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Model of Virtual Reality in Social Studies to Improve Student Learning Outcomes

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ABSTRACT

Purpose: This study aimed to determine the effectiveness of using virtual reality-based learning in learning social studies for junior high school students. **Methodology:** The population of this study amounted to 288 students of SMPN 137 grade VII in the 2022/2023 school year in Cempaka Putih, Central Jakarta, Indonesia. Sampling was carried out by simple random sampling technique, using the Slovin formula to obtain a sample size of 160 seventh-grade junior high school students. This study used an experimental research method with a one-group pretest-posttest. In addition, the researcher used the paired sample t-test to test the hypothesis and the Kolmogorov-Smirnov t-test to test normality in this study. **Findings** The results of the independent samples test show that the significance value with 2-tailed is 0.000 < 0.05; then, as the basis for decision-making in the independent sample T-test, it can be concluded that H0 is rejected, and Ha is accepted. Thus, there is a significant difference between the average student learning outcomes in the experimental and control groups. In other words, applying the treatment was given to the experimental group, and no treatment to the control group resulted in different learning outcomes towards social studies learning. **Implications to Research and Practice** This research contributes to improving 21st-century competencies facing Industrial revolution 4.0.

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Introduction

The purpose of the domain of social studies is not only to emphasize the knowledge aspect but also to encourage students to develop and apply the values of this knowledge in the community. These values include tolerance and empathy, concern for others and the environment, discipline, obedience, order, work ethics, and others. In addition, social studies also develop students to be sensitive to social problems that occur in society, to have a positive mental attitude towards improving all inequalities that happen, and to be skilled in overcoming any issues that arise every day, both for themselves and their environment. To transform social studies material in line with the Industrial revolution 4.0, it is necessary to reform learning, which can be done by synergizing various social studies materials. This will enable students to use authentic problems in everyday life that are open to solving, where students can develop multiple thinking skills, independent learning, analysis, sensitivity to issues, practice problem solving, and evaluate problems in analyzing and critical thinking.

According to the National Council for Social Studies, social studies is one part of formal environmental education, which integrates several concepts of social science disciplines, humanities, science and even various social issues and life problems. Social studies, consisting of a heterogeneous set of academic disciplines, can help provide answers and reflect on multiple dimensions of society and human behaviour (Pickersgill et al., 2018). Social studies is a subject that teaches the value of patriotism in the field of community, place, and learning environment through demonstration methods at school (Avcı, Avcı, & İbret, 2017). Patriotism is loving one's country and nation, which expresses patriotism as a guarantee of social order and continuity, raising individual awareness, and state building. A study states that the importance of social learning theory in social studies is related to the ability of learners to absorb the behaviour shown in their environment by paying attention to several socialization agents and absorbing the behaviour exhibited (Edinyang, 2016).

The implication is that teachers can apply social learning theory to achieve the goals and objectives of social science disciplines. Learning using virtual reality, students have better learning outcomes compared to understanding using printed materials and web-based application materials (Fokides & Chachlaki, 2020). Another study states that virtual reality can improve student learning performance in lessons, where posttest results show that academic achievement and student engagement scores are higher regarding cognitive, behavioral, emotional and social students than students with traditional classes (Liu et al., 2020). Virtual reality has a lesson effect on students' learning performance because it allows students to engage in the lesson. Virtual reality can encourage interest in natural experiences related to socio-scientific issues, even among people who do not yet have a positive attitude towards such matters (Filter et al., 2020). Virtual reality provides a natural experience with positive affective learning outcomes.

Social studies material as a virtual reality-assisted learning resource for the needs of students as learners for information about social studies material that is interesting, contextual, up-to-date, and fun, which, in the end, the outcome of this research is the formation of the pluralist character of students in the world of education, resulting in success in learning and having a sense of tolerance or mutual respect, mutual trust, and cooperation.

