



Pasalku.ID application: innovative learning media for improving cognitive learning outcomes

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ABSTRACT

The rapid development of digital learning requires instructional media that can assist students in understanding abstract materials, including the Undang-Undang Dasar Negara Republik Indonesia Tahun 1945. In school practice, many students still struggle to connect constitutional content to real civic contexts, while interactive and structured digital learning media for Pancasila Education remain limited. This study aims to develop Pasalku.ID is a digital learning application designed to enhance students' cognitive understanding of constitutional materials. The research employed a Research and Development approach using the ADDIE development model. The research subjects included subject-matter experts, media experts, a Pancasila Education teacher, and Grade X senior high school students. Data were collected using expert validation sheets, practicality questionnaires, and pre- and post-test instruments to assess learning effectiveness. The findings indicate that Pasalku.ID is content-valid, practical to use, and effective in improving students' learning outcomes, as reflected by medium to high N-Gain scores. These results suggest that Pasalku.ID is a feasible digital learning medium for supporting constitutional learning in Pancasila Education.

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ABSTRAK

Perkembangan pembelajaran digital menuntut tersedianya media pembelajaran yang mampu membantu siswa memahami materi yang bersifat abstrak, termasuk Konstitusi dan Undang-Undang Dasar Negara Republik Indonesia Tahun 1945. Dalam praktik pembelajaran di sekolah, siswa masih mengalami kesulitan dalam mengaitkan isi konstitusi dengan konteks kehidupan berbangsa, sementara ketersediaan media pembelajaran digital yang interaktif dan terstruktur dalam mata pelajaran Pendidikan Pancasila masih terbatas. Penelitian ini bertujuan untuk mengembangkan aplikasi Pasalku.ID sebagai media pembelajaran digital yang dapat meningkatkan pemahaman kognitif siswa terhadap materi konstitusi. Penelitian ini menggunakan metode Research and Development dengan model pengembangan ADDIE. Subjek penelitian melibatkan ahli materi, ahli media, guru Pendidikan Pancasila, serta murid kelas X SMA. Pengumpulan data dilakukan melalui lembar validasi ahli, angket kepraktisan, serta tes pre-test dan post-test untuk mengukur efektivitas pembelajaran. Hasil penelitian menunjukkan bahwa Pasalku.ID valid secara isi, praktis digunakan dalam pembelajaran, dan efektif meningkatkan hasil belajar siswa dengan kategori peningkatan sedang hingga tinggi. Temuan ini menunjukkan bahwa Pasalku.ID layak digunakan sebagai media pembelajaran digital untuk mendukung pembelajaran konstitusi dalam Pendidikan Pancasila.

Kata Kunci: hasil belajar kognitif; media pembelajaran digital; Pasalku.ID; pendidikan Pancasila

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INTRODUCTION

The rapid advancement of digital technology in recent years has reshaped the landscape of secondary school education, including in Pendidikan Pancasila. This subject requires students to comprehend abstract and normative concepts such as the values of Pancasila, constitutional principles, and the structural organisation of the Undang-Undang Dasar Negara Republik Indonesia Tahun 1945 (Dewi & Dewi, 2024). The Kurikulum Merdeka policy, introduced by the Kementerian Pendidikan Kebudayaan Riset dan Teknologi, underscores the importance of digital literacy, differentiated instruction, and experiential learning as essential components of contemporary educational reform. Despite these policy directions, various empirical reports and classroom observations indicate that instructional practices in Pancasila Education remain dominated by lecture-centred approaches and static textual materials (Dzattadini et al., 2025). Such practices hinder students' ability to critically analyse constitutional content and engage meaningfully with civic issues in the digital era. Recent developments in digital pedagogy highlight the transformative potential of digital learning media to enhance student engagement and deepen conceptual understanding.

Systematic reviews show that mobile learning consistently improves learning outcomes and critical thinking when instructional designs emphasize interaction, adaptability, and a student-centered approach (Pedraja-Rejas, 2024). Complementing this, a systematic literature review found that mobile-based learning has a positive impact on student learning outcomes and interest, particularly when instruction is designed to integrate contextual and interactive tasks into classroom activities (Handoyo et al., 2025). These findings align with the Cognitive Theory of Multimedia Learning, which emphasizes the integration of verbal and visual information to reduce cognitive load and promote deeper understanding of complex material (Mayer, 2024). Broader educational research increasingly supports the effectiveness of digital and mobile learning environments. Mobile learning increases flexibility, learner autonomy, and sustained engagement, making it particularly well-suited to subjects that require repeated exploration, such as constitutional studies (Hurwitz & Schmitt, 2020). Studies in Indonesia also show that digital learning media developed using a structured instructional design model contribute to increased learning motivation and cognitive outcomes.

