used to obtain knowledge and skills. Nowadays, everyone needs technology, from children to adults. So, as we know, technology plays an active role in everyday life. This is proven by everyone having a handphone that they use almost every day. People nowadays are better off not carrying a wallet than not carrying a handphone [1]. Directly, education is also influenced by technology, namely as a learning medium. According to Ki Hajar Dewantara motto "Educate children according to their times" Therefore, like it or not, teachers have to adapt to developments that occur [2]. One of them is the use of very diverse technology [3]. Teachers may no longer use the lecture method in teaching and learning activities. Because today's school children get bored and bored more easily. Thus, it will eliminate students' motivation and interest in learning [4]. However, it is still found that some schools only use the lecture method, this is due to the limitations of projectors and electrical voltage, apart from that there are still teachers who do not understand how to use technology as a learning medium.

Apart from that, with so much technology, teachers must be wise in choosing appropriate media such as applications or platforms so that what is conveyed can be easily understood by students [5], [6]. So, when choosing media, you have to pay attention, such as learning materials, that students' characters are predominantly kinesthetic or visual. Media can be used only to convey material or quizzes in the learning process. Apart from that, before using technology-based learning media, teachers need to design a learning process [7].

One technology that can be used as a learning medium is the Nearpod application. The Nearpod application is considered to be able to support the learning process in the era of digital technology [8] [9]. Apart from that, it is easy to use the Nearpod application as a medium for

delivering material to elementary school students in Indonesia. The Nearpod application is a multimedia application that makes it easier for teachers to design learning materials [10]. Having a learning process design will make it easier for teachers to apply Nearpod. Thus, the learning process becomes more focused and achieves learning targets [11], [12].

Learning media is a means used by teachers to transfer knowledge and skills to students [13]. The aim of learning media is to create a fun and active learning atmosphere so that during the learning process students become motivated and concentrate on the explanations given by the teacher [14], [15]. Use of learning media for students. Teachers must be innovative and take the time to create interesting learning media with the Nearpod application [16].

The Nearpod application can help the learning process become more optimal, efficient and of high quality. When creating media using the Nearpod application, you can combine power points, digital books, videos and interactive quizzes [17]. When using the Nearpod application, students can learn independently. There is a drawback to the Nearpod application, namely that the application has several paid features, so there are limitations to creativity. The advantage of the Nearpod application is that it is very easy to use so teachers who are not very skilled in using technology can find it easier.

Teachers and students gain many benefits through learning using media. Media can motivate students in the learning process because the use of media is interesting for students, especially technological media such as the Nearpod application. Motivation when studying is the most important thing to determine the quality and success of the learning process. Apart from that, the use of media can provide opportunities for interaction between teachers and students [18]. The learning atmosphere becomes more lively, it will give students clarity on the material presented, activate students' five senses, students will become more competitive, and give students a good perception.



Fig. 1. Nearpod application menu



Fig. 2. Display in the Nearpod application

Learning efforts using the Nearpod application media for elementary school students can have a direct impact on students by effectively increasing learning motivation. Then, improve student learning outcomes and achievement in elementary schools. Therefore, schools should help support all student learning facilities such as media [19]. As is known, there are many positive impacts on students, which will indirectly improve the quality of education at the school [20]. There is also a need to provide training to teachers on how to implement the Nearpod application for students.

Based on this, technology always attracts the attention of its users. Technology provides many conveniences so that activities become faster and more practical. In every learning process, teachers need to evaluate student learning outcomes [21], [22]. This is to determine the influences exerted by the media implemented by the teacher. This evaluation uses the Kirkpatrick model through four stages, namely reaction, learning, behaviour, and the overall results of the learning process.

This research aims to determine the effect of implementing the Nearpod application as an interactive medium to increase elementary school students' learning motivation. Apart from that, there is still a reduction in the number of teachers in Indonesia who apply Nearpod in the learning process [23]. This is due to the lack of familiarity with the Nearpod application, and teachers' lack of ability to update digital technology as a varied learning medium. Based on this, there is a practical contribution in this research to create varied technology-based learning media so that students do not get bored [24]. One solution that can be used to increase student motivation and learning outcomes in Indonesia is by using the Nearpod application.

