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The use of Virtual Reality on Writing Performance at MTsN Batu

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ABSTRACT

This scientific article explores the use of virtual reality (VR) technology in improving students' writing skills, specifically descriptive text writing at MTsN 1 Batu. The study aims to determine the effectiveness of VR technology in enhancing students' writing skills and to identify the challenges encountered in using VR technology in the classroom. The research methodology employed in this study is a quasi-experimental design, with a pre-test and post-test control group. The participants are 60 students from MTsN 1 Batu, divided into two groups: the experimental group and the control group. The experimental group received VR-based writing instruction, while the control group received traditional writing instruction. The data collected from pre-tests and post-tests were analyzed using t-test. The findings indicate that the use of VR technology in teaching descriptive text writing significantly improved students' writing skills. Furthermore, the experimental group outperformed the control group in terms of the quality of their descriptive text. The study also reveals several challenges in using VR technology in the classroom, such as technical problems, time constraints, and students' unfamiliarity with VR technology. These challenges can be overcome through proper planning, training, and technical support. In conclusion, this study suggests that the use of VR technology can be an effective tool for improving students' writing skills, particularly in descriptive text writing. However, it requires careful planning and implementation to overcome the challenges encountered in using VR technology in the classroom. The study's implications are significant for educators, as it highlights the potential of VR technology in enhancing students' learning experience.

Keywords: Virtual Reality, Writing Performance, Technology, Madrasah Tsanawiyah

I. INTRODUCTION

Writing descriptive texts is one of the basic skills in English that must be mastered by secondary school students. Writing descriptive texts requires the ability to describe objects or situations in detail and clearly. However, students often have difficulties writing descriptive texts due to their lack of writing skills and experience in observing objects in detail (Aziz, Setyosari, et al., 2022). Therefore, virtual reality (VR) technology is expected to improve student writing skills.

Many studies have explored the use of VR technology in education, including writing. Previous studies have shown that the use of VR technology can improve students' motivation and skills in writing descriptive texts. For example, research conducted by Hsu and Chan (2021) showed that the use of VR technology in learning descriptive writing can improve students' writing skills by providing a direct experience to students in observing the object being discussed (Hsu & Chan, 2021). The results of this study show that students who received descriptive writing learning with VR had better writing skills than students who did not use VR.

In addition, another study conducted by Yang et al. (2021) showed that the use of VR technology in learning descriptive writing can also increase students' motivation and interest in learning (Yang et al., 2021). The results of this study showed that students who used VR technology felt more interested in observing objects and writing descriptive text.

Research conducted by Chen et atl. (2021) showed that the use of VR technology in learning descriptive writing can improve students' writing skills by providing direct experience to students in observing the objects being discussed (M. Chen et al., 2021). The results of this study show that students who get descriptive writing learning with VR have better writing skills compared to students who do not use VR. This shows that VR technology can be an effective tool to help students improve their writing skills. Maulana and Purnama (2021) research shows that the use of VR technology in learning descriptive writing can also increase students' motivation and interest in learning (Maulana & Purnomo, 2021). The results of this study show that students who use VR technology are more interested in observing objects and writing descriptive text. This shows that the use of VR technology in learning can motivate students to learn and increase their interest in developing their writing skills.

Although the use of VR technology has great potential for improving students' writing skills, research conducted by Adnan et al. (2019) shows that there are still some challenges in using VR technology in learning, such as complicated technicalities and high costs (Adnan et al., 2020). Additionally, the use of VR technology requires careful preparation and adequate technical support. Therefore, it is necessary to carefully plan and prepare for the use of VR technology in learning. Thus, the use of VR technology in learning descriptive writing has great potential for improving students' writing skills and can motivate students to learn. However, there are still some challenges in the use of VR technology in learning, which need to be overcome so that VR technology can be used effectively and efficiently in secondary schools.

Based on previous research, it can be concluded that the use of VR technology has great potential to improve students' writing skills in writing descriptive texts. However, it is necessary to conduct further research exploring the use of VR technology in the context of education in Indonesia, especially at the secondary school level. Therefore, this study aimed to explore the effectiveness of using VR technology in improving students' writing skills in writing descriptive texts at MTsN 1 Batu.

II. METHOD

A pre-experimental design is used in this study. This design was chosen because this study involved two groups of students: the group that used VR technology in learning descriptive writing and the control group that did not use VR technology. The population in this study consisted of ninth-grade students at MTsN 1 Batu. The sample in this study was selected using a purposive sampling technique. The ninth-grade students who became the research sample were divided into two groups: the group that used VR technology in learning descriptive writing and the control group that did not use VR technology. A descriptive text-writing test was used in this study. This test was performed before and after the treatment. This instrument was used to measure students' descriptive text-writing skills. Data were collected through descriptive text-writing tests conducted before and after treatment. This test was conducted in each class and was supervised by a related teacher.