Research shows that digital learning modules developed through systematic instructional design stages significantly increase learning effectiveness and learner engagement in secondary education contexts (Shakeel et al., 2023). Furthermore, digital learning media have additionally been shown to support higher-order thinking skills when features such as gamification, interactive quizzes, multimedia resources, and case-based tasks are incorporated. Empirical evidence shows that online learning environments and digital media can improve the quality of citizenship education by increasing student engagement and enhancing their understanding of citizenship concepts (Halimi et al., 2022). In contexts in which learners interact with digital content and activities, students tend to demonstrate better conceptual understanding than in more traditional instructional formats. Digital learning tools designed with problem-based and inquiry-oriented activities increase student motivation and participation in discussions related to citizenship themes (Fasha et al., 2024). These findings reinforce the importance of designing platforms that not only deliver content but also encourage deeper analytical engagement with constitutional articles, civic dilemmas, and contemporary societal issues.

Despite these advances, a clear research gap remains in constitutional learning. Although digital learning media for Pancasila Education have been developed in several studies, most focus on general topics or rely heavily on static formats such as slides, videos, or text-based modules. Existing platforms rarely offer features that support the structured exploration of constitutional articles, visualisations of constitutional structures, or interactive assessments that help students interpret the meaning and implications of specific articles in the Undang-Undang Dasar Negara Republik Indonesia Tahun 1945. Recent research in

Pancasila Education and Civic Education shows that although digital media are widely used to support learning, many existing digital tools tend to focus on basic engagement and content delivery rather than on facilitating deeper cognitive processes, such as structured constitutional analysis or higher-order interpretive reasoning. Studies on learning media in civic education indicate that current digital platforms are effective in increasing student motivation and overall conceptual understanding, but still lack features that systematically support interpretive interaction with complex texts, such as constitutional articles (Hendrizal et al., 2025; Kusumawati et al., 2025). Addressing this gap, the study's scientific originality lies in the development of Pasalku.ID is an interactive web-based application designed specifically to strengthen students' understanding of constitutional articles. The application integrates multimedia learning principles, mobile learning accessibility, and the systematic stages of the ADDIE model, thereby enabling structured content design, iterative refinement, and learner-centred usability.

Features such as article exploration, article-based quizzes, visualisation of constitutional structures, and AI-supported dialogue systems provide a learning experience that enables students to engage deeply with constitutional materials. Unlike general-purpose digital media, Pasalku.ID is aligned with the pedagogical orientation of Pancasila Education and supports the goals of the Kurikulum Merdeka to foster critical thinking, digital literacy, and active civic engagement. The research focuses on the following problems: 1) How the development of Pasalku.ID is carried out using the ADDIE model in a digital learning environment; 2) How the validity of the application is evaluated by subject-matter and media experts; 3) How practical the application is based on feedback from teachers and students; and 4) The extent to which the application improves students' cognitive learning outcomes related to the Constitution and the Undang-Undang Dasar Negara Republik Indonesia Tahun 1945, as measured through pre-test and post-test assessments. Therefore, the objective of this research is to develop and evaluate Pasalku.ID as a valid, practical, and effective digital learning medium for teaching constitutional materials in Pancasila Education, in accordance with the principles and aims of the Kurikulum Merdeka.

LITERATURE REVIEW

Digital Learning Media in Modern Education

Digital learning media have rapidly evolved alongside advances in information and communication technologies, transforming classroom practices from traditional lecture-based instruction toward more interactive, flexible, and learner-centred environments (Adnan & Istiqomah, 2022; Widhiasti et al., 2022). Multimedia-based tools that integrate text, images, animation, and interactivity have been shown to reduce extraneous cognitive load and promote deeper understanding when designed in accordance with empirically validated multimedia principles (Mayer, 2024). Systematic research further demonstrates that mobile and blended learning strengthen learning outcomes and cultivate higher-order thinking skills when the instructional design is responsive to learner needs and grounded in sound pedagogical frameworks (Pedraja-Rejas, 2024). These findings confirm that digital media function not merely as content delivery channels but as instructional ecosystems in which technology and pedagogy are co-constructed.

