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INNOVATION OF VIRTUAL REALITY TEACHING MEDIA IN CIVIC EDUCATION LEARNING IN THE ERA OF TECHNOLOGICAL DISRUPTIONS: A LITERATURE REVIEW OF CIVIC KNOWLEDGE TRANSFORMATION

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ABSTRACT

Technological advancements in the era of disruption require a shift toward more interactive learning, including in Pancasila and Civic Education (Civic Education). However, conventional teaching practices often result in low student engagement and limited civic knowledge understanding. This study aims to analyze the use of Virtual Reality (VR) as a learning medium, examine its effectiveness in transforming civic knowledge, and identify its advantages, limitations, and implications. The research employs a literature review method by analyzing relevant scientific sources published within the last 5–10 years through selection and synthesis processes. The findings indicate that VR possesses immersive, interactive, and multisensory characteristics that enhance student engagement, conceptual understanding, critical thinking, and social awareness. These findings are supported by studies showing that VR improves engagement and meaningful learning experiences . However, its implementation faces challenges such as high costs, infrastructure limitations, and user readiness. The contribution of this study lies in providing a comprehensive analysis that integrates technological, pedagogical, and civic perspectives, while strengthening the discourse on civic knowledge transformation in Civic Education learning. Therefore, VR has strong potential as an innovative learning medium to improve civic education quality..

Key words: *Virtual Reality, Civic Knowledge, Civic Education*

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INTRODUCTION

The exponential progress of digital technology has driven significant changes to various aspects of human life, one of which is education (Yusuf & Ondeng, 2025). This phenomenon cannot be separated from the influence of globalization and increasingly complex social changes, requiring humans to adapt in obtaining, managing, and utilizing information (Prihatin & Sutangsa, 2025). Entering the era of technological disruption, the education system is experiencing a paradigm shift from conventional learning to digital technology-based learning, which is more flexible, interactive, and student-centered.

This transformation has resulted in the characteristics of the learning process of today's students who tend to have their own preferences for learning. Students are more interested in learning that is visual, interactive, and contextual (Dewi, 2024). Therefore, a learning approach that is unable to accommodate these changes has the potential to reduce the level of student engagement and understanding. Through the advancement of time, the integration of technology in learning has not only become an alternative but has also become a strategic necessity to improve the quality of education (Segara & Nasution, 2025). One area of education that has a high urgency to continue to be strengthened is Pancasila education. Pancasila education has a strategic role in the national education system because it aims to form citizens with character, morals, responsibility, and national commitment. Through Pancasila Education, students are expected to be able to understand the nation's basic values, appreciate the meaning of national life, and apply them in real action. Thus, Pancasila education is not only oriented towards mastering material but also towards forming civic attitudes and behavior.

In reality, learning Pancasila education still faces various obstacles. One of the challenges that often arises is the low enthusiasm of students in participating in learning, especially when the presentation of material is still predominantly conventional and does not involve interesting learning experiences. As a result, learning outcomes related to civic knowledge, such as understanding the values, concepts, and principles of citizenship, often have not developed optimally. This condition shows that concrete steps are needed to update learning approaches and media so that learning is more contextual and able to increase student understanding.

The use of technology as a teaching medium is seen as one solution to improve the quality of learning. The use of digital media is considered to be one of the options for developing students' abilities that are relevant to current developments (Prinanda, 2025). The use of interactive learning media can help students build understanding through more meaningful learning experiences. One technology that has the potential to be used is virtual reality (VR), which is technology that is capable of presenting an immersive virtual environment so that users appear to be in and interact directly in a simulated situation. The characteristics of VR, which combine audio-visual elements, interaction, and immersive experiences, make it possible to create learning that is more interesting, less monotonous, and closer to real experiences.

