THE EFFECTIVENESS OF VIRTUAL REALITY OF THE YOUTH PLEDGE MUSEUM TO INCREASE THE HISTORICAL AWARENESS OF CLASS XI SENIOR HIGH SCHOOL STUDENTS

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Abstract

This study aims to assess how much the Virtual Reality of the Youth Pledge Museum can improve historical understanding in grade XI students in high school. The approach used in this study was an experimental method with a One Group Pretest Posttest design, involving 68 grade XI students from SMA Negeri 1 Jepara as participants. Data collection was carried out with an instrument in the form of a historical awareness questionnaire given at the pretest and posttest stages. Data were analyzed using the T-Test and N-Gain Test to measure the effectiveness of using the Youth Pledge Museum's Virtual Reality in increasing students' historical awareness. The study results were based on the Independent Sample T-Test, which obtained a sig value. 0.000 <0.050, which means that using the Virtual Reality of the Youth Pledge Museum affects students' historical awareness. This is supported by the results of the N Gain Test, which obtained a score of g (0.88) > 0.71, which means that the impact of using the Virtual Reality of the Youth Pledge Museum on the historical awareness of students in the "High" category. The conclusion from the study results is that the Virtual Reality of the Youth Pledge Museum has effectively increased the historical awareness of grade XI students in Senior High School.

Keywords: effectiveness, virtual reality, Youth Pledge Museum, historical awareness, learners

INTRODUCTION

History learning is central to shaping students' national insight, nationalism, and self-identity as Indonesians. History learning is also a means to instil collective awareness about the journey and norms that underlie the life of the Indonesian nation (Hidayanti, 2021; Mahmudi & Suryadi, 2024). The purpose of learning history is to give students a deep understanding of important historical events that shape the national identity of the Indonesian nation. One of these important and historical events is the Youth Pledge. The event is a form of unanimity of Indonesian youth from various regions, which aims to echo the spirit of national unity to unite ethnic, cultural, and linguistic diversity in order to achieve Indonesian independence (Sari et al., 2024; Sukaesih et al., 2023). The Youth Pledge event reflects the attitude of nationalism as the basis for the formation of collective awareness of the younger generation to unite and

solidarity in maintaining the integrity of the Indonesian nation (Azhari, 2023; Nurjanah, 2023). The spirit of the Youth Pledge is in line with the situation of the Indonesian nation in the current era of globalization. The values of nationalism and national identity face various challenges from global dynamics. Therefore, strengthening history learning by emphasizing the significance of the Youth Pledge event is an urgent need to ensure that the younger generation, especially students, deeply understand the history and identity of the Indonesian nation.

The Youth Pledge, which is a milestone in the spirit of unity of the Indonesian nation, is an important material that must be taught to students in learning history at the Senior High School level (Azmi, 2023; Muhtarom & Erlangga, 2021). The material on the Youth Pledge can provide benefits to students, namely building national insight and national identity, developing critical learning about the Indonesian national struggle, increasing historical awareness of the spirit of unity and integrity, and as a means of instilling democratic values and tolerance (Azhari, 2023; Nurjanah, 2023; Sukaesih et al., 2023). The material about the Youth Pledge can be delivered more effectively by utilizing the Youth Pledge Museum as a source of historical learning. It should be understood that the Youth Pledge Museum has historical value because it used to function as a dormitory for students of the Native Doctors School or STOVIA and a place to pledge the Youth Pledge (Rahman et al., 2008, 2009). From these two things, the building of the Youth Pledge Museum holds the spirit of struggle and unity of Indonesian youth who tried to realize independence for the Indonesian nation. Meanwhile, in terms of collection, the museum presents various dioramas related to STOVIA or the Youth Pledge event. Therefore, the Youth Pledge Museum can be optimized as an effective tool to build students' historical awareness to understand and appreciate the values of unity and national spirit reflected in the Youth Pledge event.