Instructional design models provide the structural foundation for developing high-quality digital learning media. Among these models, ADDIE (Analysis, Design, Development, Implementation, Evaluation) remains widely used due to its transparency, iterative nature, and alignment with evidence-based development practices. Studies have shown that ADDIE enhances pedagogical validity and usability through systematic needs analysis, design precision, and continuous evaluation (Shakeel et al., 2023). Comparative research also demonstrates that ADDIE supports coherent alignment between learning objectives, content organisation, interface design, and evaluation components (Spatioti et al., 2022). In Indonesia, digital modules and applications developed using the ADDIE model consistently achieve strong validity and practicality ratings in classroom trials, confirming their suitability for local educational contexts (Martatiyana et al., 2023).

Digital media also provides highly relevant pedagogical opportunities for learning abstract, normative, or structurally complex material such as constitutional texts. Layered presentation of information, adaptive support, visual representations, and real-time feedback help learners recognize patterns and relationships that are difficult to grasp through static materials alone. Meaningful learning increases when students actively process multimodal representations (Mayer, 2024). Recent evidence on mobile learning also highlights the importance of adaptive features such as branching scenarios, structured prompts, and memory exercises, which significantly enhance conceptual retention and transfer (Pedraja-Rejas, 2024). These mechanisms offer strong potential to support constitutional learning, in which understanding the relationships among articles, principles, and institutional structures is crucial. Beyond cognitive gains, digital learning environments also foster learner autonomy and self-regulated learning competencies increasingly required in modern education.

Recent research demonstrates that self-regulation plays a significant role in the sustained use and effectiveness of mobile learning applications. Students' perceived usefulness and satisfaction positively influence their continued engagement with mobile learning environments, suggesting that mobile learning supports learners' self-regulatory behaviors (Alshammari & Alkhabra, 2025). Such features allow students to revisit materials, explore connected resources, and adopt personalised learning pathways. These affordances are particularly relevant for Pendidikan Pancasila, which requires students to interpret normative content from the Undang-Undang Dasar Negara Republik Indonesia Tahun 1945 across multiple learning contexts rather than through a single, linear exposition. Recent findings in digital pedagogy also underscore the importance of adaptive and interactive task paths for enhancing conceptual mastery. Adaptive digital modules significantly improve understanding and long-term retention (Ruiz-Martínez et al., 2022). High-quality system-learner interactions predict conceptual change as students manipulate sequences, solve problems, and make decisions in multimedia environments (Isnaeni & Hidayah, 2020). These characteristics align well with the cognitive demands of constitutional education, emphasizing the importance of interactivity, conceptual mapping, and guided inquiry.

In the Indonesian context, research indicates increasing but uneven integration of digital media into civics and constitutional learning. Digital modules that incorporate procedural frameworks enhance analytical reasoning in social studies (Herawati & Zainil, 2020). Digital learning platforms enhance students' motivation and civic understanding. However, many existing digital products remain generic and do not provide structured support for article-level exploration of constitutional texts (Sari & Putri, 2025). Similarly, research finds that mobile-based interactive civics education tools significantly increase student engagement and active learning. However, these tools generally lack specific features for in-depth textual interaction or contextual assessment (Rahmad, 2025). These combined findings highlight a persistent gap in civic and constitutional learning media, in which most available platforms lack functionality for detailed exploration of the Undang-Undang Dasar Negara Republik Indonesia Tahun 1945, such as article interpretation, structural visualisations, and interactive assessment components. Taken together, the literature converges on three key insights:

1. Multimedia-based and mobile learning environments significantly enhance conceptual understanding when grounded in cognitive design principles;
2. The ADDIE model remains one of the most reliable frameworks for producing pedagogically valid and practically usable digital learning media; and
3. A distinct research gap exists regarding specialised digital platforms that support article-level exploration of constitutional texts for Pancasila Education learners.

These insights provide a strong theoretical and empirical foundation for the development of Pasalku.ID, an interactive digital application designed to address the unmet need for structured, multimedia-based, and mobile-accessible constitutional learning tools.