Through the use of VR, Pancasila education learning can be developed to be more exploratory and participatory. Technological advances in the education sector encourage more modern and adaptive learning innovations (Wangila et al., 2025). Students not only receive information passively but can also gain learning experiences that enrich their understanding of Pancasila values in various life contexts. Through this immersive experience, VR is expected to be able to provide positive implications for increasing civic knowledge, as well as encouraging the strengthening of civic literacy and internalization of Pancasila values. Therefore, research using the literature study method is needed to systematically examine the potential, advantages, and implications of using VR in learning Pancasila education, especially in efforts to increase students' civic knowledge.

In previous research, there have been many studies on the use of digital technology in education, some examples of which are research entitled "The Role of Digital-Based Pancasila Education Learning Media in Strengthening Pancasila Values in the Society 5.0 Era" (Munthe et al., 2023) discusses the use of digital media, one of which is virtual reality, to provide an understanding of Pancasila values in the 5.0 era. Apart from that, another research study entitled "Development of interactive PPT learning media to increase

students' understanding of civics subjects in elementary schools" (Hidayat et al., 2025) discusses the development of PowerPoint media as an interactive learning media innovation.

METHODOLOGY

This article uses a qualitative approach with a literature review method, which aims to examine, analyze, and synthesize various previous research findings that are relevant to the research topic. This approach was chosen because it is able to provide a precise conceptual understanding regarding the use of virtual reality in learning Pancasila and citizenship education, especially to support the transformation of civic knowledge in an era of disruption. Literature review is used as a basis for identifying research developments, establishing patterns of trends in findings, and building scientific arguments in accordance with previously published research results (Jeka et al., 2023).

Data sources were obtained from reputable national and international journals, scientific conference proceedings, relevant reference books, and scientific publications within the last 5-10 years (Putra & Sulistyosari, 2023). Data collection was carried out through a scientific database search process, such as Google Scholar, Scopus, and ScienceDirect, using the keywords virtual reality, civic education, civic knowledge, Pancasila education, digital learning, technology-based learning, and immersive learning (Sari et al., 2025). The search strategy was designed to identify and obtain literature related to the focus of the study in a comprehensive, systematic, and relevant manner to current research developments.

The next stage is the data analysis technique, which is carried out through systematic steps. Data reduction was carried out by selecting articles that were relevant to the study, such as topic suitability, methodological quality, and contribution to the research conceptual framework (Wada et al., 2024). The theme classification process is carried out through grouping based on research focus, such as the characteristics of virtual reality, implementation in learning Pancasila and citizenship education, influence on civic knowledge, and challenges in implementing immersive technology in education. Literature synthesis is carried out through a process of comparison, interpretation, and integration of researchers' findings so as to provide a more complete understanding of the relationships between the variables studied. (Albar & Yaqin, 2025). Conclusions are drawn in the final stage as a form of conceptual generalization and construction of scientific arguments that represent patterns, relationships, and main implications of the overall findings analyzed.

The validity of the data in this study is maintained through two main approaches. First, source triangulation is carried out by comparing and confirming the consistency of findings between various types of scientific publications to minimize interpretation bias (Olfa, 2025). Second, selection of articles based on indexation and journal quality is carried out by prioritizing sources that are indexed by Scopus or have a high academic reputation, thereby ensuring credibility, reliability, and scientific authority of the data used.

The stages of literature identification are carried out in stages, starting from initial search and screening of titles and abstracts to thorough analysis of the content of the article (Yansyah, 2017). This process helps researchers obtain sources that are truly relevant to the focus of the study. Each selected article is then analyzed based on the research objectives, methods used, and findings. In-depth analysis of the content of articles helps researchers find research trends, study gaps, and opportunities for future research development.

Data analysis was carried out using a descriptive-analytical approach that emphasizes critical interpretation of previous research results (Octaviani & Sutriani, 2019). This approach allows researchers to explain phenomena in more depth through systematic and structured data analysis. The results of the analysis are then presented in narrative form to show the relationship between research findings (Octaviani & Sutriani, 2019). Descriptive data presentation is carried out so that the research results are easier to understand and provide theoretical and practical contributions in the development of immersive technology-based Pancasila and Citizenship Education learning.

