



Implementation Of AR and VR Through Google Expeditions In Social Studies Learning In Junior High School

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Abstrak. AR dan VR merupakan bentuk teknologi yang menghadirkan cara belajar yang lebih menarik, membuat siswa merasa benar-benar terlibat dalam materi pelajaran. Terutama dalam pembelajaran IPS di tingkat SMP, dengan menghadirkan unsur digital ke dalam lingkungan nyata, seolah-olah keduanya merupakan satu dan dapat dilihat atau disentuh secara langsung. Pada saat yang sama, VR menciptakan lingkungan virtual tiga dimensi yang AR dan dapat dieksplorasi secara real-time menggunakan perangkat seperti kacamata Oculus. Penelitian ini bertujuan untuk mengkaji penerapan Google Expeditions berbasis AR dan VR dalam pembelajaran IPS dan untuk mengetahui sejauh mana teknologi ini dapat mendorong siswa untuk berpikir kritis tentang isu-isu sosial. Selain itu, Studi ini meneliti efektivitas dan masalah yang timbul dari penggunaan teknologi. Studi ini menggunakan pendekatan kualitatif untuk memastikan bahwa pengumpulan data dilakukan oleh penelitian atau penelitian menggunakan dokumen terkait. Hasil penelitian ini menunjukkan bahwa teknologi AR dan VR cukup membantu dalam memfasilitasi wawasan dan pemahaman dalam memperdalam materi. Namun, para guru masih harus berhadapan dengan masalah seperti kurangnya bantuan teknis dan pelatihan. Oleh karena itu, agar penerapan teknologi ini dalam proses pendidikan dapat berjalan lancar dan berkelanjutan, diperlukan strategi yang tepat dan pendidikan yang memadai. Kata Kunci: AR; VR; Ilmu Sosial; Implementasi; SMP.

Abstract. AR and VR are forms of technology that present a more engaging way of learning, making students feel genuinely involved in the subject matter. Especially in social studies learning at the junior high school level, by bringing digital elements into the real environment, as if the two were one and could be seen or touched directly. At the same time, VR creates a three-dimensional virtual environment in which AR and VR can be explored in real time using devices such as Oculus glasses. This study aims to examine the implementation of AR and VR-based Google Expeditions in social studies learning and to determine the extent to which this technology can encourage students to think critically about social issues. In addition, this study examines the effectiveness and problems arising from the application of the technology. The approach used in this study is qualitative, with data collected through the analysis of Scientific Articles. The results of this study indicate that AR and VR technology are pretty helpful in facilitating insight and understanding, thereby deepening the material. However, the teachers still have to deal with issues like inadequate technical assistance and training, however. Therefore,

for the implementation of this technology in the educational process to function smoothly and sustainably, suitable strategies and adequate education are required.

Keywords: AR; VR; Social Studies; Implementation; Junior High School.

INTRODUCTION

AR and VR are innovations that combine the veritable world with the computerized world. In Social Consider, the application of AR gives an important and natural learning involvement. Utilizing Oculus VR glasses, people can submerge themselves in a three-dimensional virtual space and investigate it reasonably as they would inside the veritable world. Immersive and intelligently learning situations, such as expanded reality (AR) and virtual reality (VR), offer these highlights, which can essentially improve understudy support and eagerness (Algerafi et al., 2023). Studies show that middle school students' outcomes in social studies improve notably through VR as their engagement, interest, and understanding increase, leading to better performance and a more enjoyable learning experience (Sumantri, 2024). (Siricharoen, 2023) revealed that integrating AR and VR into educational environments, especially in social studies, helps create an engaging and interactive environment that increases student engagement, improves information retention, and enables learning experiences tailored to individual needs. (Aslan & Cakmak, n.d.) Besides, thinks about has appeared that utilizing AR in instruction can improve students' scholastic accomplishment and progress in their data maintenance because it gives cognitive and passionate bolster, making the learning involvement more locked in and successful. A recent study, as detailed by (Riner et al., 2022), found that students who engaged with AR achieved better results compared to those who used conventional methods, thanks to the significant cognitive and emotional experiences that AR provides.

