



## Google Expeditions as Social Studies Digital Media

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### Abstract

*This study examines the application of Augmented Reality (AR) and Virtual Reality (VR) technologies, to find out the implementation of digital media in social studies learning through google expeditions in junior high school. AR and VR provide immersive and interactive learning experiences that significantly enhance students' understanding of abstract concepts and historical events. Although previous studies have demonstrated high student engagement and improved conceptual understanding through these technologies, a striking digital divide remains, particularly between urban and rural areas. Using a qualitative case study approach, this study emphasizes the empirical impact and personal experiences of integrating AR/VR in education. Findings suggest that AR and VR can enhance students' interest, retention, and comprehension, making them valuable tools in modern pedagogy.*

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## INTRODUCTION

Augmented Reality (AR) and Virtual Reality (VR) are technologies that can provide interactive and immersive learning experiences in social studies education. Augmented Reality (AR) is an advanced technology that combines the real world with digital elements, creating interactive and engaging learning experiences (Prananta et al., 2024). Augmented Reality (AR) enhances the teaching-learning process by enabling teachers to present complex scientific concepts interactively, thereby making abstract ideas more accessible and engaging for students (Dunleavy & Dede, 2013; Huang et al., 2025; Papanastasiou et al., 2019).

Virtual reality (VR) is a powerful tool in education, allowing students to immerse themselves in simulated environments that enhance their learning experience. (Mahmoudi-Dehaki & Nasr-Esfahani, 2024). Virtual Reality (VR) has become a consolidated and effective tool in technical and professional courses, offering practical simulations and immersive learning environments (Ramos & Júnior, 2024; Yechkalo & Tkachuk, 2024; Ravichandran & Mahapatra, 2023; Halabi, 2020).

The use of AR and VR in social studies learning in Indonesia is still limited but shows great potential to overcome the limitations of traditional learning methods. The application of Augmented Reality (AR) in social studies learning in Indonesia shows significant promise for enhancing engagement and learning outcomes compared to traditional methods (Abdilah & Suhardiyanto, 2023; Apriyanto et al., 2024;

Saripudin et al., 2022). Researchers can investigate how virtual reality (VR) affects information retention and critical thinking skills over time (Nurlaila & Ariesta, 2024).

Previous research has shown that AR and VR enhance interactivity, effectiveness, and conceptual understanding in social studies learning. Previous research has shown that AR and VR enhance interactivity, effectiveness, and conceptual understanding in social studies learning. Research shows that 97% of students expressed interest in AR learning, with 90% reporting positive responses to its implementation in the classroom (Salira et al., 2024). AR supports personalized learning experiences tailored to individual student needs, encouraging greater engagement and understanding (Wei et al., 2021).

Although digital technology is developing rapidly, a significant digital gap persists between urban and rural areas in the application of AR and VR. Despite the rapid development of digital technologies, a significant digital divide persists between urban and rural areas in the application of AR and VR. The urban-rural income gap exacerbates the digital divide, as low-income rural populations may not be able to afford the devices or services needed for AR and VR (Lampropoulos et al., 2022). Limited access to education and training in rural areas hinders the ability to effectively utilize advanced technologies (Anbarasan, 2024; Gulati, 2008).

The use of GAS-VR learning media has been proven effective in improving student learning outcomes in the material on the shape of the earth's surface. The effectiveness of GAS-VR learning media in improving student learning outcomes on the material, specifically the earth's surface, is not directly discussed in the provided context. However, we can draw parallels based on findings from a study on Virtual Reality (VR) learning media that focuses on Archimedes' Law (Aini et al., 2023). The analysis reveals that incorporating VR into science education yields significantly improved student learning outcomes compared to traditional learning methods. This suggests that VR can be a powerful tool in educational settings, especially in science subjects (Sari et al., 2024; Merchant et al., 2014; Parong & Mayer, 2018).

As a researcher, experience shows that social studies topics, such as maps and historical events, can be challenging to understand without the aid of technology like AR and VR. Research shows that Augmented Reality (AR) enhances the understanding of historical material in social studies by providing interactive visualizations of historical figures and events, thereby increasing student engagement and making complex topics, such as maps and history, more accessible (Wei et al., 2021). This study highlights that AR and VR significantly enhance the understanding of complex concepts in subjects such as history and geography by providing an immersive experience. These technologies transform intangible ideas into tangible encounters, increasing student engagement and understanding of maps and historical events (Vashisht, 2024; Price & Marshall, 2013).