RESULT AND DISCUSSION

1. Characteristics of Virtual Reality in Learning

Virtual reality is an immersive technology innovation based on 3 dimensions that allows users to interact in real time in a digital environment like reality (Priyatna, 2020). VR technology is developing into a learning innovation through instilling deeper experiences than conventional media. VR learning media does not just function as a visual medium but as a learning experience system that integrates visual, auditory and kinaesthetic sensory elements, thus creating an immersive and experiential learning experience (Budi, 2023; Syafei, 2025). Virtual reality (VR) has the main characteristic of being the ability to provide a sense of presence, namely, the psychological perception of the user feeling that they are in the virtual environment (Cevikbas et al., 2023; Priyatna, 2020). This situation causes students not only to see the learning object, but also to feel emotional and cognitive involvement during the learning process. This experience makes learning more meaningful because students can understand concepts through simulating real situations that are difficult to realise in ordinary classes. A realistic virtual environment is also able to increase students' focus of attention, curiosity and learning motivation because they gain different experiences.

New experiences through virtual reality as a form of technological progress have been supported by various devices and platforms that offer various variations, such as Oculus Rift, Samsung Gear VR, and Google Cardboard (Lestari, 2021). These variations have a direct impact on the quality of the learning experience, especially in terms of revolutions, sensory response, and user freedom of navigation. Therefore, there needs to be consideration in learning design so that it has character and is in line with instructional objectives and student needs.

The main characteristics of virtual reality are divided into three, including immersion, interactivity, and multisensory experience. First, immersion is the ability of technology to create a learning environment that absorbs the user's attention (Azmi et al., 2024). This ability is utilised in learning to support and help students foster cognitive and affective involvement, especially in understanding abstract concepts. Second, interactivity, the user's ability to interact actively with objects or phenomena in a virtual environment. Interactivity provides students with the opportunity to explore learning material independently through the activities of trying, observing, and manipulating virtual objects (Khaira et al., 2024). This process is in line with constructivism theory, which emphasises that knowledge is built through direct experience. Students do not only receive information passively but are actively involved in the process of discovering knowledge so that the understanding formed becomes deeper and lasts longer. Interactivity in VR also allows for direct feedback on user actions so that the learning process becomes more adaptive and responsive.

Third, namely, the integration of audio, visual and haptic feedback simultaneously strengthens the process of conveying information, which is known as multisensory integration. The combination of various sensory stimuli strengthens the process of conveying information because students receive learning experiences through more than one sense (Syafei, 2025). Research shows that multisensory learning can improve memory, concentration and understanding of concepts because the brain processes information more thoroughly. The use of sound effects, three-dimensional animation and motion response in VR creates a more realistic and interesting learning experience, thereby increasing learning effectiveness (Azmi et al., 2024).

From a pedagogical point of view, the characteristics of virtual reality media support learning that requires a high level of understanding (Sukmawati et al., 2023). The use of VR in learning supports a learning process that focuses on higher-order thinking skills because, at the same time, students not only apply VR but also understand its use. The presence of VR allows for the transformation of abstract phenomena into concrete representations that can be observed and studied directly. Based on this, VR not only fosters conceptual understanding but also supports the application of deep learning.

2. Effectiveness of VR on Civic Knowledge

The effectiveness of virtual reality on civic knowledge is detected from its ability to provide learning experiences that are

contextual, participatory, and oriented towards a deep understanding of the concept of citizenship (LaValle, 2023; Pendidikan et al., 2025). Civic knowledge contains mastery of democratic values, awareness of the rights and obligations of citizens, understanding of the political system, and the ability to understand the dynamics of social life critically (Maulana, 2025). The integration of immersive technology in learning allows students to gain experiences that are not only informative but also reflective and applicable in real life. The VR-based learning process directs students to better understand citizenship issues through simulations like real situations so that previously abstract concepts become more concrete.