Facts in the field show that students' historical awareness still needs to improve. This is caused by students' low interest in learning history, which is influenced by students' views that learning history is boring and less relevant to life today (Asmara, 2019; Kusuma, 2020; Rahmawati et al., 2023). Based on research conducted by Purni (2023) and Hidayanti (2021), students perceive history learning as a collection of material that must be memorized, not as a means to understand the deep meaning of each historical event as a shaper of the Indonesian national identity. This view arises because history learning tends to be monotonous because of methods and media that are less interactive, so students only act as passive listeners in receiving information (Asril, 2022; Hasan, 2019). This is reinforced by the results of research by Fadli et al. (2021), Umami et al. (2022), and Zubaidah et al. (2022), which state that limiting the active involvement of students has an impact on students' lack of interest in exploring historical material. This condition impacts the students' limited understanding of important historical events in Indonesia, such as the Youth Pledge. This can lead to a loss of historical awareness in the younger generation, which in the long run can weaken the younger generation's understanding of the national identity and noble values of the Indonesian nation.

One effective way to increase students' historical awareness is by visiting historical objects and sites such as museums (Triaristina & Rachmedita, 2021). Visiting historical objects and sites allows students to get real experiences related to a historical event. However, these efforts are faced with the limitations of schools or students to access adequate and relevant educational resources due to geographical, financial,

or material constraints (Basri et al., 2020; Prabowo & Supardi, 2022). Therefore, efforts are needed to design innovative learning approaches to overcome these limitations and increase students' interest in learning history while strengthening students' awareness of historical values. One approach that can be applied is to utilize learning technology, such as Virtual Reality, which offers immersive and interactive experiences to support achieving history learning objectives. Umami et al. (2022), Zubaidah et al. (2022), and Inayah (2022) state that the use of interactive and relevant technology-based learning media can provide a more in-depth learning experience, increase interest and understanding and strengthen students' historical awareness.

Advances also influence the implementation of learning in education regarding technology and information. One form of impact from these developments is innovation in the form of the use of Virtual Reality technology to support the learning process in the classroom. Virtual Reality is a technology that can create an immersive three-dimensional virtual environment and allows users to interact directly with the environment (Mihelj et al., 2016; Nofiar et al., 2023). The utilization of Virtual Reality technology in learning history provides an experience to students as if they were directly in an object or historical site, thus deepening their understanding and learning experience. Utilizing Virtual Reality in history learning, such as the Virtual Reality of the Youth Pledge Museum provided by the "Indonesia Virtual Tour" platform, can be an innovative solution to overcome limited access and direct visits to the Youth Pledge Museum. This technology allows learners to visit the Youth Pledge Museum virtually, thus providing equal opportunities for all learners to deepen their understanding and awareness of history, primarily through reflection on the events of the Youth Pledge. Research conducted by Rasyida et al. (2023), Haryana et al. (2022), and Fadzil et al. (2020) showed that the application of learning media based on Virtual Reality technology has a positive impact on increasing students' interest in learning and understanding of the historical context studied. Thus, Virtual Reality technology presents more interesting history learning and positively correlates with achieving learning objectives, namely increasing students' historical knowledge and awareness effectively and efficiently.

Several studies are in line with this topic, namely: (1) Muhammad Afif Maghfur et al. (2023), entitled "Utilization of the Youth Pledge Museum as a Learning Resource through Virtual Reality Technology" with a qualitative phenomenological approach examines the utilization of Virtual Reality-based learning resources for the Youth Pledge Museum in high school. (2) Abduloh Arif Robin & Jumardi (2023), entitled "Virtual Museum of Youth Pledge as a History Learning Media to Increase Historical Awareness" with a qualitative case study approach, examines the role of the Virtual Reality of the Youth Pledge Museum in increasing the historical awareness of students at SMA Negeri 6 Pandeglang. (3) Ichtiar Wilujeng Margarini (2023), entitled "Application of the Youth Pledge Museum Learning Methods In Improving Historical Understanding" with a qualitative method, discusses the benefits of field trip learning at the Youth Pledge Museum to improve students' historical understanding. dan (4) Muhammad Firnanda et al. (2024), entitled "Virtual Field Trip to the Youth Pledge Museum in History Learning at SMA Negeri 7 Banjarmasin," with a qualitative method, describes the implementation of a virtual visit to the Youth Pledge Museum at SMA Negeri 7 Samarinda.