Teaching Pancasila and the Constitution in the Digital Age

Teaching Pancasila Education and constitutional content in the digital era brings both significant opportunities and notable challenges for educators and learners. The rapid development of digital technology has reshaped the learning environment, offering students more interactive, flexible, and personalised learning experiences compared to traditional textbook-based instruction (Yusuf et al., 2022). This shift is significant for subjects such as Pancasila Education, where students are expected to understand abstract concepts related to national values, constitutional principles, and the structure of the Undang-Undang Dasar Negara Republik Indonesia Tahun 1945. Over the past few years, scholars have shown that integrating digital media into civic education can enhance students' ability to connect formal legal content with their everyday social realities. Research on digital citizenship education shows that digital environments can support the development of civic knowledge and responsible participation. For example, research shows that digital citizenship significantly affects the quality of civic education, indicating that strengthening digital citizenship can increase student engagement and understanding in civic learning environments, particularly when integrated with responsible digital practices (Alrakhman & Budimansyah, 2023).

Empirical studies in Indonesia consistently highlight the potential of digital media to improve learning outcomes in Pancasila Education. The use of Android-based learning devices improves students' understanding of civic concepts and increases their motivation to participate in class discussions (Fasha et al., 2024). Similarly, research has observed that digital media enables students to be more active and reflective, particularly when engaging with issues related to civic identity and constitutional values (Sari & Putri, 2025). These findings suggest that digital tools can shift classroom dynamics from passive listening to active, student-centered conceptual exploration. Digital tools also play a crucial role in helping students improve their understanding of civics and constitutional concepts. Research indicates that the use of digital technologies, such as interactive multimedia and online learning platforms, can enhance student engagement and understanding in civics education, suggesting that these tools support deeper learning of complex normative content (Shefira et al., 2024).

Features such as visualizations, step-by-step guides, quizzes with feedback, and simplified representations of legal concepts help students grasp formal constitutional language. This is particularly relevant because many high school students struggle to interpret legal articles independently, making interactive digital materials a valuable support system in the learning process. Despite their significant potential benefits, the existing literature also indicates that many digital media used in civics education lack depth and specificity. Existing applications generally focus on broad civics themes but rarely provide structured tools for analyzing articles of the Undang-Undang Dasar Negara Republik Indonesia Tahun 1945 (Rahayu et al., 2024). Many remain limited to videos, slides, or text modules without interactive features that support article-level exploration or legal reasoning. Current digital materials often fail to help students fully grasp the structure and meaning of constitutional documents (Herawati & Zainil, 2025). This highlights the urgent need for tools that not only present information but also guide learners through a more in-depth analytical process.

Beyond the national context, international studies also underscore the relevance of digital approaches to civics and constitutional education. For example, interactive civics learning materials have been shown to enhance critical thinking and conceptual mastery when combined with technology-based formats (Julian & Miaz, 2024). Similarly, gamification-based civics education tools for young learners demonstrate that structured digital platforms can support understanding of rights and obligations even at the early stages of education (Adila et al., 2024). These findings reinforce the notion that constitutional learning benefits significantly from immersive and interactive digital environments. Taken together, the literature clearly shows a gap in existing digital learning materials: although digital tools for civic education are increasingly common, resources specifically designed to support in-depth engagement with constitutional articles are still limited. Addressing this gap, the present study introduces Pasalku.ID, a web-based interactive

application developed to enhance students' comprehension of the Undang-Undang Dasar Negara Republik Indonesia Tahun 1945. The platform integrates article exploration, constitutional quizzes, state-structure visualisation, and AI-based learning assistance by aligning these features with multimedia learning principles and the goals of the Kurikulum Merdeka. Pasalku.ID strives to create a meaningful, structured, and accessible digital environment for senior high school students learning constitutional material.

METHODS

This study employed a Research and Development (R&D) approach to produce a digital learning application and evaluate its effectiveness in supporting constitutional learning within Pancasila Education. The R&D approach was selected because it provides a systematic and evidence-based framework for developing educational media that can be refined through iterative testing. Therefore, this approach was deemed appropriate for developing Pasalku.ID is a digital learning tool that meets the criteria of validity, practicality, and effectiveness. The development process follows the ADDIE model, comprising the stages of Analysis, Design, Development, Implementation, and Evaluation. The ADDIE model is widely used in digital media development due to its flexibility, iterative workflow, and emphasis on continuous improvement. ADDIE serves as the operational basis for the development of Pasalku.ID. The research participants included two subject-matter experts, two media experts, one Pancasila Education teacher, and 80 Grade X senior high school students. Participants were selected using purposive sampling based on their experience and relevance to the instructional context.