(Afnan and Puspawati, 2024) As previously said, constructivist theory places a premium on students actively constructing knowledge via hands-on experience. In order to fully grasp complex ideas, one must participate in engaging and "real" activities (Animashaun et al., 2024). In addition to facilitating conceptual understanding, augmented and virtual reality technologies can provide students with complicated real-world simulations, enabling them to investigate a range of pertinent social problems (Uçar, 2024). According to research (Faresta et al., 2024), the use of virtual reality (VR) in the classroom enhances students' engagement and comprehension of complex subjects. More specifically, VR allows more knowledge to build knowledge and promote active cooperation and study exploration. This potential method improves the learning experience by meeting the interests and skills of each student (Wahiddiyah et al., 2023). According to (Parmaxi et al., 2021), Google Expeditions Use virtual reality and enhanced technologies to teach students visually and in different ways. This aligns with the experience learning theory, which posits that learning is more efficient, effective, and of high quality when it is based on coordinated interactions (Marougkas et al., 2023).

Integration of comprehensive technologies that can disrupt traditional educational paradigms is the goal of research on Google Expeditions in the context of AR and VR (Seenathmol, 2024). Furthermore, according to (Algerafi et al., 2023), this technology promotes critical thinking and evaluation of social concerns among pupils. According to research (Vashist, 2024), augmented and virtual reality (AR/VR) technologies can create dynamic and immersive learning environments, which in turn can motivate and engage students. (Choudhury, 2024) AR and VR are able to improve the teaching of social research by solving many learning styles and providing practical experience. Therefore, secondary education becomes more important and can be applied (Sathyapriya et al., 2024).

AR and VR can contribute to increasing student engagement and offer assistance in gaining a deeper understanding of complex concepts, as well as give learning encounters that request students' interface and abilities inside the setting of history instruction (Vashisht, 2024). AR also offers a new approach for teachers in teaching history, thus integrating traditional methods (Apriyanto et al., 2024). Through AR, students can explore historical contexts in greater depth (Remolar et al., 2021). AR makes it easier to use and fully contributes to the effectiveness and satisfaction of student literature (Trista & Rusli, 2020). Such collective writing encounters not only intrigue students' consideration but also enhance basic critical thinking and investigative abilities (Koparan et al., 2023). As a result, authentic proficiency has experienced noteworthy advances (Maulida & Zamahsari, 2024). This inquiry bolsters the change from AR and VR, not just improving educational strategies but also opening up new opportunities for students to engage more deeply with their subjects. (Tripoulas & Koutromanos, 2024).

(Al Balushi et al., 2024) revealed to identify the strengths and challenges of using AR/VR with Oculus VR in social studies learning in junior high schools, based on teacher perspectives. Before implementing AR and VR, teachers must undergo training to develop awareness and intuition on how to use this technology effectively and efficiently in social studies (Sumantri, 2024). In its application, educators must manage a complete evaluation (Linett et al., 2024). How this immersion technology can increase student engagement as a key to learning (Jantanukul, 2024) and knowledge maintenance while overcoming possible barriers (Familoni & Onyebuchi, 2024). Consolidation of this technology has increased knowledge and classroom engagement, which is statistically significant (Riner et al., 2022).

The use of Google Expeditions by future educators demonstrates the enormous promise of AR and VR to revolutionize education (Bhatnagar, 2024). In order to successfully implement tools like Google Endeavors in classrooms, particular strategies are required due to the fact that a good foundation is required, and internet connections can be unreliable (Nyaaba et al., 2024). According to Taggart et al. (2023), teacher preparation programs could assist future educators in assessing their own digital competency levels and creating practical strategies for innovation. (Rodríguez, 2024)

emphasizes the meaning of structured methods, such as the TPACK model, to evaluate and improve the combination of these technologies in-class teaching. This will help overcome obstacles to effective integration in junior high school classrooms, Such as the absence of knowledge and experience, against changes, content availability, user experience, and accessibility (Yadav, 2024).