2 Research Methods

Based on research that will be carried out through quantitative experimental methods. This is because the experimental method is more accurate using two research groups, namely pretest and post-test [25], [26]. This research was also combined with the Kirkpatrick model with stages of reaction, learning, attitudes and results obtained. Then, this research aims to determine the effect of the Nearpod application in increasing student motivation and learning outcomes in

Indonesian schools. The subjects used in the research were 112 participants from 4 schools in Indonesia. The subjects of this research were selected through random sampling [27].

3 Results and Discussion

The results of research that has been carried out through observation, interviews and questionnaires to obtain research data. A total of 4 school teachers apply Nearpod in the learning process. Then, researchers used the Kirkpatrick model to determine students' influence on the Nearpod application starting from reactions, learning processes, behaviour and learning outcomes.

Table 1. Comparison of on the use of the Nearpod application

	Control	Average	Experimental	Average
N	Valid	56	Valid	56
	Missing	0	Missing	0
	Mean	60.00	Mean	62.20
	Std. Error	1.402	Std. Error	1.122
	Median	61.00	Median	65.20
	Mode	42	Mode	46
	Std.	6.420	Std.	9.431
	Variance	98.469	Variance	82.866
	Range	44	Range	36
	Min	36	Min	48
	Max	78	Max	87
	Sum	1462	Sum	1679

The table 1 states that before and after implementing Nearpod in the control and experimental classes. The results showed that in the control class, students tended to be below the completeness score, getting a high score of 78. Then, in the experimental class, students tended to have a score above completeness, getting the highest score of 87. These results showed that in the control and experimental classes there were differences in student behavior in the learning process. students in the control class who did not receive treatment near a passive learning atmosphere. Meanwhile, in the experimental class the learning atmosphere tends to be active and critical.

Table 2. Comparison of descriptive statistics post-test control and experimental classes

	Control class	Average	Experimental class	Average
N	Valid	56	Valid	56
	Missing	0	Missing	0
	Mean	76.20	Mean	84.50
	Std. Error	1.220	Std. Error	1.002
	Median	78.00	Median	88.00
	Mode	78	Mode	88
	Std.	7.329	Std.	6.275
	Variance	52.720	Variance	36.375
	Range	28	Range	20
	Min	60	Min	72

Max	86	Max	95
Sum	2228	Sum	2468

Meanwhile, in Table 2 the results obtained from the post-test are very significant differences between the control and experimental classes. This can be proven based on Table 2. In the control class, students got the highest score of 86, while the experimental class had a high score of 95.

Table 3. Normality test

Class	Kolmogorov-Smirnov			Shapiro-Wilk		
	Statistic	df	Sig.	Statistic	df	Sig.
Pre- test Experimental	.126	136	.114	.928	136	.247
Post-test Experimental	.121	136	.112	.919	136	.067
Pre-test Control	.124	136	.103	.940	136	.180
Post-test Control	.107	136	.204	.955	136	.309

Table 3 states that based on normal distribution, the normality test has almost the same meaning in the experimental and control classes. It is 0.114 and 0.112 according to Table 3 of the experiment. Meanwhile, the control class obtained significance values of 0.103 and 0.204. There is a significant difference in the results of the normality test in the Kolmogorov-Smirnov and Shapiro-Wilk tests between the experimental class and the control class.

Table 4. Homogeneity test

	Levene Statistic	df1	df2	Sig.
Mean	.415	1	56	.510
Median	.220	1	56	.610
Median and with adjusted df	.240	1	50.268	.610
Trimmed mean	.420	1	56	.520

Table 4 then presents homogeneous data between the control and experimental classes. After that the data was tested at the hypothesis stage. The test results show a sig value. $0.007 < 0.05$ and experimental class $0.000 < 0.05$. This difference is caused by the treatment factors that students receive in the learning process. This treatment greatly influences students' performance and condition before and after learning. As we often know, traditional learning in controlled classes is only based on the students' own cognitive abilities.