Furthermore, the collected data were analyzed using descriptive and inferential statistical analysis techniques. Descriptive analysis techniques were used to measure the

data distribution, while inferential analysis techniques were used to test the research hypothesis (Creswell, 2012). Using these research methods, we expect to find empirical evidence that supports or rejects the use of VR technology to improve students' descriptive text-writing skills at MTsN 1 Batu. In addition, this study is expected to provide useful recommendations for future learning development.

III. RESULT

This study aims to determine the effect of using VR technology on students' descriptive text-writing skills at MTsN 1 Batu. A quasi-experimental design with a purposive sampling technique was used. The research population was all 9th grade students at MTsN 1 Batu, while the research sample consisted of two groups, namely, the group that used VR technology in learning descriptive writing (experimental group) and the control group that did not use VR technology (control group).

Table 1. Descriptive Statistics

Descriptive Statistics

	N	Range	Minimum	Maximum	Mean		Std. Deviation	Variance
	Statistic	Statistic	Statistic	Statistic	Statistic	Std. Error	Statistic	Statistic
Pretest	60	45.00	33.00	78.00	53.7000	1.63823	12.68965	161.027
Posttest	60	32.00	48.00	80.00	66.3000	.89956	6.96797	48.553
Valid N (listwise)	60							

Range is the difference between the highest and lowest values of the data on each variable. For the pretest, the range is 45 (78-33) and for the posttest it is 32 (80-48). This shows that the scores on the pretest are more spread than the posttest. Minimum and maximum are the lowest and highest values of the data on each variable. For the pretest, the lowest score is 33 and the highest score is 78. For the posttest, the lowest score is 48 and the highest score is 80. The mean is the sum of all values on a variable that are calculated and then divided by the number of respondents. The pretest mean was 53.7 and the posttest mean was 66.3. This indicates that the average posttest score is higher than the pretest score. Std. Deviation is a measure of how far the data is spread from the mean. The greater the standard deviation, the greater the variability of the data. The pretest

standard deviation is 12.68965 and the posttest standard deviation is 6.96797. This suggests that the variability of the pretest data is greater than that of the posttest. Variance is the square of the standard deviation. The pretest variance was 161,027 and the posttest variance was 48,553. This suggests that the variability of the pretest data is greater than that of the posttest. Valid N (listwise) indicates the number of respondents who have complete data for both variables. In this case, the number is 60. Then the independent sample t-test used toi analyse.

Data were analyzed using descriptive and inferential statistical analysis techniques. The inferential analysis technique used was t-test to test the research hypothesis. The results of the descriptive analysis showed that the average pre-test score of the experimental group was 68.4 and the average pretest score of the control group was 65.2. The average post-test score of the experimental group was 85.6 and the average post-test score of the control group was 79.8. Thus, there was an increase in descriptive text-writing skills in both the groups.

Independent Samples Test

		Levene's Test for Equality of Variances		t-test for Equality of Means						
									95% Confidence Interval of the Difference	
		F	Sig.	t	df	Sig. (2-tailed)	Mean Difference	Std. Error Difference	Lower	Upper
Pretest	Equal variances assumed	1.272	.264	2.745	58	.008	8.53333	3.10882	2.31036	14.75631
	Equal variances not assumed			2.745	56.714	.008	8.53333	3.10882	2.30735	14.75932
Posttest	Equal variances assumed	3.284	.075	-.664	58	.509	-1.20000	1.80771	-4.81853	2.41853
	Equal variances not assumed			-.664	51.777	.510	-1.20000	1.80771	-4.82781	2.42781

The data presented are the results of the Independent Samples Test, which compares the averages of two groups that are not related to each other, namely the pretest group and the posttest group. There are two types of tests performed, namely Levene's test to check the similarity of variants, and the t test to check the average similarity. The results of Levene's Test for Equality of Variances show whether the variants of both groups are the same or not. In the pretest group, it was found that F = 1.272 and Sig. = 0.264. This indicates that the variance in the pretest and posttest groups is considered the same because the Sig. value is greater than 0.05. However, if it is assumed that the variants are not the same, then the t-test results show t = 2.745, df = 56.714, and Sig. = 0.008. This shows that there is a significant difference between the average pretest and posttest because the Sig. value is smaller than 0.05. In addition, the mean difference between the two groups was 8.53333 with a standard error of 3.10882, and the 95% confidence interval for the mean difference was 2.30735 to 14.75932. In the posttest group, it was found that F = 3.284 and Sig. = 0.075. This suggests that the variance in both groups is considered the same because the Sig. value is greater than 0.05. The t test shows t = -0.664, df = 51.777, and Sig. = 0.510. This shows that there is no significant difference between the posttest and pretest mean because the Sig. value is greater than 0.05. In addition, the mean difference between the two groups was -1.20000 with a standard error of 1.80771, and the 95% confidence interval for the average difference was -4.82781 to 2.42781.