Fundamental theories about AR and VR support the use of this technology to create immersive and realistic learning experiences. Theories related to AR and VR support their use in education, demonstrating how these Technologies can create immersive and realistic learning experiences that foster student engagement and understanding within a collective environment (Vashisht, 2024). Fundamental theories about Augmented Reality (AR) and Virtual Reality (VR) suggest that these technologies can create immersive and realistic learning experiences, which are crucial in modern education (Jantanukul, 2024).

## **METHODS**

### **Research Approach**

This study employed a mixed-method research design, which integrates both quantitative and qualitative approaches in order to achieve a comprehensive

understanding of the phenomenon under investigation. The central focus of this research was to examine how Augmented Reality (AR) and Virtual Reality (VR) technologies, particularly Google Expeditions, enhance students' learning experiences and outcomes in junior high school social studies classes. The use of a mixed-method design was considered appropriate because it not only allowed the researcher to capture measurable and comparable data through quantitative surveys but also enabled a deeper exploration of students' lived experiences and perceptions through qualitative observations. By combining these two approaches, the study sought to address both the breadth and depth of the research problem, ensuring that numerical findings were contextualized with rich qualitative insights.

### **Research Instrument**

The main method of quantitative data gathering was a structured questionnaire designed to be used in this study. The questionnaire was crafted on four great pointers namely, student engagement, comprehension, enjoyment, and interactivity. These measures were chosen due to their applicability in considering the success of AR/VR technologies in the promotion of learning activities. This questionnaire included seven well-designed questions, each of which is accepted as corresponding to the indicators to make sure that the answers would reflect credible evidence on the experience of the students with AR/VR-assisted lessons.

A multi-step approach was taken to make sure that the instrument is valid and reliable. To begin with, the questionnaire was screened by experts in the field of educational technology and pedagogy who assessed the questionnaire regarding its clarity, relevancy and appropriateness to the objectives of the study. Second, pilot test was carried out on a small sample group of students before the actual data collection. This pilot was to determine the understanding of the questions, appropriateness of the response options and the ability of the questionnaire to produce consistent and meaningful data. The expert review and pilot test resulted in the refinement of this instrument before its administration at larger scale.

### **Participants of the Study**

Students of the junior high school were the participants of this study who attended social studies classes with the assistance of AR/VR technologies by means of Google Expeditions. These students were a representative of the target population since they were those who were directly involved in classroom learning where digital immersive tools were used. The students were requested to fill in the structured questionnaire after taking the AR/VR-assisted lessons. Their involvement in it gave important insights on the mental and emotional aspects of learning in AR/VR, because they were able to revisit their personal experiences at each moment of the lessons.

### **Data Collection Procedures**

The process of data collection was done in two supplementary phases. The structured questionnaire was applied in collecting the quantitative data and was distributed to all the participating students right after the AR/VR lessons. This was done at a good time to make the perceptions of students fresh and aligned with their first hand experiences.

Besides the questionnaire, qualitative data were gathered by use of classroom observations and open-ended questions. The classroom observations were conducted in a systematic manner and within the AR/VR sessions, which concentrated on student behavior, interaction pattern, engagement level, and reaction to the immersive learning environment. In the meantime, the open-ended questions within the questionnaire enabled the students to provide narrative evidence on their experiences by giving an explanation in their own words, which could not be obtained

through numerical ratings only. These approaches together allowed the researcher to find a certain balance in data collected and allow both general and personal views.

### Data Analysis Techniques

The results of the questionnaire were analyzed using the descriptive statistical methods on the quantitative data. To summarise the answers of students to every item, frequency distribution, percentages, and averages were computed. In order to make the findings more interpretable, the results were shown in the table and graphic form, which provided a clear visual image of how responses were distributed among the four indicators of engagement, comprehension, enjoyment and interactivity.

The thematic analysis was applied to the qualitative data that comprised of observation notes and open-ended student answers. This included systematizing data with the use of codes, developing common themes and clustering the results into significant groups. The thematic analysis has given more insightful results since it identified patterns in the behavior and perception of the students that would be impossible to identify using quantitative analysis. To illustrate, some qualitative data were used to show the peculiarities of the interaction of the students with the technology, the way they communicated with other students and the way they showed their excitement and problems in the process of learning.

## RESULTS AND DISCUSSION

The integration of Augmented Reality (AR) and Virtual Reality (VR) technology through the Google Expeditions platform in Social Studies (IPS) learning at the junior high school level has been proven to significantly enhance student engagement, interest, and conceptual understanding of the subject matter.

