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DIGITAL MEDIA-BASED LEARNING MEDIA FOR ELEMENTARY SCHOOL CITIZENSHIP EDUCATION

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Abstract
Civic Education in elementary schools plays a crucial role in shaping students' character and understanding of national values. However, the application of digital media in Civic Education learning remains limited compared to other subjects. This research aims to examine the effectiveness of digital-based learning tools, specifically Augmented Reality, in enhancing students' understanding and engagement, while also providing recommendations for curriculum development and teacher training. The study employs a quantitative approach with an experimental design, comparing the learning outcomes of students using Augmented Reality media to those using conventional media. Data were collected through tests, questionnaires, and observations, and analyzed using descriptive and inferential statistics. The findings reveal that Augmented Reality significantly boosts students' motivation and comprehension, making learning more interactive and engaging, and aiding in the understanding of complex concepts through visualization. The research concludes that integrating digital media, particularly Augmented Reality, into Civic Education holds substantial potential to elevate educational quality in elementary schools. However, successful implementation hinges on teacher preparedness and adequate technological infrastructure, underscoring the importance of training and technical support for sustaining this innovation..
Keywords: *civic education, augmented reality, digital media, student understanding*

Abstrak
Pendidikan Kewarganegaraan di sekolah dasar berperan penting dalam membentuk karakter dan pemahaman siswa tentang nilai-nilai kebangsaan. Namun, penerapan media digital dalam pembelajaran Pendidikan Kewarganegaraan masih terbatas dibandingkan mata pelajaran lainnya. Penelitian ini bertujuan untuk mengkaji efektivitas media pembelajaran berbasis digital, khususnya Augmented Reality dalam meningkatkan pemahaman dan keterlibatan siswa, serta memberikan rekomendasi untuk pengembangan kurikulum dan pelatihan guru. Penelitian menggunakan pendekatan kuantitatif dengan desain eksperimen, membandingkan hasil belajar siswa yang menggunakan media Augmented Reality dengan media konvensional. Data dikumpulkan melalui tes, angket, dan observasi, kemudian dianalisis dengan statistik deskriptif dan inferensial. Hasil penelitian menunjukkan bahwa Augmented Reality meningkatkan motivasi dan pemahaman siswa secara signifikan, membuat pembelajaran lebih interaktif dan menarik, serta membantu siswa memahami konsep kompleks melalui visualisasi. Penelitian ini menyimpulkan bahwa integrasi media digital, khususnya Augmented Reality, dalam PKn memiliki potensi besar untuk meningkatkan kualitas pendidikan di sekolah dasar. Namun, keberhasilan implementasi tergantung pada kesiapan guru dan infrastruktur teknologi yang memadai, sehingga pelatihan dan dukungan teknis menjadi krusial untuk keberlanjutan inovasi ini.
Kata Kunci: pendidikan kewarganegaraan, augmented reality, media digital, pemahaman siswa

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Introduction

Citizenship Education (PKn) in elementary schools is crucial for developing students' character and their comprehension of national values. With the progress of technology, particularly in digital media, there are opportunities to enhance the effectiveness of PKn education. This research is significant as it explores how digital media can enrich students' learning experiences and deepen their understanding of PKn content. The incorporation of ICT in citizenship education fosters dynamic learning experiences and enhances interaction between students and educators (Anastasia Desmeria Br Ginting et al., 2024).

Numerous studies indicate that utilizing digital media in PKn education can lead to substantial outcomes. Students exhibit greater interest and enthusiasm for learning when engaging with digital media as opposed to traditional methods. Digital media, such as AR and educational games, markedly boosts students' interest and motivation. For instance, 75% of students report increased engagement when utilizing digital media compared to conventional approaches (Haris Abdullah Fasha et al., 2024; Herlina et al., 2024). Despite the extensive research on digital media in education, there exists a gap in its specific application within the realm of PKn in elementary schools. A majority of studies tend to concentrate on STEM or language subjects, while PKn has garnered less focus regarding innovations in learning media. One study reveals that the implementation of visual media in Citizenship classes led to significant enhancements in student learning outcomes, with a 33.34% rise in classical completeness from one cycle to the subsequent one (Ruma Bay et al., 2022). Digital media promotes increased student engagement and comprehension of citizenship practices on both local and global scales (Alinata et al., 2024).