The main objective of this research was to analyze students' and teachers' needs for learning media that can assist in delivering material on ecosystem-themed learning in a way that is relevant to the environment with appropriate technology. The problem that occurred in this research was that social studies learning in Grade 7 of Junior High School tends to be boring; there is less active interaction between teachers and students during learning due to limited time, facilities constraints and inappropriate learning methods, so learning is applied only in one direction, i.e., "Teacher Centered ". In addition, in classroom learning, the media used is only PowerPoint and a few supporting videos. The learning outcomes are not adequate as most students are not able to follow the lessons. It is not enough to provide material through student books, teachers also need to develop exciting learning media for students on ecosystems. The delivery of material so far is still abstract and needs to cover more tangible and concrete material as a whole so that students need to understand the virtual reality and the computer simulations. Another problem being faced is that student scores are much below the Minimum Completion Criteria (KKM) laid down officially. This study entails that Virtual reality is a technology that ignites users who can relate to or feel an event in an area operated by a computer (computer-simulated environment).

Literature Review

Social studies play a role in instilling positive values, strengthening existing values, and developing skills towards students' social abilities. The material in social studies is essential to be understood by junior high school students related to preparing students when living in a society of globalization and cultural diversity, where social studies in this school contribute to instilling social science concepts to restore human nature to become good citizens. The virtual reality-based social studies model will bring students to think critically in understanding social studies material to create experiences similar to physical reality but in a digital world that allows users to learn, play, or interact with environments that are impossible or difficult to access in everyday life so that in the end the transmission of social studies material becomes optimal.

A study states that the local wisdom-based social studies model can improve students' social knowledge and attitudes (Uge, Neolaka, & Yasin, 2019). The effectiveness of the learning design is tailored to the learning needs of the school. Other studies have shown that synesthetic learning methods can improve creativity regarding fluency, originality, and elaboration and student differences in social studies (Tajari & Tajari, 2011). The synesthetic learning method is more effective than the lecture method, especially in education and creativity in social studies. Through problem-based learning, social studies can also develop scientific thinking skills in urban students (Jewett & Kuhn, 2016). By solving problems involving social science content, students can build inquiry skills to make written scientific thinking assessments.

Furthermore, the lesson study experience can develop a culture of professional knowledge in social studies teachers so that teachers know the obstacles and have proficient knowledge in their learning (Howell & Saye, 2016). Teachers can teach and learn to develop a social studies curriculum through lesson study. Another study states that in the course of human life, skills are critical. When applied to learning, educational programs such as play-based programs, programs involving families or teachers, drama and story activities, cooperative programs, and project-based programs will produce more effective social skills (Aksoy & Baran, 2010). The program can improve students' social skills.

Furthermore, cooperative learning can improve students' social, emotional and cognitive learning, enhancing students' social behaviour in the classroom, and students' anti-social behaviour also decreases (Veldman et al., 2020). School-based social and emotional learning related to social competence, bullying prevention, substance use and abuse prevention, civic and character education, emotional intelligence, conflict resolution, social skills training, and 21st-century skills (Osher et al., 2016). This social learning provides recommendations for future practice, policy and research.

A study states that using virtual reality can help improve students' ability in oral presentations, where students who use virtual reality get higher scores than when not using virtual reality tools because it can facilitate preparation and encourage active learning (Xie, Chen, & Ryder, 2021). Students can develop oral proficiency in learning the material taught by the teacher. Virtual reality can overcome the challenges by providing a controlled and interactive environment by providing visual and audio feedback and allowing users to move in space like in the real world using a smartphone, such as teaching visually impaired students how to navigate the world for example: crossing the street (Thevin, Briant, & Brock, 2020). Virtual reality becomes a practical alternative, providing visual and audio feedback and allowing users to move in space as in the real world. Another study shows that virtual reality can improve the quality of the classroom learning experience, especially in helping students improve communication skills related to delivering effective presentations and participating in public speaking events. It allows students to assess their presentation skills, practice improving their skills, and gain more confidence in delivering effective presentations (McGovern, Moreira, & Luna-Nevarez, 2020). Virtual reality can be very beneficial for educators in helping students improve their presentation skills. Virtual reality can improve students' writing performance in terms of content and performance as well as creativity tendencies and writing self-efficacy, allowing students to have an in-depth experience and perception of the context of a topic (Huang, Hwang, & Chang, 2020). Developing writing skills is an essential and challenging teaching goal, where writing performance is related to students' understanding and expression of the text and their experience and perception of the context.