The use of VR shows a significant contribution to strengthening understanding of community citizenship, because the virtual environment is able to present a realistic and multidimensional representation of complex social situations (Fadilah et al., 2023). Simulations regarding events in the public deliberation process, social conflict, collective decision-making, elections, and the dynamics of societal diversity are able to provide a wider space for exploration than conventional approaches. The results of literature studies in the last five years show changes in knowledge and analytical skills after applying VR in civic learning (Kuncoro et al., 2025; Yuliastini et al., 2025).

The effectiveness of virtual reality is also reflected in the involvement of students in the learning process. The interactive environment presented through VR technology encourages more active and meaningful learning activities. Students no longer act as recipients of information but as individuals who are directly involved in the learning experience (Cevikbas et al., 2023). This involvement has a positive impact on students' motivation, concentration, and interest in citizenship material. The use of VR also improves students' skills to think critically about the learning material presented because it is more interactive and in line with current developments (Puspitaningrum et al., 2024). These conditions provide a dynamic and visual learning situation that can reduce students' boredom in the learning process.

VR's ability to develop critical thinking is an important indicator in assessing its effectiveness on civic knowledge (Maulana, 2025). The simulative environment provides various scenarios that require analysis, evaluation, argumentation, and decision-making based on the values and norms that apply in people's lives. This process encourages students to consider various points of view before determining the attitude they apply to public issues. Learning experiences through the use of VR in citizenship education help students understand that every citizenship decision has an impact on individuals and community groups (Cevikbas et al., 2023). These conditions strengthen students' reflective abilities in responding to social issues rationally and responsibly.

The affective aspect is also strengthened through VR-based learning experiences. Representation of social situations in a virtual environment allows students to understand different perspectives, thereby forming empathy and sensitivity to societal conditions. This experience has had a positive impact on the formation of tolerant, inclusive, and responsible citizenship attitudes. Research findings show that the immersive approach significantly improves social awareness and concern for public issues (Surachman et al., 2024).

The main goal of applying VR in civic knowledge focuses on developing overall civic competence. Learning is not only directed at mastering the material but also at developing critical thinking skills, active participation, and social responsibility. The integration of virtual reality technology is part of the educational transformation that adapts to developments in the digital era so that the learning process becomes more relevant to the needs of the times. The effectiveness of VR implementation is influenced by several supporting factors. A structured and goal-based learning design is an important aspect in ensuring the successful use of this technology (Ardiansyah et al., 2025). Educator competence in managing digital-based learning also determines the quality of the resulting learning experience. The availability of devices and the level of technological literacy of students also influence the optimization of VR use.

The literature review shows that virtual reality has great potential in increasing civic knowledge through an immersive, interactive, and contextual experience. The resulting learning experience is able to strengthen conceptual understanding, increase

engagement, and develop critical thinking skills and social awareness (Musril et al., 2020). Further development is needed to ensure sustainable implementation and equitable access so that this technology can make an optimal contribution to citizenship education.

3. Transformation of Civic Learning

The transformation of Pancasila and Citizenship Education (Civic Education) learning in the era of technological disruption demonstrates a paradigm shift from conventional approaches to adaptive, digital learning models oriented toward strengthening 21st-century citizenship competencies (Sartika & Megasari, 2025). This change lies not only in the use of technology as an aid but also reflects a comprehensive reconstruction of learning strategies, the role of educators, and student learning experiences. The integration of digital technology, including artificial intelligence and blended learning models, encourages the creation of a more flexible, interactive, and relevant learning environment, addressing the characteristics of the digital generation accustomed to rapid and dynamic access to information.

This transformation demonstrates that Civic Education learning is no longer focused on a one-way transfer of knowledge but has evolved into a process that emphasizes active engagement, critical thinking, and analytical skills in addressing citizenship issues (Sartika & Megasari, 2025). The use of technology enables students to access various learning resources, explore social phenomena more broadly, and develop skills in connecting citizenship concepts to the realities of life.