Based on the explanation of the four relevant studies, no research measures the effectiveness of using the Virtual Reality of the Youth Pledge Museum in increasing students' historical awareness. Qualitative approaches such as phenomenology, case studies, and implementation descriptions are used in these four studies by describing the benefits and implementation of history learning based on the Virtual Reality of the Youth Pledge Museum. This study seeks to measure the effectiveness of Virtual Reality of the Youth Pledge Museum on increasing students' historical awareness with quantitative methods. This study uses One Group Pretest Posttest Design to measure the effect of using the Virtual Reality of the Youth Pledge Museum on students' historical awareness. The theoretical benefits of this research will enrich scientific studies on the effectiveness of Virtual Reality technology as a medium for learning history and explain the relationship between the use of Virtual Reality technology and the improvement of the affective aspects of students, especially in building historical awareness. Meanwhile, the practical benefits of this research can provide evidence-based guidelines for History Teachers on the effectiveness of using the Virtual Reality of the Youth Pledge Museum in increasing students' historical awareness.

RESEARCH METHODE

The method used in this research is quantitative, specifically using an experimental model in the form of One Group Pretest Posttest Design involving one test group. The research design was chosen so that the treatment given is more intense and planned to obtain maximum results and measure changes directly in the group after treatment. This research was conducted at SMA Negeri 1 Jepara in the academic year 2024/2025 odd semester, with the sample population being all grade XI students, totaling 396 students divided into 11 classes. The sample selection refers to the purposive sampling technique, which is based on specific considerations, including suggestions and input from teachers, as well as daily habits and the average value of students. From these considerations, 68 students were obtained and used as a test group.

Table 1. Experimental research with One Group Pretest Posttest Design

Before	Treatment	After
O_1	X	O_2

Remarks:

O_1 : In this phase or the first meeting, students carry out history learning by using learning media in the form of infographics. At the end of the learning process, students were given a pretest to determine the initial condition of the student's level of awareness.

X : In the second meeting, learners learn history by exploring the Virtual Reality of the of Youth Pledge Museum and absorbing the information.

O_2 : At the end of the second meeting, after using the Virtual Reality of the Youth Pledge Museum, students are given a posttest to measure the final condition of the students' level of historical awareness.

Data collection techniques and instruments in the form of a lift consisting of 24 statement items with six indicators of historical awareness have been validated by validators using the Expert Judgment method. The indicators of historical awareness are (1) understanding of historical events, (2) appreciation

of the values contained in historical events, (3) connection of historical events with modern life, (4) interest in historical material, (5) awareness of national identity, and (6) the influence of historical awareness on behaviour, which in detail is presented in the table as follows:

Table 2. Indicators and Sub-Indicators of Historical Awareness Instrument

No.	Indicators	Sub-Indicators	Question Number
1.	Understanding of historical events	Understand historical events in chronological order	1, 2
		Understand the impact of historical events	3, 4
2.	Appreciation of the values contained in historical events	Appreciate the values in historical events	5, 6
		Reflecting on historical events	7, 8
3.	Connection of historical events with modern life	Understand the relevance of historical events to life in the present and future	9, 10
		Applying the values of historical events in daily life	11, 12
4.	Interest in historical material	Increase motivation to learn more about history	13, 14
		Increase interest in deepening understanding of historical events	15, 16
5.	Awareness of national identity	Understand the importance of nationalism for daily life	17, 18
		Understand the importance of unity for today's life	19, 20
6.	The influence of historical awareness on behaviour	Have an awareness of preserving and maintaining historical objects and sites	21, 22
		Motivated to maintain the value of unity and nationalism in everyday life.	23, 24