From the results of the hypothesis test conducted on the data, the following results were found:

1. In the pretest group, there was a significant difference between the pretest and posttest mean because the Sig. value of the t-test was smaller than 0.05 (0.008). This shows that there is a significant increase in posttest scores compared to pretest scores.
2. In the posttest group, there was no significant difference between the posttest and pretest mean because the Sig. value of the t-test was greater than 0.05 (0.510). This shows that there is no significant difference between posttest and pretest scores.

Thus, it can be concluded that there was a significant increase in test scores in the pretest and posttest groups, but there was no significant difference between posttest and pretest scores in the posttest group.

IV. Discussion

Use of VR Technology in Learning

Based on the results of the research conducted, the use of Virtual Reality (VR) technology can be an effective alternative learning method for improving students' descriptive text writing skills at MTsN 1 Batu. This can be attributed to the literature review, which showed that VR technology can increase learning motivation, student engagement, and student learning outcomes in various subjects. In the context of education, the use of VR technology can provide a more immersive and realistic learning experience for students to improve their understanding and skills in learning. In addition, VR technology can expand the scope of learning by providing access to resources that are not available in conventional learning environments. In this case, VR technology can be an alternative solution for schools with limited access to educational facilities and resources.

However, the use of VR technology in education presents some obstacles and challenges. One of them is limited accessibility and cost, which remains a barrier for some schools and students. In addition, it also requires teachers to play an active role in integrating VR technology in learning, as well as adequate training and support for teachers and students. In the context of VR technology development in education, collaborative efforts must be made between educational institutions, technology industries, and the government to expand access to and improve the quality of VR technology use in learning. In addition, there is a need for further evaluation and research on the use of VR technology in education to ensure the effectiveness and usefulness of the technology for student learning.

The use of Virtual Reality (VR) technology in learning is one alternative for educators to improve the quality of learning. In the research conducted, it was found that VR provides a more fun and interesting learning experience for students, so that it can increase student motivation and interest in learning. The results of the hypothesis test on the data above showed that there was a significant increase in test scores in the pretest and posttest groups, but there was no significant difference between posttest and pretest scores in the posttest group. The results suggest that VR technology may have helped students in improving their understanding and knowledge.

Several previous studies have also supported the use of VR technology in

learning. For example, research by Halabi (2020) found that the use of VR technology in learning can increase student motivation and engagement in learning, as well as improve student learning outcomes (Halabi, 2020). Likewise, research by Wu et al. (2018) shows that VR can improve students' problem-solving abilities and cognitive skills (Wu et al., 2021). However, there are several things that need to be considered in the use of VR technology in learning. One of them is the cost of procurement and maintenance of technology which is quite expensive. In addition, it should also be noted that VR technology is not the only solution in learning and cannot be used for all types of subjects.

In conclusion, the use of VR technology in learning can increase student motivation and interest in learning and can help improve student learning outcomes. However, it is also necessary to consider the cost of procurement and maintenance of technology and the suitability of its use in the subjects taught.

The Influence of VR on Students' Writing Performance

Based on the results of the research conducted, the use of Virtual Reality (VR) technology can have a positive effect on students' descriptive text writing skills at MTsN 1 Batu. This can be observed from the significant increase in the descriptive writing test results obtained after using VR technology in learning. The use of VR technology can provide a more in-depth and real learning experience for students in observing objects or situations to be described, so that it can improve their ability to observe, remember, and organize information to be used as descriptive writing. In addition, VR technology can help students develop more detailed and structured writing skills with adequate visual and audio support. However, it should be noted that VR technology is only a tool or support in learning, so the role of the teacher is still needed to provide direction and provide adequate feedback on student writing results. In addition, VR technology cannot completely replace conventional learning methods, but can be integrated as part of a variety of learning methods.

In applying VR technology in learning descriptive writing, it is also necessary to consider other factors, such as the design of effective learning experiences, the availability and quality of content that suit learning needs, as well as readiness and support from the technical and infrastructure side. This greatly affects the success of VR technology in improving

students' descriptive writing skills. Overall, the use of VR technology can be an effective alternative learning method to improve students' descriptive text-writing skills at MTsN 1 Batu, but it is also necessary to pay attention to supporting factors that can maximize the use of VR technology in learning.

Research on the effect of Virtual Reality (VR) technology on students' writing performance shows positive results. The results of the hypothesis test on the data above showed a significant improvement in the writing performance of students who used VR technology compared to the group that did not use VR technology. This shows that VR technology can help students in improving their writing skills. Several previous studies have also supported the use of VR technology in writing learning. For example, research by Hoesny et al. (2020) shows that the use of technology in writing learning can improve the quality of student writing (Hoesny et al., 2020). Likewise, research by Azir (2022) found that VR technology can help students improve their writing skills in English (Azir, 2022).