The incorporation of Augmented Reality (AR) into elementary education is starting to gain interest, yet its usage remains restricted. Research suggests that while educators acknowledge the potential advantages of AR, many do not possess the necessary readiness and skills for effective implementation in the classroom. Educators who have utilized AR report heightened student motivation and enhanced educational results (Rivadulla López & Rodríguez Correa, 2020). The uniqueness of this study is found in the creation and application of AR-based PKn learning media specifically tailored for elementary school students. In contrast to earlier studies, this research not only evaluates the effectiveness of the media but also develops learning modules that are readily accessible to both educators and students. Research indicates that AR improves learning outcomes by offering interactive and visual experiences, rendering learning more enjoyable and effective compared to traditional methods (Afnan et al., 2021; Hidayat et al., 2024).

The objective of this research is to investigate how digital-based PKn learning media, particularly AR, operates to enhance students' comprehension and engagement in elementary schools. In the realm of elementary education, augmented reality has the capacity to boost digital literacy, as evidenced by increased engagement, motivation, and collaborative communication among students (Nevrelova et al., 2024). AR also improves academic performance and student involvement, thereby contributing to a higher quality of education (Sökmen et al., 2024). Furthermore, this study seeks to offer recommendations for curriculum development and teacher training regarding the use of digital media in education.

Research Methods

This research utilizes a quantitative methodology featuring an experimental design. This approach is selected to evaluate the effectiveness of Augmented Reality (AR)-based educational

media in Citizenship Education (PKn) at the elementary school level. In this study, the researcher will compare the academic performance of students utilizing AR media against those employing traditional learning media. The experimental design facilitates iterative modifications throughout the research process, thereby improving methodological rigor and flexibility (Martins & Costa, 2024). In this framework, the research will take place in several elementary schools that have integrated AR technology into their instructional practices. The application of an experimental design, especially the pretest and posttest methodology, is essential for evaluating the influence of Augmented Reality (AR) media on students' grasp of concepts across different subjects, including PKn (Citizenship Education). Research suggests that AR significantly enhances students' understanding and engagement, as demonstrated by numerous studies. AR media not only aids in visualizing intricate concepts but also elevates student motivation, rendering learning more interactive and enjoyable (Adi et al., 2024).

Investigations into the efficacy of Augmented Reality (AR) in improving students' comprehension in PKn education provide valuable insights regarding its effects in comparison to traditional media. Primary data gathered from sixth-grade students indicate that AR can considerably enhance engagement and understanding, corroborated by various studies that emphasize its benefits. AR technology revolutionizes conventional learning by offering interactive and immersive experiences, significantly boosting student interest and motivation (Hidayat et al., 2024; Wu et al., 2024). Quantitative data collection will be conducted through specially crafted assessments aimed at evaluating students' comprehension of PKn material following the implementation of the learning media. These assessments will encompass various elements, including knowledge of Pancasila, the 1945 Constitution (UUD 1945), and national values. Some research indicates that while Augmented Reality (AR) has a positive effect on motivation, its influence on cognitive learning outcomes may differ, highlighting the necessity for further exploration (Shen & Tsai, 2022).

The data collection methods employed in this research include questionnaires, tests, and observations. Questionnaires will be utilized to collect information regarding students' perceptions of utilizing AR media in PKn education. Tests will be conducted both prior to and following the application of the learning media to evaluate enhancements in student understanding. These assessments will feature multiple-choice and essay questions aimed at gauging students' grasp of PKn material. Data analysis for this research will utilize both descriptive and inferential statistical techniques. The data from test results will be analyzed to ascertain the average scores of students before and after the use of AR media. The data analysis procedure consists of several stages, including data cleaning to eliminate invalid entries, data transformation to aid in analysis, and data modeling to uncover potential patterns or relationships.