In today's digital era, education has influenced the orientation of civics learning, shifting from a normative and textual orientation to a more contextual and experience-based approach (Musril et al., 2020). Civics (Civic Education) learning no longer emphasizes merely memorizing concepts of democracy, the constitution, and Pancasila values but is directed toward developing students' abilities to critically and reflectively understand social realities. Social phenomena evolving through digital media, such as the polarization of public opinion, the spread of hoaxes, intolerance, and the low level of ethical communication in cyberspace, present new challenges that must be addressed through more adaptive civics learning (Yanti, 2025). These conditions demonstrate that Civic Education plays a strategic role in building student awareness so they can become intelligent, critical, and responsible digital citizens in utilizing information technology.

The transformation of Civic Education learning is also marked by the development of a student-centered learning approach that positions students as active subjects in the learning process (Nastiti, n.d.). Discussion-based learning models, problem-based learning, collaborative learning, and project-based learning are increasingly being used to strengthen higher-order thinking skills. Students are given the space to analyze social issues, present arguments, and develop solutions to various civic issues that arise in society (Sukmayadi et al., 2024). This creates a more democratic learning environment because students are directly involved in the knowledge-building and decision-making processes during the learning process.

The development of digital technology provides significant opportunities for Civics (Civic Education) learning to deliver more innovative and engaging learning experiences. The use of interactive media such as educational videos, online learning platforms, virtual simulations, and virtual reality (VR) can foster student engagement in understanding civics material (Daifullah et al., 2024). Visualizing material through digital technology helps students make abstract concepts more concrete and understandable (Sukmawati et al., 2023). Social simulations presented through digital media enable students to understand the dynamics of democratic life, social conflicts, and the public policy-making process more realistically and in-depth.

Strengthening civic knowledge in Civic Education learning in the digital era is also closely related to the development of student literacy (Nurmalisa et al., 2020). The ability to understand, evaluate, and utilize information wisely is a crucial competency amidst the rapid flow of information. Civics education is responsible for developing students' ability to sort information based on its validity and truth value. This ability is crucial for preventing the spread of disinformation, hate speech, and digital radicalism, which have the potential to threaten democracy and national unity.

Another prominent change can be seen in the role of educators, who have experienced a redefinition from simply conveying material

to becoming facilitators, innovators, and agents of value transformation. Educators are required to have adequate digital literacy and the ability to design technology-based learning that remains based on humanistic values. This transformation is important so that the learning process does not lose the essence of character formation but is able to integrate technological dimensions with strengthening morals, ethics, and national identity.

The presence of technology in civics learning also opens up opportunities to create a more personalized and adaptive learning experience (Fauziah et al., 2023). Technology-based systems allow the adjustment of material according to students' needs and abilities so that the learning process becomes more effective and efficient. This condition contributes to improving the quality of civic knowledge because students not only understand concepts theoretically but are also able to apply them in real-life contexts (Sartika & Megasari, 2025). A dynamic and experience-based learning environment helps strengthen high-level thinking skills and awareness as an active and responsible citizen.

The transformation of Civic Education learning ultimately emphasizes the importance of synergy between technology and civic values in creating education that is relevant to the demands of the times. The integration of innovative teaching media such as virtual reality is part of this change because it is able to provide a more immersive, contextual, and reflective learning experience (Kritis et al., 2025). This approach strengthens the direction of developing civic knowledge, which is not only oriented towards mastery of material but also towards the formation of competencies, attitudes, and complete civic awareness.

4. Advantages and limitations of virtual reality Teaching Media

Virtual reality-based teaching materials have several advantages and limitations in their use. In general, VR's main advantage lies in its ability to create immersive and interactive learning experiences. Learning Pancasila education is often considered abstract because it is related to values such as justice, democracy, and tolerance. Virtual reality contains concepts that can be visualized in the form of real-life simulations (Radianti et al., 2020). This visualization helps students understand the value of citizenship more concretely because the material is not only delivered through theoretical explanations but also through virtual experiences that resemble actual social conditions. This situation provides space for deeper reflection on the application of Pancasila values in everyday life. Based on this, VR is in line with the goals of Pancasila education in forming a profile of Pancasila students who are critical, creative, and able to collaborate.