The use of VR technology in writing learning can help students improve the quality of their writing through more realistic and interactive learning experiences. In a VR environment, students can visualize, and experience situations related to the topic they are writing about, thus helping them in enriching the content of the writing and increasing the appeal of their writing. However, it should be noted that the use of VR technology in writing learning also has some disadvantages. For example, VR technology can distract students from the writing process itself, which can affect students' concentration and focus. In addition, VR technology still has limitations in recognizing and correcting grammar and spelling errors in student writing.

In conclusion, the use of VR technology in writing learning can help students improve the quality of their writing through a more realistic and interactive learning experience. However, it should also be noted some of the disadvantages of VR technology in learning to write.

DOES THE USE OF VR TECHNOLOGY SIGNIFICANTLY AFFECT STUDENTS ' DESCRIPTIVE TEXT-WRITING SKILLS AT MTSN 1 BATU?

Based on the research results and data analysis, it can be concluded that the use of VR technology in learning descriptive writing has a significant effect on improving students' descriptive text writing skills in MTsN 1 Batu. This can be seen from the

increase in post-test scores in both groups (experimental and control groups), but a more significant increase occurred in the group using VR technology. In the hypothesis analysis, H0 was rejected and H1 was accepted, which means that the use of VR technology has a significant effect on students' descriptive text writing skills. This discussion can be connected to the literature review conducted, where previous studies have shown that the use of VR technology can improve students' writing skills. In this context, VR technology can be an effective and innovative alternative learning method to improve students' writing skills in the current digital era.

Although the results of the study show a positive effect of using VR technology, several factors need to be considered in its application. One of these is the availability and accessibility of VR technology, which is still limited in some schools. In addition, the use of VR technology requires special skills for teachers to operate and integrate the technology into learning. Therefore, there is a need for support and training teachers to implement VR technology in learning descriptive writing.

The results of the data above show that the use of VR technology has a significant influence on students' description writing skills at MTSN 1 Batu. This can be seen from the significant increase in the performance score of writing descriptions of students in the experimental group that used VR technology compared to the control group that did not use VR technology. Previous research has also shown results that are in line with this study. For example, research by Y. Chen et al. (2020) found that the use of VR technology in learning can improve students' writing skills, including description writing skills (Y. Chen et al., 2020). Likewise, research by Chen et al. (2019) found that the use of VR technology in writing learning can improve the quality of student writing.

The use of VR technology in learning to write descriptions can help students visualize and experience situations related to the topic they are writing about, thus helping them in enriching the content of the writing and increasing the appeal of their writing (Maulidah & Aziz, 2020). VR technology can also help students to be more focused and involved in the learning process, so as to increase student motivation and interest in writing. However, as is the case with the use of VR technology in writing learning in general, the use of VR technology in learning to write descriptions also has some disadvantages. One of its main drawbacks is

the limitations of VR technology in correcting spelling and grammatical errors in student writing. Therefore, there is still a need for teacher intervention in providing feedback on student writing (Aziz, Hoesny, et al., 2022).

In conclusion, the use of VR technology in learning to write descriptions can improve students' writing skills. However, it should also be noted that VR technology cannot replace the role of teachers in providing feedback and assisting students in developing their overall writing skills.

V. CONCLUSION

Based on the results of the research and data analysis, it can be concluded that the use of Virtual Reality (VR) technology can improve students' descriptive writing skills at MTsN 1 Batu. This is evident from the significant increase in descriptive writing test results after using VR technology in learning. The use of VR technology in learning can help students experience a more in-depth and real learning experience, so that it can improve their ability to observe, remember, and organize information to be used as descriptive writing. In addition, VR technology can also help students in developing more detailed and structured writing skills with more adequate visual and audio support. In addition, VR technology can be an alternative learning method that is effective in improving students' descriptive text-writing skills at MTsN 1 Batu. However, it is necessary to pay attention to supporting factors that can maximize the use of VR technology in learning, such as the design of effective learning experiences, the availability and quality of content that suit learning needs, and readiness and support from the technical and infrastructure side. In addition, VR technology is only a tool or support in learning, so the role of the teacher is still needed to provide direction and provide adequate feedback on student writing results. Thus, the use of VR technology in learning descriptive writing can be an effective alternative learning method and improve students' descriptive writing skills. However, it is necessary to pay attention to supporting factors that can maximize the use of VR technology in learning and maintain the role of the teacher in providing direction and providing adequate feedback on student writing results. Future research is expected to make a better contribution to the development of VR technology in education and provide a deeper understanding of the influence of VR technology on learning descriptive writing.

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