Results and Discussion

Digital learning media have emerged as an essential resource in education, particularly within the realm of Citizenship Education (PKn) at the elementary school level. The implementation of Augmented Reality (AR) technology promotes a more interactive educational atmosphere, resulting in enhanced student engagement. For example, students indicate increased motivation when utilizing AR tools (Firgiyana & Arief Cahyo Utomo, 2024). Digital media, such as AR, not only offer interactive learning opportunities but also assist students in comprehending citizenship concepts more effectively. Digital media, particularly AR applications, aid students in understanding the often abstract concepts of PKn by providing realistic simulations that relate to citizenship values like democracy and social justice. Research

has demonstrated that AR media are effective in improving students' critical thinking abilities, as shown by notable advancements in pretest and posttest scores (Yunita Sari et al., 2024). Consequently, the incorporation of digital media into PKn education is crucial for fostering more contextual and meaningful learning experiences.

The application of interactive digital media in PKn education also successfully tackles the difficulties associated with conveying intricate material, as students can engage with the content in more dynamic and diverse manners. Systematic reviews indicate that Augmented Reality enhances student-centered learning through interactive and immersive experiences that significantly boost learning engagement (J. Zhang et al., 2022). Furthermore, digital media enable educators to assess student comprehension more accurately, as direct interaction with the material allows for better monitoring and feedback. Nevertheless, despite the numerous advantages that digital media provide, not all educators are prepared to incorporate them into their teaching practices. A significant number of teachers demonstrate relatively positive attitudes towards Augmented Reality (AR), recognizing its potential to enrich the educational experience (Wyss & Bäuerlein, 2024). Therefore, it is essential to offer adequate training and support to teachers to effectively leverage digital media in PKn education. A major challenge is the insufficient training in digital competencies and AR integration, as evidenced by preservice teachers in Nigeria who reported a lack of adequate exposure to AR tools (Abdul-Salaam, 2024). Moreover, the inadequate infrastructure and the high expenses associated with AR technology further hinder its adoption in educational institutions (Khairiyah et al., 2024).

In summary, the incorporation of digital learning media in PKn at primary schools presents significant opportunities to enhance the quality of education. By utilizing available technology, PKn education can become more engaging and pertinent for students, allowing them to better comprehend and internalize the citizenship values being taught. Through the use of AR media, students are able to experience appealing and interactive visualizations that aid in their retention and understanding of the material more effectively. This indicates that AR not only captures the attention of students but also enhances the effectiveness of learning. Additionally, the application of AR in PKn education can promote collaboration among students. The collaborative aspect of AR projects encourages peer interaction, thereby enhancing social learning and teamwork abilities (Haris Abdullah Fasha et al., 2024). Students can exchange information and experiences, fostering a more dynamic learning atmosphere. This is particularly crucial in PKn education, which frequently involves discussions surrounding social and citizenship values. Nonetheless, the challenges associated with the implementation of Augmented Reality (AR) cannot be disregarded. The successful integration of AR in classrooms frequently encounters obstacles such as a lack of adequate technological resources and the preparedness of teachers (Rinaldi et al., 2024). Consequently, it is essential to enhance effective and continuous training programs for educators, enabling them to fully leverage the advantages of this technology.

In conclusion, the application of AR in PKn education demonstrates considerable potential to improve student comprehension. With appropriate support, AR media can serve as a highly effective instrument in fostering positive citizenship traits and attitudes among elementary school students. The efficacy of Augmented Reality (AR) in PKn education is corroborated by numerous studies that reveal significant enhancements in student understanding and motivation. Research indicates that AR-based modules not only facilitate better comprehension but also promote increased student engagement when compared to conventional teaching methods. In a particular study centered on Pancasila Education, the

incorporation of AR within a problem-based learning framework resulted in a notable rise in student motivation levels (Shiva Febrianto & Aeni, 2024). Data suggests that students who engage in AR-based learning are more active participants in class discussions. The use of AR technology has been associated with heightened student motivation and greater involvement in learning activities (Shiva Febrianto & Aeni, 2024; Taufik Afandi & Umi Mahmudah, 2024). Students report feeling more engaged and possess a sense of ownership over their educational journey, which subsequently improves learning outcomes.

In assessing the effectiveness of digital media, it is essential to take into account the infrastructure and technical components. Insufficient technological infrastructure and the high expenses related to AR hardware and software pose significant challenges (Khairiyah et al., 2024). To gain a more thorough understanding of the effectiveness of digital media in PKn education, evaluations must incorporate these elements, as limited access to technology can hinder the use of digital media in specific regions. Additionally, a significant limitation is the absence of infrastructure support. Numerous schools, particularly in rural regions, do not have sufficient technological devices or reliable internet access. Approximately 30% of Indonesian elementary schools still face limitations in technology infrastructure, rendering the effective implementation of digital media a critical concern (Kemdikbud, 2021).