The data collection process is carried out by giving a pretest to students to obtain data in the form of the initial condition of students' historical awareness, as well as a posttest to collect data in the form of the final condition of students' historical awareness after using the Virtual Reality Museum of the Youth Pledge. After the data is collected, a prerequisite test, which consists of a normality test and a homogeneity test, is carried out. The data analysis was carried out with statistical tests using the help of the SPSS version 26.0 program to determine the effect of using the Virtual Reality Media of Youth Pledge Museum on students' historical awareness. Statistical tests were carried out using the T-Test with the Independent Sample T-Test method, which refers to the sig value. <0.050, which means that the Virtual Reality learning media of the Youth Pledge Museum is effective and significant in increasing students' historical awareness. The T-Test results are reinforced by the Normalized Gain (N-Gain) Test with the assumption that the value of g. > 0.71 means that the use of learning media, such as the Virtual Reality Youth Pledge Museum, has an impact with a "High" category in increasing students' historical awareness. The categorization of the N-Gain value is based on the opinion of Richard Hake (1999) as follows:

Table 3. N-Gain Score Categorization

| Intervals	Category
$g \geq 0.710$	High
$0.310 \leq g \geq 0.700$	Medium
$g \leq 0.300$	Low

RESULT AND DISCUSSION

The Virtual Reality of the Youth Pledge Museum has alignment with the Merdeka Curriculum in Phase F history subjects or Class XI SMA. The Virtual Reality of the Youth Pledge Museum can be maximally utilized as a medium and learning resource for students, especially in the material about the "Indonesian National Movement." One of the platforms that provides free access to the Virtual Reality of the Youth Pledge Museum is the Indonesia Virtual Tour. Researchers use the Virtual Reality of the Youth Pledge Museum as a medium for learning history to increase historical awareness among grade XI students at SMA Negeri 1 Jepara. Virtual Reality has several features, including the Virtual Reality of the Youth Pledge Museum described in accordance with the original conditions, available Exploration Menu List that provides access to explore according to the wishes of students, the exploration button that makes it easy for users to browse the virtual Youth Pledge Museum environment, the pop-up information feature that explains each collection and diorama in the Youth Pledge Museum, the zoom in and out feature that can be used to view the Youth Pledge Museum collection in detail or as a whole, and precise image quality so that observation can be done carefully. Here is the main display of the Virtual Reality of the Youth Pledge Museum.

Table 4. Main view of the Virtual Reality of the Youth Pledge Museum

No.	Views	Remarks
1.		Start page and Exploration Menu List
2.		Diorama of the Youth Pledge Museum that is depicted by the actual conditions
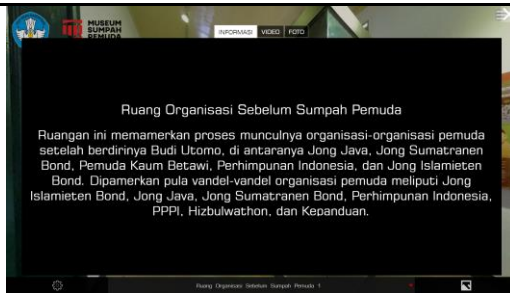
| 3. | | Pop-up information feature that explains the Youth Pledge Museum collection in the form of text, video, and also photos or supporting images |

Normality Test

The normality test aims to identify whether the distribution of the research data usually occurs. This test was carried out using the Kolmogorov-Smirnov method with the help of the SPSS version 26.0 program. The criteria used are as follows: if the sig. value> 0.050, then the data is considered normally distributed, and if the value is the opposite, the data is not normally distributed.