(Mystakidis et al., 2021) emphasize the need for lawmakers, school administrators, and teachers to consider possible implementation constraints and challenges. To create a practical cognitive experience, students must understand how to interact deeply with immersive VR environments, which ultimately influences teachers' perceptions of their readiness to adopt these technologies in their teaching (Carpenter et al., 2023). It is crucial to recognize that teachers' insights and desire to implement unrealized enhancements are more than just theoretical (Jang et al., 2021). A lot of factors, including the people concerned, school-wide social norms, and students' TPACK (technical and subject-specific knowledge), go into making this decision. Despite the relevance of the topic, research on how AR and VR affect teachers' motivation and professional development is lacking. The technical and practical aspects of education require a thorough framework (Henne et al. (2024). (Sulisworo et al., 2024) so that teachers can complete their professional development standards. If teachers are not adequately trained and supported in their careers, they can struggle to bring these innovations to life in the classroom (Mena & Estrada-Molina, 2023). For these technologies to be effective, it is essential to provide teachers with the necessary resources and support (Familoni & Onyebuchi, 2024).

METHOD

Examine the use of Google Expeditions' AR/VR capabilities in social studies lessons at the junior high level through a qualitative descriptive approach. Qualitative research approaches are essential for studying human behavior, culture, social norms, emotions, experiences, and perceptions (Chasokela, 2024), all of which are complex and subjective phenomena.

Analysts who rely on subjective tactics go through the following steps in their investigation: Analysts first generate hypotheses and assumptions based on the awe-inspiring thought processes that lie beneath. As an additional measure, have the report examination team inquire about tools. The meticulously selected materials are from Google Scholar, DOAJ, and SINTA, and they include logical papers about the use of AR, VR, and Google Expeditions media in education, as well as student archives such as written assignments, reflection notes, and visuals of learning exercises and their methodologies. The primary focus here is to ensure that every document is actually related to the social science topic that is currently being studied.

Next, the documents are analyzed in detail. Identifying concepts or evidence of AR, VR, and Google Expeditions integration in the social context of scientific articles and identifying how students experience and interpret the use of AR and VR media in learning from student work. In addition, visual documents of activities provide a real picture of the interaction and dynamics of learning, allowing researchers to interpret aspects of participation and social understanding. As stated by (Kusimba, 2023),

document analysis is a method that uses a systematic review and then evaluates documents by finding, selecting, and synthesizing data contained in the document.

RESULTS AND DISCUSSION

Table 1. Document Analysis on Implementation Of AR and VR Through Google Expeditions In Social Studies Learning In Junior High School

No	Analisis Indicator	Main Findings
1	Improved understanding of complex social studies concepts.	AR helps students grasp abstract topics (e.g., history) more clearly and sequentially through 3D visualization and simulation.
2	AR/VR as immersive and engaging media.	These technologies enhance learning enjoyment and make social studies more appealing through lifelike simulations and visuals.
3	Easy access and interactivity in digital learning.	AR/VR enable easier access to content and promote hands-on exploration of virtual environments.
4	Active participation and contextual experience.	Students become more engaged and actively involved in contextualized learning environments using AR/VR.
5	Critical and reflective thinking through AR/VR.	Students are encouraged to analyze social issues critically using immersive simulations.
6	AR/VR as motivation and social collaboration triggers.	Learning with AR/VR fosters peer interaction, group exploration, and collaborative knowledge building.
7	Development of global competencies and 21st-century skills.	AR/VR support communication, collaboration, digital literacy, and intercultural understanding.
8	Barriers to AR/VR implementation.	Challenges include device costs, teacher readiness, digital nausea, infrastructure gaps, and rigid curriculum structure.
9	Enhancing historical thinking through 3D visualization.	AR/VR enables students to relate past events with present contexts by interacting with digital historical artifacts.

10	Holistic social studies learning with AR/VR integration.	AR/VR enhances not only cognitive understanding but also emotional engagement and social interaction.
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Based on the results of the review of the eleven (11) articles, the application of AR/VR and Google Expeditions in social studies learning has a significant positive impact on the process and learning outcomes of students. This technology not only increases interest and motivation but also strengthens active involvement, critical thinking skills, and social awareness of students.

The application of AR and VR technology in social studies learning, especially history, has shown a real positive impact on the process and learning outcomes of students. Based on the analysis of several articles, the implementation of this technology is carried out in various engaging and interactive forms. Research by (Wahiddiyah et al., 2023) shows that AR is used through books or study sheets that are able to display historical figures and events in 3D projections. It makes education more absorbing and helps students understand the historical context that has so far been considered abstract. Meanwhile, (Rahmiati D. et al., 2024) emphasized how immersive simulations in AR and VR facilitate understanding of abstract concepts and encourage the strengthening of higher-order thinking skills (HOTS), such as critical thinking, problem-solving, and collaboration in the context of project-based learning. Furthermore, (Salira et al., 2024) revealed that the use of AR in Hindu-Buddhist history material was able to significantly improve conceptual understanding, as seen from the comparison of pretest and post-test results.