Virtual reality in science education provides nature experiences, such as seeing wild animals, e.g., wolves, which has resulted in a higher sense of presence, emotion and interest. Other studies suggest that virtual reality can benefit educators by helping students improve their presentation skills. Virtual reality can utilize natural interaction and immersion in a virtual environment, such as active listening, attention, and time (Degli Innocenti et al., 2019). This mobile virtual reality showed a significant improvement in the genre characterization of music learning (i.e., typical instruments and their spatial arrangement on stage) compared to traditional lessons with printed materials and passive listening. Virtual reality training can provide an innovative approach to safety training as it offers employees low-cost, low-risk, repeatable situational safety training to reduce common factory injuries (Joshi et al., 2021). This virtual reality training is more engaging and provides a better understanding of safety protocols and a real factory experience.

Furthermore, in neurosurgery, regarding the use of VR as an aid to surgery or a tool incorporated into patient care (Vayssiere et al., 2022). Most VR applications in neurosurgery target neurosurgeons, mostly in training (76.8%) and education (21%). Little

effort so far has targeted patients and focused on using VR for therapy. This study shows the need to use this powerful technology to address the complex management of neurosurgical patients: anxiety and pain, 11 intraoperative test functions such as verbal and non-verbal language, motor rehabilitation, and neuropsychological testing.

This research collaborates between social studies and virtual reality to transmit information, internalization, and understanding of social studies material to motivate students and stimulate students' interest. Students can develop their understanding of social studies materials and learn how to understand cases of social studies material contextually and interestingly through virtual reality. Furthermore, students can take attitudes and skills to respond to the social studies material; then, a young generation will be created who have a commitment and awareness of humanitarian and environmental values to foster a love for the nation and state so that they can reflect their role in their social environment.

Methodology

- *Research Design*

This study adopted a quantitative research design supported by several data distribution tests like the normality test and Kolmogorov-Smirnov test and performed the experimental method of pretest-posttest invention to test the effectiveness of the resulting product. The data was collected through Research and Development methods, to develop virtual reality in social studies. Table 1 presents the pattern of one group pretest-posttest research design.

Table 1

Experimental Research Design

Groups	Pretest	Treatment	Posttest
Experiments	O_1	X	O_2

Description:
O_1: Pretest (initial test)
O_2: Posttest (final test)
X: Virtual reality in social studies

- *Research Sample*

A simple random sampling technique was sued to identify a sample size of 160 Grade VII students from a population of 288 students of SMPN 137 in Cempaka Putih, Central Jakarta, Indonesia during the 2022/2023 school year. The Slovin formula was used to obtain the sample size of 160 Grade VII junior high school students. The sample size ideally suited the experimental research method with a one-group pretest-posttest. In addition, a paired sample t-test was also used to test the hypotheses and the Kolmogorov-Smirnov t-test to test normality in this study.

- *Research Instrument and Procedure*

Questionnaires and semi-structured interviews were used to collect data from Grade VII teachers of SMPN 137 in Cempaka Putih, Central Jakarta, Indonesia. This

study also used pretest and posttest instruments related to student learning outcomes in social studies learning. The pretest measurement was conducted before the treatment; then, the researcher provided treatment in the form of virtual reality-based social studies learning. After the experimental treatment, the posttest was given to the experimental group. The pretest results were compared with the posttest results of the experimental group after treatment. The comparison between the pretest and posttest of the experimental group shows the effect of virtual reality-based social studies learning treatment on social studies learning outcomes. The grids of pretest and posttest statements about student learning outcomes in social studies learning can be seen in Table 2 and Table 3.

Table 2

Table of Pretest Instruments of Virtual Reality in Social Studies

The flow of learning objectives	Learning objectives	Total
Understand the existence of self and family during their immediate social environment	Unable to describe the history of family origins	1
	Cannot explain interregional interactions	1
	Unable to describe the socialization process in the family and community environment	2
	Unable to analyze the influence of family and society on character and lifestyle development	2
Analyze the relationship between the geographical conditions of the region and the characteristics of the people and how they live.	Unable to compare similarities and differences in environmental phenomena as a geographical process.	2
	Unable to recognize/identify the life of prehistoric society in the socio-economic aspect	1
	Unable to explain the process of social interaction based on spatial characteristics	1
	Unable to compare the similarities and differences of a location based on its natural conditions and population composition	2
	Unable to analyze changes in location characteristics over time based on physical and social aspects	2
Environment economic potential	Unable to explain the possibility of natural resources	1
	Unable to identify factors that cause changes in the potential of natural resources	2
	Unable to describe the life activities of people during the Hindu-Buddhist and Islamic periods	2
	Unable to identify community economic activities	1