The analysis stage involved classroom observations and interviews with teachers and students to identify learning difficulties and user needs related to constitutional materials. This stage also included identifying preferred learning formats, technological accessibility, and the required features to facilitate conceptual understanding. The design stage included developing storyboards, user interface layouts, navigation structures, and prototype screens for key features, including constitutional materials, article-based quizzes, and exercises related to Pancasila values. During the development stage, the application was programmed using JavaScript to ensure responsive access across various devices. Prototype testing, expert validation, and iterative revisions were conducted to improve content accuracy and usability. The implementation stage involved a limited trial with teachers and students to assess usability, practicality, and learning outcomes in real classroom settings. Finally, the evaluation stage included expert validation, analysis of student learning outcomes, and final revisions to ensure that Pasalku.ID met the standards for digital learning media.

Table 1. ADDIE Development Model Scheme

ADDIE Model	Objectives	Main Activities	Outputs
<i>Analysys</i>	Identifying the need for learning media development	Curriculum analysis and review of learning materials literature	media requirements
<i>Desain</i>	Designing content and application flow	Storyboard, flowchart, UI design, validation instrument	Initial design of the application and instruments
<i>Development</i>	Prototype Development and Validation Tests	Expert application coding, initial revision, limited testing	Revised version of the media
<i>Implementation</i>	Trial by teachers and students	Limited use of media and assessment questionnaires	User response data, pre-test, and post-test results
<i>Evaluation</i>	Assessing the validity of the media	Formative and summative evaluations, final revisions	Media ready to be disseminated

Source: Adapted from Mayer (2024)

Table 1 presents the five stages of the ADDIE development model, which serve as the basis for developing Pasalku.ID application. Each stage in the ADDIE model is carried out sequentially but is cyclical, allowing researchers to make continuous revisions based on findings from previous stages. The implementation phase was conducted through limited trials with teachers and 10th-grade high school students. At this stage, students were asked to use the application directly to learn constitutional material, complete quizzes, and provide feedback on the practicality and comfort of using the media. Teachers provided input on the alignment of content with learning outcomes and on the effectiveness of the application in supporting learning. The evaluation phase was conducted through expert validation, user assessment, and analysis of learning improvement using quantitative and qualitative data. Data were analyzed descriptively and quantitatively to assess the product's feasibility, informed by expert validation results. The calculation of the feasibility percentage is based on the model of contemporary educational media evaluation analysis. The formula for the feasibility percentage is used as follows:

$$P = \frac{TSe}{TSh} \times 100\%$$

Where TSe is the total empirical score, and TSh is the total maximum score. The improvement in student learning outcomes was analyzed using the N-Gain formula to compare pre-test and post-test scores. The formula used is:

$$N - Gain = \frac{S_{post} - S_{pre}}{S_{maks} - S_{pre}}$$

Interpretation of the N-Gain value refers to the categories of improvement in modern learning outcomes, namely high (≥ 0.70), medium (0.30-0.69), and low (≤ 0.29). Learning media is considered feasible if it meets the following indicators: a minimum validation score of 81% (very valid category), a minimum practicality score of 81% (very practical category), and a minimum N-Gain score of 0.30 (effective category).

RESULTS AND DISCUSSION

Results Expert Validation

Test Results (Material, Media, and Teacher)

Validation testing was conducted to ensure that the Pasalku.ID application meets validity standards with respect to content, appearance, and pedagogy before being used in learning. Validation involved three parties, namely content experts, media experts, and Civics subject teachers. Each expert provided an assessment of the suitability of the content of the Undang-Undang Dasar Negara Republik Indonesia Tahun 1945, the accuracy of the interface design, and the usability of the media in the classroom learning context.