This media also supports the formation of critical, analytical, and sensitive student characters towards social issues. (Cowin J.B 2020) Moreover, it utilizes Google Expeditions to present virtual visits that open up opportunities for collaborative, fun, and practical global learning. Similar results were also stated in a study conducted by (Alya, D.R. et al. 2025) that digital media provides contextual and collaborative learning opportunities, including the ability to explore historical sites or interact across cultures virtually. Meanwhile, (Ningsih and Kurniawan, 2024) developed a VR learning media called Si Calang to overcome the limitations of physical access to historical sites and succeeded in increasing students' interest in local history.

If examined further, these findings show important similarities in that AR and VR technologies are able to increase interest in learning, strengthen conceptual understanding, and create more active and contextual learning experiences. This technology answers the limitations of conventional approaches in delivering historical material that is spatial and temporal in nature. This finding is in line with (Fleming, 2001) multisensory theory, which states that learning will be more effective if it involves various senses. In addition, the use of AR and VR, which allows direct learning experiences, is also in line with (Kolb, 1984) Experiential Learning theory, which emphasizes the importance of concrete experiences in building meaningful understanding.

Not only does it have an impact on cognitive aspects, (Lacle-Melendez et al., 2024) show that immersive experiences in VR can foster students' empathy because they can feel other people's perspectives safely and in a controlled manner. This reinforces the idea that technology can shape emotional intelligence, not just academic understanding. Research by (Logayah et al., 2025) and (Amiruddin & Saputra, 2025) also supports this

by highlighting how visualizing historical artifacts in 3D format can help students connect the past with the context of present life, supporting the development of historical thinking as theorized by (Wineburg, 2001).

However, the implementation of this technology is not without challenges. (Paramita et al., 2024) highlighted obstacles such as high device costs, the need for special training for teachers, and side effects such as digital nausea. (Widyawati & Sukadari, 2023) Also added that limited infrastructure, teacher digital competence, and inflexible curriculum are still significant obstacles to the adoption of this technology. Therefore, although AR and VR technology promises major transformations in the world of education, optimal implementation requires collaboration between teachers, schools, policymakers, and technology developers.

These findings and discussions reinforce the idea that incorporating AR and VR into social studies education makes a meaningful contribution to improving the overall quality of learning. This enhancement is evident not only in the deepening of conceptual understanding but also in the development of student's character and essential 21st-century competencies. With the right approach and adequate support for infrastructure, this technology can meet the requirements of interactive, interactive, and, more important, learning for today's digital generation.

CONCLUSION

Insights from various studies clearly show that integrating AR and VR into history learning within social studies brings significant benefits in improving students' learning experiences and outcomes of students' grades. This technology has been shown to create a more attractive, attractive and context learning experience, which not only improves the understanding of the concept but also builds high reflection skills such as critical thinking, problem-solving, and cooperation.

AR and VR help bring historical devices to life thanks to images and 3D simulations that allow students to view and explore; this approach not only contributes to improved cognitive outcomes but also supports the development of students' attributes, such as empathy and social awareness; it also fosters students' capacity for critical reflection. Through immersive and engaging experiences, learners can connect with historical content in ways that are both practical and meaningful. In addition, the use of AR and VR encourages the implementation of a TPACK-based teaching framework that seamlessly blends technological tools, pedagogical approaches, and subject matter expertise.

However, the successful application of this technology still faces various challenges, such as limited infrastructure, teacher competency readiness, device procurement costs, and digital health risks, Like nausea when using VR. Therefore, the implementation and VR in learning must come with clear political support, fully trained teachers, and cooperation between different parties to ensure dependable and efficient use. Overall, AR and VR technology have great implicit to revolutionize learning history in the digital age. With the right approach and the strategy to implement correctly, this technology can be an operative tool to create more positive, more active, reflective, and meaningful social studies learning for the 21st-century generation.

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