Table 1. Improved Understanding

Response Category	Percentage
Agree/Strongly Agree	72%
Neutral	28%
Disagree	0%

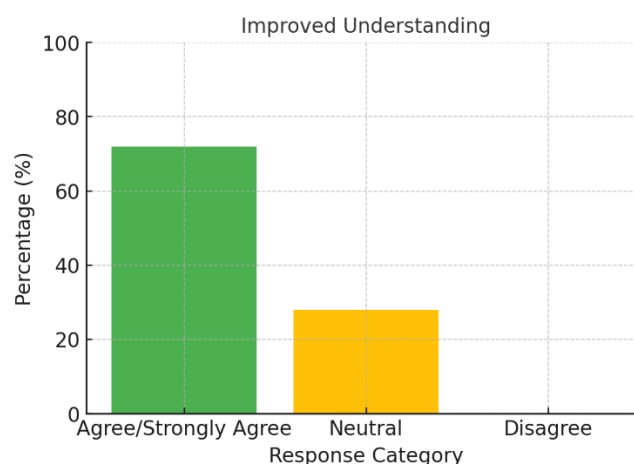


Figure 1. Improved Understanding

The findings indicate that a significant percentage of students about 72 percent of the total number had either agreed or strongly agreed that the application of AR/VR technologies assisted them in grasping the content with more ease. At the same time 28% of students gave neutral answers implying that they did not clearly say that the technology contributed to the better understanding, but it did not have a negative impact on them either. Importantly, all of the students did not disagree, which

highlights the lack of resistance or adverse attitude towards AR/VR as a tool of aiding learning. Collectively, these results prove that most students acknowledged a beneficial effect of AR/VR on their understanding of the material covered in class, and it proves that the technology is an efficient tool that enhances more efficient and easy-to-follow learning processes.

Table 2. Increased Learning Interest

Response Category	Percentage
Agree/Strongly Agree	100%
Neutral	0%
Disagree	0%

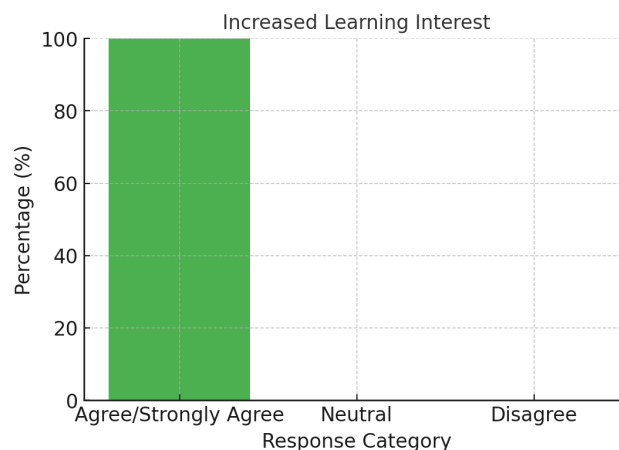


Figure 2. Improved Understanding

The results obtained show that 100% of respondents agreed or strongly agreed that the incorporation of the AR/VR technology into the learning process was more interesting. None of the students chose a neutral or negative answer, which also indicates the powerful and universal effect of such an immersive method on students. This finding indicates that AR/VR technologies were very effective in ensuring that the students were attentive and were able to focus during the lesson. The fact that the application of AR/VR proved not only interesting but also accepted by all students is one more piece of evidence proving that the device has a potential to become an effective instrument to increase interest in classroom learning.

Table 3. Higher Interactivity

Response Category	Percentage
Agree/Strongly Agree	85%
Neutral	15%
Disagree	0%

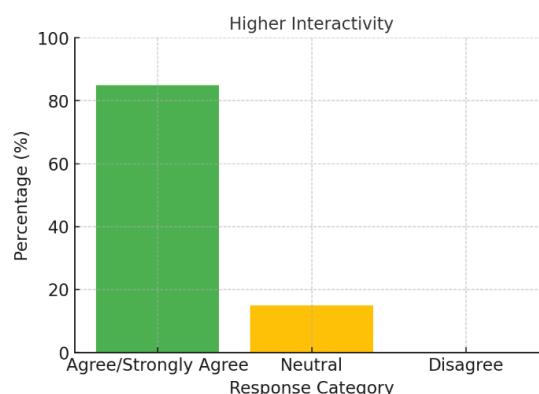


Figure 3. Higher Interactivity

Most students, about 85 percent, noted that the introduction of AR/VR into their social studies classes created a more interactive learning process. The other 15% of the students gave neutral answers which mean that they did not notice a heavy escalation of the interactivity yet they had no negative attitude towards the technology. Notably, none of the students said that AR/VR tools were not welcomed in the classroom, highlighting the overall favorable attitude towards using them in a classroom setting. These results indicate that immersive technologies were useful to establish a more dynamic and engaging learning environment, which is likely to stimulate students to participate and interact actively.