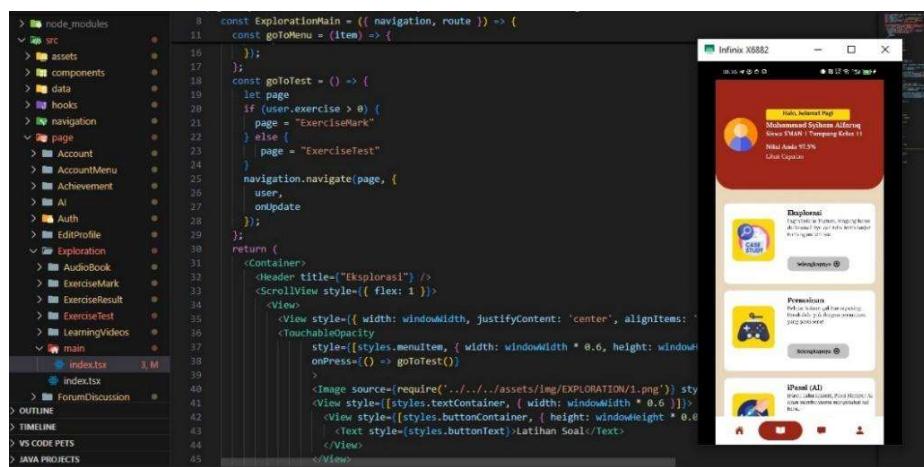


Figure 1. Application Programming
 Source: Researcher's Process, 2025

Figure 1 displays the programming process for the Pasalku.ID application during the development phase. This stage includes creating the page structure, writing navigation functions, developing quiz logic, and integrating graphical displays into the codebase. The programming process was carried out in stages to ensure each component worked according to the initial plan. After all key functions were successfully implemented, the application prototype was tested internally to ensure stability and feature consistency. After the prototype stage was completed, expert validation was conducted to assess the quality of the developed media. This process involved specialist reviewers who assessed core aspects, including content relevance, user interface design, and pedagogical suitability, using a structured validation instrument. The validation results indicate that expert judgment is essential to ensure that digital learning media are appropriate for educational use and aligned with learning objectives prior to classroom implementation (Laksana, 2024). The assessment results are presented in **Table 2** below.

Table 2. Expert Validation Results for the Pasalku.ID Application

No	Validation Aspect	Score Percentage	Category
1	Subject Matter Expert	89,6%	Highly Valid
2	Media Expert	88,7%	Highly Valid
3	Practitioner/Teacher	90,2%	Highly Valid

Source: Researcher's Process, 2025

Based on **Table 2**, all aspects scored in the 'very valid' category, thus indicating that the application is suitable for use in learning. This result aligns with findings that expert validation is an important indicator of the quality of ADDIE-based media (Spatioti et al., 2022). Furthermore, research emphasizes that stable visual design and technical functionality are crucial factors in the effectiveness of multimedia learning (Mayer, 2024). Therefore, the validity of the Pasalku.ID application confirms that it meets the eligibility standards in terms of content, interface, and pedagogical relevance.

Practicality Test

A practicality test was conducted to determine the extent to which the Pasalku.ID application is easy to use by teachers and students in the learning process. The assessment was based on five leading indicators: material suitability, media appeal, ease of use, learning effectiveness, and student engagement.

The instrument used a percentage scale that was then converted into practical categories. The results of the practicality test are presented in **Table 3** below.

Table 3. Results of the Practicality Test of the Pasalku.ID Application

No	Indicator	Practicality Percentage	Category
1	Material Relevance	97,9%	Very Practical
2	Media Appeal	96,7%	Very Practical
3	Ease of Use	97,6%	Very Practical
4	Effectiveness in Learning	97%	Very Practical
5	Student Engagement	97,6%	Very Practical

Source: Research 2025

Based on **Table 3**, all indicators ranged from 96.7% to 97.9%, indicating that the Pasalku.ID application falls into the 'very practical' category. This indicates that the application is easy to use, visually appealing, and capable of encouraging student engagement in learning. These results are consistent with findings that ease of use and visual appeal are important elements of the effectiveness of digital learning media (Garzón et al., 2023). Practical digital media will increase learning motivation and facilitate students' interactive understanding of the material (Ismiyati et al., 2022). Thus, the practicality test indicates that Pasalku.ID is suitable for use in Civics learning activities and meets the needs of both teachers and students.