Table 5. Normality Test Results

Data Group	Significance Value	Remarks
Pretest result	0.163	Normal
Posttest result	0.187	Normal

Table 5 shows that the significance value for pretest results is 0.163, and for posttest results, it is 0.187. Both results are smaller than the significance level of 0.050, so the pretest and posttest data are normally distributed.

Homogeneity Test

The homogeneity test aims to identify whether the research data is homogeneous or not. The homogeneity test uses the Levene Statistic method with the help of the SPSS version 26.0 program. The reference used is if the sig. value > 0.050, then the data is homogeneous, and vice versa.

Table 6. Homogeneity Test Result

Data Group	Significance Value	Remarks
Pretest result	0.551	Homogeneous
Posttest result	0.809	Homogeneous

Table 6 shows that the significance value for pretest results is 0.551, and for posttest results, it is 0.809. Since both results are smaller than the significance level, the data results can be said to be homogeneous.

Hypothesis Test

Hypothesis testing was conducted using the Independent Sample T-test for normally distributed data. The process was assisted by the SPSS version 26.0 program with a significance level of 5%. If the sig value. <0.050, then the Virtual Reality of the Youth Pledge Museum influences increasing students' historical awareness, and vice versa.

Table 7. *Independent Sample T-Test Result*

T-test Result	Significance Value
Of the Independent Sample T-Test	0.000

Table 7 shows the significance value of the results of the Independent Sample T-Test test <0.050, which indicates the influence of the use of the Virtual Reality Museum of the Youth Pledge on the historical awareness of students.

N-Gain Test

The N-Gain test was conducted to support the results of the hypothesis test. This test aims to measure the extent of the impact of the application of the Youth Pledge Museum's Virtual Reality on increasing students' historical awareness.

Table 8. N-Gain Test Result

No.	Data Group	N-Gain Score	Category
1.	Understanding of historical events	0.85	High
2.	Appreciation of the values contained in historical events	0.93	High
3.	Connection of historical events with modern life	0.83	High
4.	Interest in historical material	0.89	High
5.	Awareness of national identity	0.92	High
6.	The influence of historical awareness on behaviour	0.91	High
	Average	**0.88**	**High**

Referring to Table 8, the average value of the N-Gain Score is 0.88, which means that the use of the Youth Pledge Museum's Virtual Reality influences the historical awareness of students in the "High" category.

Discussion

The previously described research results show that this study's data have a normal distribution, with a significance value of 0.163 for the pretest results and 0.187 for the posttest results, which means greater than the significance level of 0.050. The data in this study also met the homogeneity criteria with a significance value of 0.551 for pretest results and 0.809 for posttest results, which means greater than the significance value of 0.050. Meanwhile, the results of the Hypothesis Test conducted using the Independent Sample T-Test method obtained a significance value of 0.000 or <0.050, which means that the Alternative Hypothesis (Ha) is accepted, namely the application of the Virtual Reality of the Youth Pledge Museum has a significant impact on increasing students' historical awareness. In line with these results, the results of the N-Gain Test show an average score of g = 0.88, which means that the use of the Virtual Reality of the Youth Pledge Museum has an impact with the "High" category on increasing students' historical awareness. The pretest results of students' historical awareness obtained an average score of 3.82, and the pretest results of historical awareness obtained an average score of 4.8, which means that there was an increase in students' historical awareness by 27%. Overall, regarding the various test results, the Virtual Reality Media of the Youth Pledge Museum is effective and affects the historical

awareness of grade XI students in high school. This study also proves that there is an increase in the historical awareness of grade XI students at SMA Negeri 1 Jepara after using the Virtual Reality of the Youth Pledge Museum to study the chapter "Indonesian National Movement", especially related to the Youth Pledge event. The results of this study can be a reflection for teachers to utilize or develop technology-based learning media in the form of Virtual Reality as a support in strengthening students' historical awareness. Interactive learning will encourage motivation and interest in learning students so that it affects their understanding of the material, which will ultimately shape and strengthen their historical awareness.