Apart from that, the effect size test produced research data of 1.173 which states that the learning process applied by Nearpod to students has experienced a very high increase. The Nearpod application can activate students in the classroom, make learning easier to understand, attract students' attention and does not require a projector.

The conclusion from these results is that teachers can use the Nearpod application as an interactive learning tool in elementary schools. The Nearpod app makes design and implementation easy for teachers. The most important thing is that the school has sufficient

internet connection for the Nearpod application. Teachers must be ready to adapt to current developments so as not to be left behind. Apart from that, teachers must be willing to take part in Nearpod application training.

This is in accordance with research which states that the type of media chosen and the learning methods used in learning are factors that influence the effectiveness of learning. Based on the results of questionnaires and interviews in the form of Google forms as well as an analysis of teacher needs, teachers utilize a technology-based learning environment (ICT) in learning, namely using worksheets in developing Nearpod-based interactive science learning media. Currently studying mass media. The teacher applies a student-centered learning model in his teaching activities. Therefore, teachers need a technology-based learning environment in their learning. Other research also shows that the use of PPT-based learning environments and textbooks supports students in independent learning. However, innovation is also needed in creating a Nearpod-based interactive learning environment in the learning process. So, teachers need a Nearpod-based learning environment so that students can learn independently and can be accessed at any time.

4 Conclusion

In this research it can be concluded that the use of a technology-based learning environment using the Nearpod application has an effect on student learning outcomes. Apart from that, this research uses the Kirtpatrik model in four stages to obtain research results. First, students' reactions to the use of Nearpod in the student learning process are more interested in evidence and student enthusiasm during learning. The second is the learning stage, where researchers observe and assess students' understanding of the material to measure students' skills after learning via the Nearpod application. The third step is behavior. Namely, researchers monitor the Nearpod application to monitor students' attitudes and performance in the learning process. The fourth stage is the results, where researchers evaluate all stages of the learning process using the Nearpod application environment.

Based on this, the Nearpod application is known to be usable and suitable for current technology-based learning. The many advantages of the Nearpod application can prove it. In addition, Nearpod is an interactive multimedia application that allows you to achieve quality learning by combining several media such as PowerPoint, digital books, and YouTube. Based on the analysis of the data presented, the use of a technology-based learning environment viz. Nearpod application, has an impact on learning outcomes and student motivation. The experimental class obtained a higher average score than the control class, namely $95 > 86$. Learning used the Nearpod and Kirtpatrick models to evaluate the impact of using Nearpod on Indonesian students. Researchers monitor learning using the Nearpod application and in general students are very enthusiastic about learning. Apart from that, it is easier for students to understand learning because students have to learn independently. The researchers then assessed reactions, learning, behavior and overall results when learning using the Nearpod application. Student achievement has improved and students generally receive above average grades.

Based on this, it is known that the Nearpod application can be utilized and is suitable as a technology-based learning medium at this time. The many advantages of the Nearpod application can prove this. In addition, the Nearpod application is interactive multimedia that can achieve quality learning by combining several media such as power points, digital books, and Youtube. Based on the analysis of the data presented, there is an influence of technology-

based learning media, namely the use of the Nearpod application, on student learning outcomes and motivation. The experimental class obtained an average score higher than the control class of $92 > 88$.

Learning by using the Nearpod application and the Kirkpatrick model to evaluate the effect of using the Nearpod application on students in Indonesia. Researchers observing the learning process using the Nearpod application students tend to have high enthusiasm for learning. Besides, students can more easily understand learning because students have to study independently. Then, researchers assessed reactions, learning, behavior, and overall results when learning using the Nearpod application. Student learning outcomes have increased, and students tend to get above average scores.

It is hoped that further research will be able to provide innovation over time and take advantage of technological advances. In this way you can choose a learning environment that suits the student's character and learning material. One of them is the Nearpod application which can be used as a learning tool based on the latest technology. In addition, further research is needed regarding the factors that influence the success of using the Nearpod application to improve student learning outcomes. This research hopes to find more factors that influence the use of the Nearpod application on student learning outcomes to consider choosing a technology-based learning environment for the successful use of the Nearpod application as a learning experience in Indonesia.

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