Table 4. More Enjoyable Learning Experience

Response Category	Percentage
Agree/Strongly Agree	86%
Neutral	14%
Disagree	0%

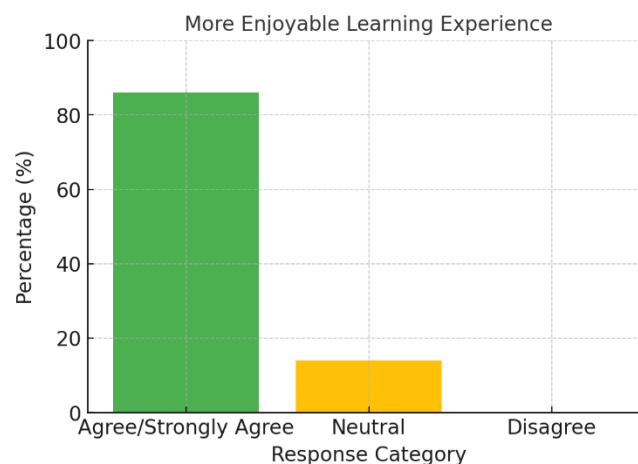


Figure 4. More Enjoyable Learning Experience

According to the results, it was found that a massive percentage of students, about 86 percent, found that learning using AR/VR technologies was more entertaining and less tedious than the conventional ones. This creates an implication that being able to be immersive and interactive, AR/VR has a positive impact on the general classroom environment, as learning experiences become more refreshing and engaging.

At the same time, 14 percent of students gave neutral answers, which means that even though they did not feel that the use of the technology was strongly improved, they did not also indicate that they were not happy with it. Markedly, not a single student disagreed with the statement, which once again supports the conclusion that AR/VR integration has a positive impact on learners on a consistent basis.

Combined, these findings illustrate the value of AR/VR in enhancing the emotional comfort and pleasure of the learning process. The technology makes the learning experience less tedious and more interactive to ensure that students are ready to be more attentive, motivated and receptive to new knowledge.

Overall, the questionnaire results reflect a very positive attitude from students toward the implementation of AR and VR technology in Social Studies learning. The absence of negative responses indicates a high level of acceptance and a strong perception of the benefits of using this technology to enhance the effectiveness and comfort of learning.

Nevertheless, several challenges remain, especially in rural areas that still face limitations in digital infrastructure and technological devices. Economic disparities, limited facilities, and a lack of teacher training are key obstacles to the equitable implementation of AR/VR technology in education. Therefore, although the technology has proven effective, its success still depends on systemic support, including equal access, facility readiness, and teacher competence in operating immersive learning media.

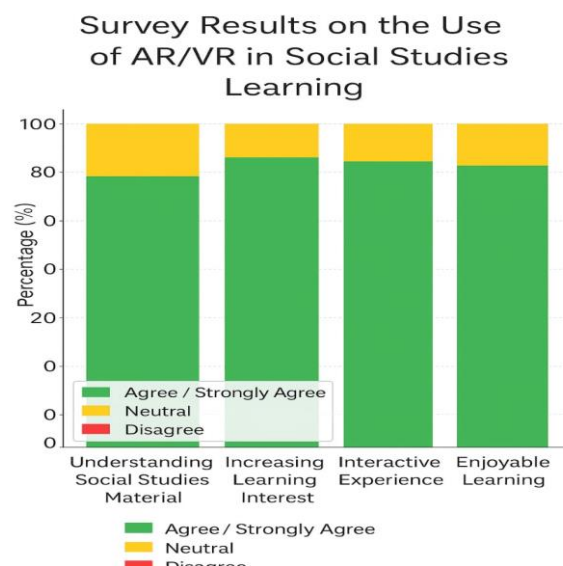


Figure 5. Survey Results on the Use of AR/VR

## Finding

The use of Augmented Reality (AR) and Virtual Reality (VR) technology in social studies learning for junior high school students can really make them more enthusiastic about learning, understand the material better, and be more satisfied with their learning experience. The direct experience felt by the children shows that if learning social studies using AR/VR media, the classroom atmosphere becomes more lively, exciting, and in-depth. So, it is easier for them to understand abstract concepts and rather complicated material in social studies. Most students seem very enthusiastic and give good responses when learning with this technology. This can be seen from the results of the questionnaire which shows that they strongly agree that AR/VR is effective in helping them understand the material. In addition, they also remember information better and are more active in participating in lessons. This proves that this media really helps them in learning. However, the results of the study also found a big problem, namely the issue of access to technology, especially in areas far from the city. The difference in digital facilities between schools in the city and in the village is an obstacle to implementing AR/VR technology evenly. This includes the problem of inadequate infrastructure and teachers who need to be retrained. So, although AR and VR have proven to be great for enhancing students' learning experiences, their successful use is highly dependent on support from the system, such as easy access, complete facilities, and prepared teachers.