Table 3

Table of Posttest Instruments Virtual Reality in Social Studies Education

The flow of learning objectives	Learning objectives	Total
Understand the existence of self and family during their immediate social environment	Can describe the history of family origin	1
	Can explain interregional interactions	1
	Can describe the socialization process in the family and community environment	2
	Can analyze the influence of family and society on character and lifestyle development	2
Analyze the relationship between the geographical conditions of the region and the characteristics of the people and how they live.	Can compare similarities and differences in environmental phenomena as a geographical process.	2
	Can recognize/identify the life of prehistoric society in the socio-economic aspect.	1
	Can explain the process of social interaction based on spatial characteristics	1
	Can compare the similarities and differences of a location based on its natural conditions and population composition	2
	Can analyze changes in location characteristics over time based on physical and social aspects	2
Environment economic potential	Can explain the potential of natural resources	1
	Can identify factors that cause changes in the potential of natural resources	2
	Can describe the life activities of people during the Hindu-Buddhist and Islamic periods	2
	Can identify community economic activities	1

The validation instruments from material and media experts to test the media's feasibility at this study's trial stage are shown in Table 4 and Table 5.

Table 4

Media Validation Instrument Table

Aspects	Percentage (%)
Correctness of the material	95%
Material suitability	90%
Accuracy of information	85%
Relevance of instructional materials	80%
Average	87.5%

Table 4 shows that the assessment of the material expert review, virtual reality-based social studies learning developed is said to be very good. This is shown from the percentage of the average score, which is 87.5% and is included in the category "very feasible" when adjusted to the Likert Scale and categorized as "very feasible" when changed to the Likert Scale.

Table 5

Material Validation Instrument Table

Aspects	Percentage (%)
Media display	80%
Media Accuracy	93.33%
Ease of media	93.33%
Average	88.89%

Table 5 shows that the assessment of the Media Expert review is perfect. Media, virtual reality-based social studies learning developed is excellent. This is shown from the percentage of the average score, which is 88.89%, and is included in the category "very feasible" when adjusted to the Likert Scale.

The data distribution normality test was also carried out in statistical analysis, namely the Kolmogorov-Smirnov test. The basis for making normality test decisions was as follows: The residual value was usually distributed if the significance value > 0.05. If the significance value <0.05, the residual value was not normally distributed. This study utilized inferential statistics for hypothesis testing using paired sample t-tests. Conclusions from the hypothesis were made using criteria with a significance level of 0.05. The basis for decision-making in the paired sample t-test is as follows:

- If the significance value (2-tailed) < 0.05, Ho is rejected, and Ha is accepted.
- If the significance value (2-tailed) > 0.05, Ho is accepted, and Ha is rejected.

Data measurement analysis technique was used to determine media and material experts' responses using a Likert scale with the questionnaire score category, as shown in Table 6.

Table 6

Validation Score-Category Media Experts and Material Experts

Scoring Scale	Alternative Answer
5	Very good
4	Well
3	Pretty good
2	Not Good
1	Not very good

The feasibility test of virtual reality-based social studies learning is analyzed with a percentage rating scale. The validation criteria used in the validity research of virtual reality-based social studies learning are presented in Table 7.

Table 7

Media Eligibility Criteria Based on The Rating Scale

No.	Percentage of Scoring Result	Eligibility criteria
1	86% - 100%	Very Worthy
2	51% - 85%	Worthy
3	26% - 50%	Less Worthy
4	0% - 25%	Not feasible

Results and Discussion

This research discusses a virtual reality-based social studies model, where students are brought to contextual, actual, authentic conditions that are up to date through the sensation of presence in an artificial environment that looks real even though they are actually in the virtual world. This enables the cultivation of values, strengthening of values, and the resulting skills in responding to social problems are more optimal. The objectives of social studies are targeted according to what has been determined. Virtual reality makes it easier for students to understand broad information about material in social studies. Students are invited to understand and explore various things about social studies material through a series of illusions of depth and space that make users feel like they are in a virtual world, which raises student interest, attraction, and activeness. Hence, the cognitive abilities and creativity of students become more honed and innovative in finding final solutions and wise solutions to each material in social studies. In addition, social studies can also encourage a positive attitude towards improving the inequality that occurs and is skilled in overcoming every problem that occurs daily, both for themselves and their environment. So that students can respond to social issues contextually and social sensitivity can begin early.