Technological advances in the current era make students more involved in participating in the learning environment so that they can improve their understanding of the material better (Mckechnie & Wilson, 2021). Virtual reality-based teaching media has been proven to be able to increase motivation and learning engagement because students are actively involved in learning (Conrad et al., 2024). An interactive and interesting learning environment makes students more active in the learning process. Virtual reality makes learning more diverse and less monotonous, thereby attracting students' interest in being involved in learning. Simulation-based learning experiences also help increase students' focus and concentration because they gain multisensory experiences involving visual and audio aspects and direct interaction with the virtual environment (Al-ansi et al., 2023). These conditions strengthen the attractiveness of learning and help students understand the material more deeply than using conventional media.

The use of virtual reality in learning Pancasila education also contributes to the development of critical thinking and decision-making skills (Mckechnie & Wilson, 2021). Social simulations presented through virtual environments allow students to face various situations that require analysis, evaluation, and moral considerations in determining their attitude towards an issue. This experience helps students understand the consequences of each action while strengthening awareness of the importance of democratic values, tolerance, and social responsibility (Satria Arek, 2025). Learning becomes more contextual because students not only understand citizenship theory but also learn to apply it in situations that resemble real life.

Behind these advantages, the use of virtual reality also has several disadvantages. One of the main challenges is the relatively high cost of equipment and infrastructure so that it

is not evenly used in schools. Apart from that, there are technical obstacles such as the need for special equipment and the uneven ability of students to operate the teaching media (Wohlgenannt et al., 2020). The shortage of digital-based teaching materials such as virtual reality can also be seen in the lack of adequate internet networks in Indonesia so that digital-based learning like this cannot be implemented optimally (Arya et al., 2022). This gap in technology access means that VR implementation tends to be easier in schools with adequate facilities compared to schools in areas with limited digital infrastructure.

The effectiveness of using virtual reality and similar teaching media on learning outcomes is not always consistent because in some cases it only increases the learning experience without being accompanied by an increase in academic achievement results (Cevikbas et al., 2023). These conditions show that the success of using VR is not only determined by the sophistication of the technology but is also influenced by the quality of the learning design, the readiness of educators, and the ability of students to utilize technology optimally. Cognitive load that is too high due to visual displays and excessive information can also affect students' concentration during learning. This situation has the potential to cause students to focus more on the entertainment aspect rather than the learning objectives they want to achieve.

Educator readiness is an important factor in determining the effectiveness of implementing virtual reality in learning (Crispin, 2024). The use of immersive technology-based media requires adequate pedagogical skills and digital literacy so that learning remains focused on achieving competency. Lack of training and mastery of technology can cause problems; the benefits of VR are not yet optimal in supporting the learning process (Azmi et al., 2024). Virtual reality-based teaching media have significant advantages in learning Pancasila education, especially in increasing understanding of concepts, motivation to learn, and internalization of values through direct experience. However, its implementation also faces various challenges such as cognitive load, limited infrastructure, teacher readiness, and learning design.

5. Implications of Virtual Reality for the Transformation of Civic Knowledge in Pancasila Education

The development of digital technology is driving innovation in learning media, one of which is virtual reality (VR). This technology provides an immersive learning experience so students can understand concepts more contextually. VR in higher education can increase learning engagement and conceptual understanding by providing authentic learning experiences (Radianti et al., 2020). The use of technology in education continues to grow, one example being the use of virtual reality (VR) as a teaching medium. VR enables students to learn through direct experience in a virtual environment that resembles the real world. This characteristic strengthens the experiential learning process because students have the opportunity to explore social phenomena more realistically and reflectively. The interactive virtual environment also helps students understand the relationship between the concept of citizenship and the dynamics of social life in a more concrete way.