## Pedagogical Implications of AR/VR in Social Studies Learning

In this paper, the two concepts of an imaginary application of Augmented Reality (AR) and Virtual Reality (VR) through Google Expeditions were presented as a way to improve the learning experience of the junior high school social studies students. All the results suggest that AR/VR technologies are not just accepted by students but also have a revolutionary potential to rebuild pedagogy. There is also an overview of the overall implications of these findings or how the findings are related to the body

of past research and also how opportunities and challenges are linked with the application of immersive technologies in education.

The role of AR/VR in terms of improving the engagement and the motivation of the students is amongst the most important lessons of this study. The greater interest, attention, and participation shown by the positive responses that were constant throughout all indicators are testament to the capability of immersive technologies to stimulate interest, attention and participation. This is akin to the concepts of constructivist theories of learning in which learners place special emphasis on experience and interactive learning. AR/VR, as a learning process, does not reject the concept of learning as an experience that Dewey introduced, and one can make abstract historical and geographical knowledge experience real and memorable. Regarding this aspect, AR/VR cannot be simply referred to as a supplementary object but could be viewed instead, in other words, as a medium that alters the very learning environment.

The results also concern the emotional facet of learning. Students indicated that they liked the lessons and it was less repetitive to prove that AR/VR is one of the factors of the favorable emotional climate in the classroom. The works devoted to the affective sphere of learning presuppose the development of motivation and degree of knowledge retention by pleasure. It coincides with the findings of Animashaun et al. (2024) and Christopoulos et al. (2024) who has highlighted that immersive technologies bring satisfaction and enhanced engagement in learning processes. The implication of this discussion is that AR/VR is not merely conducive to the learning of cognitive advantages, but also the emotive nature of learning, which is the important part of sustainability of engagement in the long-term.

AR/VR supports the participatory and collaborative forms of learning that outperform the traditional didactic modes, in terms of interactivity. The discussion of interactivity should be situated in terms of 21 st century skills of learning where collaborations, communication and problem solving are considered. Group exploration and interaction with peers are also available with the help of AR/VR due to the immersion the technology introduces, which generates opportunities to co-construct knowledge within the student body. It could be of particular benefit in social studies, where, in most instances, critical engagement with a number of positions and contextual understanding is required.

However, despite the fact that the findings show unquestionable pedagogical advantages, there are also systematic barriers identified in this debate. First is the digital divide which is yet to be resolved. According to the research conducted by Lampropoulos et al. (2022), the current bias in the access to immersive technologies, in the majority of instances, is biased towards urban schools as opposed to rural ones. Lacking concrete policies to cover gaps in infrastructure, AR/VR can become the source of educational inequities, rather than the reduction thereof. Moreover, the immersive technologies can only be successful when teachers are ready to introduce them successfully. Teachers, curriculum and pedagogical changes must be trained so as to ensure that AR/VR is not used superficially.

Another issue that should be mentioned is the effect of novelty. In this research, the initial passion can be partially explained by the fact that the discovery of a new technology is quite exciting in comparison to its educational value. Longitudinal research is required to determine whether AR/VR can sustain these effects on the learning outcomes over time, especially, when the novelty has waned. Besides that, the views of the students will also serve as an informative source of data, yet in the future, the study will be triangulated with the quantitative data on academic performance, thinking critically, and knowledge retention.

What these results imply in the broader meaning is that AR/VR is not a new technological change, but a contributor of pedagogical change. The social studies can be an interesting experience and not perceived as abstract or monotonous through immersive experience. The more students get a chance to virtually tour historical sites, visualize cultural phenomena or the geographic terrain, the more likely they to empathize, become more aware and understand the context. It is in line with the conclusions made by Riner et al. (2022), who found out that VR fosters historical empathy and engagement in social studies classrooms.

## CONCLUSION

The application of Augmented Reality (AR) and Virtual Reality (VR) technology in social studies learning has proven to be a very effective strategy to increase students' interest, conceptual understanding, and academic achievement. Although challenges such as digital inequality still exist, the potential for AR/VR to transform the learning experience is enormous. Education stakeholders must address issues of access and training to maximize the benefits of this technology across diverse learning environments.

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