This virtual reality creation uses software with different functions, such as content creator, 3D designs, Oculus virtual reality, and virtual reality simulator. A few examples are cited in Figure 1.

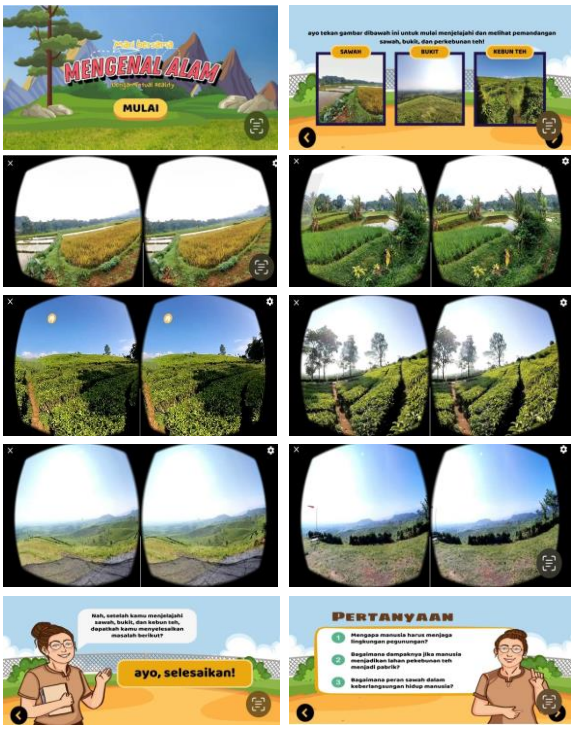

Figure 1. *Virtual reality-based social studies model*
Source: https://bit.ly/VRIPSMengenalAlam

The figure demonstrates VR material about recognizing nature through rice fields, hills, and tea gardens, which ends with giving three analysis questions related to the material about recognizing nature. To assess the impact of virtual reality on learning outcomes. Meta-analyses summarizing the effects of VR in terms of learning gains are several reviews focusing on K-6 students and analyzing the influence of several variables: immersion level, length of intervention, and knowledge domain (Villena-Taranilla et al., 2022). The results obtained by virtual reality positively affected the learning outcomes of K-6 students. When virtual reality is compared with other educational practices, VR improves the learning process—next, exploring the usability factors of learning 3D modelling in a virtual reality environment (VRE) (Huang et al., 2020). Three key usability factors can be used to guide the design of learning interfaces for 3D modelling in VRE. In the future, virtual reality 3D modelling will likely be an essential development in industrial design, particularly in product design decisions and designer communication in a synchronous virtual modelling environment.

Virtual reality is still in the early stages of adoption for education. Studies show that using Virtual Reality in education can positively affect students' learning experience (Akman & Çakır, 2023). This study shows the effects of an educational virtual reality game, *Keşfet Kurtul* which improves academic achievement and maintains students' engagement level in mathematics. In addition, in terms of the social subdimension of student engagement, it was seen that *Keşfet Kurtul* was more effective than the method applied at school. A study on the use of exploratory scientific practice activities based on Spherical Video based Virtual Reality (SVVR) in science classes verifies the impact of such actions on the problem-solving ability of elementary school students (Wu et al., 2021). The results showed that integrating SVVR into exploratory scientific practice instruction significantly affected students' learning outcomes and problem-solving abilities. Results also revealed that the integration of SVVR had different effects on students with varying attitudes toward learning.

Virtual reality has been widely applied in various fields, including medicine, education, entertainment, the automotive industry, and industrial design. Some previous studies have grouped virtual reality in the context of education into three subcategories: games, simulations, and virtual worlds. One of the simulation subcategories is the anatomy of the human body's nervous system, and one of the game subcategories is presented as an input device because it consists of several devices connected to a computer desktop. Virtual reality in this study was developed with a subcategory of mobile worlds that are mobile and easily accessed by mobile phones. Virtual reality is a fantastic medium; it can take users to another place and experience and interact and communicate in that place.