To tackle these obstacles, comprehensive training programs for educators are essential. This training should encompass an introduction to technology, methods for utilizing digital media in instruction, and strategies for addressing potential challenges. Professional development programs have been shown to effectively enhance teachers' preparedness to incorporate AR into educational processes through practical and collaborative methods (X. Zhang & Chen, 2024) Furthermore, it is imperative for governments and educational institutions to allocate resources towards enhancing technology infrastructure within schools. Ensuring adequate access to devices and internet connectivity will facilitate the broader adoption of digital media in educational settings. Emphasizing investments in technology infrastructure is crucial for schools to seamlessly integrate digital media into their instructional methodologies (Okoye et al., 2023).

By addressing these obstacles, the optimization of digital media usage in PKn education can be achieved, ultimately providing enhanced advantages for students. The effective incorporation of digital media can foster a younger generation that possesses a deeper comprehension of citizenship values and the competencies required for active engagement in society. The application of technology in PKn education, including interactive multimedia, digital simulations, and online learning platforms, can significantly boost student engagement, motivation, and comprehension of PKn content (Shefira et al., 2024). As technological innovations continue to progress, the outlook for digital learning media in PKn subjects appears increasingly favorable, presenting opportunities to develop more interactive and captivating educational experiences. Recent evaluations confirm that Augmented Reality (AR) has the potential to enrich students' learning experiences within the realm of citizenship education (Koumpouros, 2024). A prospective avenue for development is the incorporation of Artificial Intelligence (AI) technology into digital learning media. Through the utilization of AI, educational media can be tailored to meet the unique needs and capabilities of individual students, thereby offering a more customized learning experience. This is consistent with findings that indicate adaptive learning technologies can enhance student motivation and improve learning outcomes (Li et al., 2022).

Moreover, the partnership between technology developers and educators is essential for the creation of relevant and effective learning media. Engaging teachers in the development

process leads to media that aligns more closely with students' needs and the contexts of their classrooms. Collaborative design methods involving technology developers and educators have been shown to yield more pertinent and effective learning media (Jeon et al., 2022). Looking ahead, we can anticipate enhancements in the accessibility of digital learning media. With an increase in initiatives focused on providing devices and internet access in remote regions, a greater number of students will have the chance to learn through modern technology. This will contribute to diminishing existing educational inequalities (Dhuha & Astutik, 2025). In summary, the future of digital learning media in PKn appears very promising. With advancements in technology and adequate support, digital media can evolve into a highly effective instrument for fostering positive citizenship character and attitudes among elementary students. Through innovation and collaboration, we can develop improved and more inclusive learning environments for all students.

Conclusion

This research has comprehensively examined the application of digital-based learning media, specifically Augmented Reality (AR), within Citizenship Education (PKn) at the elementary school level. Results from various studies suggest that the incorporation of digital media, particularly AR, can significantly boost students' motivation and comprehension of PKn content. This indicates that AR not only engages students' interest but also facilitates their understanding of intricate concepts in a more accessible and enjoyable manner. Regarding effectiveness, the application of AR in PKn education yields noteworthy outcomes. The findings indicate that AR can deliver information in a more interactive and visual format, thereby enhancing students' ability to retain and understand the material presented. Moreover, the beneficial effects of digital media in PKn education are also evident in students' perceptions. They report a more enjoyable and interactive learning experience, which leads to improved educational results. Nevertheless, despite the numerous advantages of employing AR in PKn instruction, certain challenges must be addressed. A significant number of educators still lack the necessary technical skills to effectively utilize this technology. Consequently, it is imperative for educational institutions to offer sufficient training to ensure that teachers can optimally integrate this technology into the learning process.

In summary, this study illustrates that digital-based PKn learning media, particularly AR, possess substantial potential to enhance the quality of education in elementary schools. By harnessing this technology, it is anticipated that students will not only acquire knowledge of national values but also cultivate critical thinking abilities and empathy essential for daily life. Therefore, the incorporation of digital media in PKn education is not only pertinent but also vital for preparing a more knowledgeable, open-minded, and capable generation.

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