Referring to Table 2 on Historical Awareness Instrument Indicators, one of the characteristics of historical awareness is having a complete understanding of historical events. According to research conducted by Fitriani & Fatmariza (2022), students' historical awareness and ability to understand historical events will develop. Conrad et al. (2024), Ofianto et al. (2023), and Fadzil et al. (2020), in their research, confirmed that the utilization of facilities in the form of Virtual Reality-based learning media has a positive effect on increasing students' knowledge and thinking skills. Therefore, the accuracy and suitability in the selection and use of historical learning media are key in building students' curiosity, which will positively impact students' understanding of the material and historical awareness. The results of research conducted by Abdullah Arif Robin & Jumardi (2023) show a positive correlation between the use of history learning media based on Virtual Reality technology and increased historical awareness of students. The same thing is also shown in the results of research conducted by Meizano Ardhi Muhammad et al. (2023) and Bahtiar Afwan (2023) which confirms that the development and use of Virtual Reality-based learning media in learning history are effective in increasing students' historical knowledge and awareness. These findings are also supported by research by Agus Susilo, Khairul Anwar, Leo Agung S (2024), and Nurul Fatimah & Dessy Octaviani (2023) which state that technology in the form of Artificial Intelligence, one of which is in the form of Virtual Reality, is an integral part of learning history, especially in building knowledge and shaping students' historical awareness in the era of technological disruption. The findings of previous research strengthen the results of this study, which prove that the virtual reality media of the Youth Pledge Museum has a significant impact on increasing students' historical awareness and knowledge, as well as their understanding of historical events.

The success of students' learning is also influenced by the teacher's ability to choose and use the right learning media, which, in this case, increases historical awareness and understanding of historical events. Effective and efficient learning media, one of which is Virtual Reality media, can be a tool that helps teachers deliver material more easily. Research conducted by Sasmita et al. (2022), Setiawan et al. (2022), and Kusumaningsih et al. (2018) confirmed that Virtual Reality media can be a supporting force in achieving the success of the history learning process for students in high school. This is supported by the results of research by Rachmawati & Hermawan (2024) and Azizi et al. (2023), which explain that Virtual Reality media is an effective means of delivering material, especially those related to historical objects and museum collections, to students. Conrad et al. (2024), Dianta et al. (2023), and Afwan (2023), in their research results, explain that learning history that utilizes Virtual Reality technology can encourage students' interest in learning so that they can actively participate in the learning process. Referring to this explanation, a pleasant learning atmosphere and conditions are the key to fostering

students' interest in learning to support the success of the learning process. Learning outcomes reflect the extent to which students understand the historical material learned. Understanding and interest in historical materials and events is one indicator of students' growth in historical awareness. The application of Virtual Reality media in learning encourages students to be more interested and motivated to study history. Students can virtually see and observe historical objects, usually only presented through text or two-dimensional images. Using Virtual Reality technology in learning history can create a more conducive, engaging, and interactive learning atmosphere, thus providing students with a more meaningful learning experience.

CONCLUSION

The use of Virtual Reality media of the Youth Pledge Museum impacts the historical awareness of class XI students at SMA Negeri 1 Jepara. This is evident in the statistical test results with the independent sample t-test method, which shows the sig value. (0.000) <0.050, which means that there is an effect of using the Virtual Reality of the Youth Pledge Museum on the historical awareness of students. These results are supported by the N-Gain test, which shows an average score of g = 0.88, which indicates that the use of the Virtual Reality of the Youth Pledge Museum has a "High" impact on increasing students' historical awareness. Thus, it can be concluded that the Virtual Reality Media of the Youth Pledge Museum is effective and significantly influences learning history, especially in increasing students' historical awareness related to the Youth Pledge event. Based on these conclusions, the development and utilization of Virtual Reality-based history learning media needs to be studied further to improve the quality of history learning. Historical objects and sites that are difficult to access can be presented as Virtual Reality technology, allowing students a more real learning experience in the classroom.

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