Virtual reality consists of several technological devices, such as three-dimensional displays, motion tracking, input, work, and development tools. At the same time, virtual reality devices are still quickly developed through several platforms such as Oculus Rift, Samsung Gear VR, and Google Cardboard. Each platform has different virtual reality experiences, prices, and levels of awareness. Virtual reality has a lot of energy in product development that attracts many enthusiasts, and VR will become one of the most massive computer-based technologies. Virtual reality is still early to incorporate feelings, being in another place, new experiences, and the beginning of virtual travelling.

This study used a histogram as a visual tool to get a rough idea of the shape of the data distribution. The histogram data shows that the histogram is bell-shaped with a center around the average value, indicating that the data is normally distributed. Based on the normal Q-Q (Quantile-Quantile) plot graph, the data is grouped into intervals that are close to each other, and the horizontal axis shows the range of data values; the Q-Q plot also indicates that the data is normally distributed because the data is on a 45-degree line, it shows that the data is close to the normal distribution as shown in Figure 2.

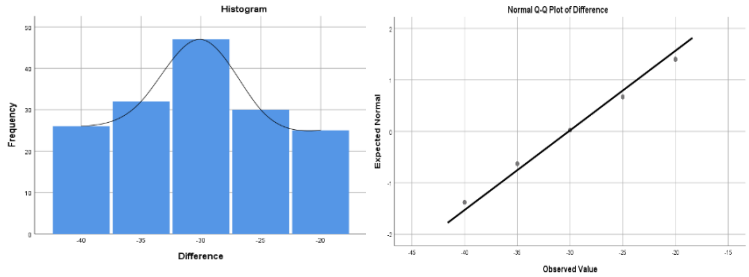

Figure 2. *Data Normal Distribution*

Furthermore, based on statistical data from the homogeneity test table using the Levene method, the Sig.0.729 value concludes that the group under study is homogeneous data, as displayed in Table 8.

Table 8

Test of Homogeneity of Variance

Results	Levene Statistic	df1	df2	Sig.
Based on Mean	.120	1	318	.729
Based on Median	.152	1	318	.697
Based on Median and with adjusted df	.152	1	295.157	.697
Based on trimmed mean	.030	1	318	.863

This study used the N-Gain Test (Normalized Gain) to measure changes or improvements in test results or student performance in an experiment or learning involving pretest and posttest. This is done because it helps evaluate the effectiveness of an intervention by comparing initial knowledge or performance (pretest) with expertise or performance after intervention (posttest). In this study, the intervention was carried out by providing virtual reality-based social studies learning for junior high school students in Grade VII.

In the effectiveness criteria, reviewed from the achievement of student learning outcomes tests given after all learning implementations are carried out, the results show that learning with virtual reality is calculated by the n-gain score formula on the learning outcomes of Grade VII students. Effectiveness test research uses Pretest and Posttest data comparison techniques using a multiple-choice evaluation tool totaling 20 questions. The pretest was conducted before students used virtual reality media, and Posttest was conducted after using virtual reality media.

This virtual reality also impacts student learning outcomes in social studies; after giving this virtual reality media to 160 Grade VII junior high school students in North Jakarta, Indonesia. The results of the N-Gain test are presented in Table 9.

Table 9

Descriptive Statistics

	N	Minimum	Maximum	Mean	Std. Deviation
N_Gain	160	0.44	1.00	0.7659	0.15583
N_Gain_(%)	160	44.44	100.00	76.5930	15.58349
Valid N (listwise)	160				

Based on the statistical data in Table 9, it is evident that the mean value is 0.7659 and 76.59%. Judging from Hake's N-Gain effectiveness interpretation category, it is known that the N-Gain score of 0.7659 or 76.59% illustrates a very significant increase in student performance. This result reflects the success of the applied learning intervention, namely, virtual reality-based social studies, which successfully increases students' understanding by more than half the initial value when virtual reality-based social studies have yet to be applied. The figure demonstrates the effectiveness of the virtual reality-based social studies implementation and provides the potential for further improvement in the future. Therefore, virtual reality in social studies learning effectively improves the learning outcomes of Grade VII students of SMPN 137 Jakarta, Indonesia.