In Pancasila education, the use of VR is relevant because the material taught is not only conceptual but also relates to values, attitudes, and practices of social life (Habe & Ahiruddin, 2017). The implementation of virtual reality-based learning media significantly improves students' critical thinking skills in Pancasila and citizenship education (Musril et al., 2020). From an affective perspective, this learning media allows students to directly experience the values of Pancasila through topics around them. Immersive learning experiences help students understand the meaning of tolerance, social justice, unity, and democracy through simulations that mimic real-life situations (Tolle & Al Huda, 2023). This process contributes to strengthening civic knowledge because students not only understand the material theoretically but also reflect on civic values in their daily lives.

Pancasila education learning can be utilized to simulate situations involving diversity, tolerance, and moral decision-making, making Pancasila values more easily internalized by students. Digital technology-based media, including VR, can provide a more engaging and relevant learning experience, thereby increasing students' emotional engagement (Jannah, 2025). This emotional

engagement is a crucial aspect of civics learning because it helps students understand the social impact of actions and decisions. Virtual simulations of social conflict, deliberation, and intercultural interactions provide students with a platform to understand the importance of empathy, respect for diversity, and social responsibility in community life.

VR also has implications for strengthening the Pancasila student profile. This is because the integration of VR into project-based learning can create in-depth learning through virtual exploration, discussion, and reflection between teachers and students (Komalasari Riri, 2025). This learning process supports the development of 21st-century competencies such as communication, collaboration, creativity, and problem-solving skills. The virtual learning environment provides opportunities for students to actively engage in the learning process, fostering a more participatory and student-centered learning pattern. This environment strengthens the transformation of civics learning from conventional patterns to one that is more adaptive to the developments in the era of technological disruption.

Furthermore, the use of virtual reality can increase learning engagement and conceptual understanding by providing an authentic learning experience (Radianti et al., 2020). Therefore, students not only understand the material but also develop collaborative, critical, and creative attitudes. Virtual simulation-based learning experiences help students develop analytical skills in understanding complex citizenship issues. Students have the opportunity to evaluate a problem from multiple perspectives, making learning more reflective and contextual. This situation demonstrates that the use of VR functions not only as a visual learning medium but also as a means of fostering deeper civic awareness.

The use of this type of technology in Pancasila education also presents challenges. The effectiveness of using virtual reality and similar learning media on learning outcomes is not always consistent, as in some cases, it only enhances the learning experience without being accompanied by improved learning achievement (Cevikbas et al., 2023). The success of using virtual reality learning media in Pancasila education remains dependent on the abilities of the students and the skills of the teachers themselves. Act as facilitators in the learning process, allowing students to achieve different learning outcomes (Isoghie & Saleem, 2025). Infrastructure readiness, educators' digital literacy competencies, and the quality of learning design also determine the optimal use of VR in the educational process. Limited devices and internet access in some regions also hinder the equitable implementation of VR-based learning technology in Indonesia.

In the current digital era, technology-based learning, such as virtual reality, has become a new innovation in education (Cevikbas et al., 2023). This offers potential for development in Indonesian education, particularly in Pancasila Education. VR-based teaching media have significant implications for Pancasila education (HRP et al., 2022). VR not only enhances conceptual understanding but also strengthens students' internalization of values and character development. The use of immersive technology in learning demonstrates that civic knowledge transformation can be built through contextual, interactive, and reflective learning experiences (Nurmalisa et al., 2020). Therefore, students are able to develop into critical, democratic, adaptive, and responsible citizens amidst the dynamics of the era of technological disruption.

CONCLUSION

The use of Virtual Reality (VR) as a teaching medium in Pancasila education learning has enormous potential, but still requires proper management to be optimal. Apart from that, success really depends on learning design, technological readiness, and the competence of educators and students. Apart from that, the integration of VR is also part of the transformation of Pancasila Education learning in the digital era, which shifts learning from conventional models to be more adaptive, participatory and experience-based. Virtual Reality is an effective and relevant learning media innovation to improve the quality of Pancasila education learning, especially in developing civic knowledge.

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