As for the paired sample t-test with normally distributed data results from the Paired samples statistics table, comparing pretest and posttest scores from 160 research samples significantly increases, the average Pretest score was 60.22, which increased in the Post Test to the value of 90.34, as shown in Table 10.

Table 10

Paired Samples Statistics

		Mean	N	Std. Deviation	Std. Error Mean
Pair 1	Pre-Test	60.22	160	6.075	.480
	Post-Test	90.34	160	6.732	.532

Based on calculations using the Pearson correlation method between the pre-and post-test, it was 0.494, indicating a relatively strong positive relationship between the two variables in the sample analyzed as shown in Table 11. The Sig value obtained is 0.000, more significant than the general significance level (0.05). The obtained Sig value of 0.000 in the Pearson correlation test indicates that the test result is highly statistically significant. This value also indicated a strong and powerful relationship between the two variables under study as seen in Table 11.

Table 11

Paired Samples Correlations

		N	Correlation	Sig.
Pair 1	Pre-Test & Post-Test	160	.494	.000

Based on the Paired Samples Test in Table 12, the 2-tailed significance value <0.05 indicates a significant difference between the initial and final variables. This proves that there is a substantial effect on the difference in treatment given to each variable. Then H0 is rejected, and H1 is accepted.

Table 12

Paired Samples Test

		Paired Differences					t	df	Sig. (2-tailed)
		Mean	Std. Dev.	Std. Error Mean	95% Confidence Interval of the Difference				
					Lower	Upper			
Pair 1	Pretest-Posttest	-30.125	6.466	.511	-31.135	-29.115	-58.933	159	.000

This research implies that virtual reality can improve learning outcomes in social studies because students are brought a real, factual, and contextual condition to understand social studies material and make lessons more fun and interactive. In addition, students can also actively participate in learning because they can interact with the virtual environment, thus improving students' social skills.

This research is oriented towards social studies learning conducted on Grade VII junior high school students. Social studies learning is an integrated learning model that involves several subject contents to provide meaningful experiences to students. This meant that students will understand the concepts they learn through direct experience and connect with other ideas. This social studies learning has advantages including: 1) students quickly focus their attention on a particular theme; 2) students can learn knowledge and develop various essential competencies between subjects in the same theme; 3) understanding of the subject matter is more in-depth and memorable; 4) essential competencies can be developed better by linking other subjects with student experience; 5) students can feel the benefits and meaning of learning because the material is presented in the context of a clear theme; 6) students can be more passionate about learning because they can communicate in real situations, to develop an ability in one subject while learning other subjects; 7) teachers can save time because the subjects presented in an integrated manner can be prepared at once and given in two or three meetings, the remaining time can be used for remedial, stabilization, and enrichment activities.

The virtual reality-based social studies model also provides knowledge and understanding, problem-solving, and skills according to norms and ethics, especially those related to social values integrated into social studies. This will encourage understanding social studies material in detail and comprehensively to produce social values in students. The outcome of this research is the formation of a social character in students through social studies to equip students with social knowledge and social and intellectual skills in fostering attention and social care as responsible human resources in realizing national education goals. Virtual reality applications in social studies make students independent, creative, interested, motivated and in a learning environment that is deliberately created to get objective solutions to make rational decisions as citizens of a multicultural society.

Conclusion and Recommendations

This study concludes that the Grade VII students of SMPN Cempaka Putih, Central Jakarta, Indonesia, related to social studies learning outcomes and the use of virtual reality in social studies learning. The media used in this study proved valid and practical so that it can be used by junior high school teachers as media in social studies learning. The application of virtual reality in social studies learning affects learning outcomes because teachers can bring students to interact with simulated environments in the virtual world so that students feel more natural. The incorporation of technology in the form of virtual reality can be a unique attraction for students in learning social studies material.

Based on the data from the posttest results of students' social studies learning outcomes, it is known that the experimental treatment of virtual reality media is greater than the pretest of students' social studies learning outcomes before learning. The application of virtual reality-based social studies learning improves the social studies learning outcomes of 7th-grade students of SMPN 137 Cempaka Putih, Central Jakarta, Indonesia. However, the limitation of this study is that some students may need access to smartphones or other devices required to access virtual reality.

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