Effectiveness Test

The effectiveness test was conducted to assess improvements in student learning outcomes following the use of the Pasalku.ID application. Measurements were conducted using a pre-test administered before learning and a post-test administered after learning with the application. Pre-test and post-test scores were then analyzed using the N-Gain calculation to determine the level of improvement in student understanding. The results of the effectiveness test are presented in **Table 4** below.

Table 4. Hasil Uji Keefektifan Aplikasi Pasalku.ID

No	Test Type	Average Score	N-Gain	Category
1	Pre-test	68,4	-	
2	Post-test	85,9	0,56	Medium-High

Source: Research 2025

As shown in **Table 4**, the average post-test score increased significantly relative to the pre-test. The N-Gain calculation of 0.56 places the Pasalku.ID in the medium-high category and effective in improving students' understanding of the Constitution and the 1945 Constitution of the Republic of Indonesia. These findings support research indicating that interactive digital learning can significantly improve learning outcomes by delivering more flexible and engaging material (Garzón et al., 2023). Digital media that provides interactive activities and direct feedback can accelerate understanding of concepts and consistently improve learning outcomes (Ismiyati et al., 2022). Thus, the effectiveness test results indicate that Pasalku.ID is not only engaging and easy to use but also has a significant positive impact on improving student learning outcomes.

Discussion

The high level of validity from subject matter experts, media experts, and teachers indicates that the Pasalku.ID meets the basic principles of digital learning design. As stated, learning media provide easy access and are easy for students to understand due to their interactive design (Mayer, 2024). Using the ADDIE approach, this study developed effective digital learning media for civic education. These findings are consistent with research indicating that the ADDIE model can produce valid learning products when the analysis, design, and evaluation stages are carried out systematically (Martatiyana et al., 2023; Shakeel et al., 2023; Spatioti et al., 2022). The implementation of ADDIE in the development of Pasalku.ID strengthens the argument that modern instructional design approaches remain highly relevant in developing technology-based learning media, particularly for abstract materials such as the Constitution. In terms of practicality, positive responses from teachers and students indicate that Pasalku.ID is easy to use and meets user needs. Through interactive and visually appealing learning media designs, Pasalku.ID can attract students' interest in learning and increase student activity in the classroom (Sari & Putri, 2025; Shefira et al., 2024). Ease of navigation and visual appeal are important factors for the success of digital media in increasing participation, motivation, and learning effectiveness (Garzón et al., 2023). The alignment of Pasalku.ID with effective digital media characteristics supports the assumption that successful media implementation is determined not only by content but also by a comfortable and intuitive user experience.

The findings on effectiveness, as reflected in improved learning outcomes, indicate that Pasalku.ID can enhance students' conceptual understanding and reasoning regarding the Constitution. Interactive digital media can significantly improve learning outcomes by providing opportunities for students to be actively involved, receive timely feedback, and build understanding through practice-based activities (Ismiyati et al., 2022). Thus, the effectiveness of Pasalku.ID reinforces prior findings that link media interactivity to improved cognitive abilities. Furthermore, this study contributes new insights to the field of citizenship education. Recent studies have shown that technology-based citizenship learning improves digital citizenship literacy and understanding of national issues (Fasha et al., 2024; Sari & Putri, 2025). However, most of these studies still focus on learning digital values and participation, rather than on in-depth constitutional content. Pasalku.ID expands the scope of the literature by presenting digital media specifically designed to help students understand the articles of the Undang-Undang Dasar Negara Republik Indonesia Tahun 1945 through an interactive approach, contextual quizzes, and systematic presentation of material.

Thus, this study presents an innovative approach to developing web-based Civics media that has not been widely explored in prior research. Comparison with previous research shows that the Pasalku.ID application excels in integrating constitutional content with digital features that support meaningful learning. While most previous research on digital media has focused solely on visual displays or general presentation of material, this application seeks to connect constitutional concepts with real-world contexts through case-based quizzes and structured materials (Garzón et al., 2023; Mayer, 2024). This unique feature is an important finding that contributes to the development of digital media in civics. Overall, this discussion confirms that Pasalku.ID is not only valid and practical, but also effective and innovative in enhancing students' understanding of the constitution. This application offers a modern learning approach that integrates multimedia design theory, principles of digital interactivity, and constitutional learning needs, which have rarely been addressed. Thus, this study provides empirical and theoretical contributions to the development of digital media in civic education.

CONCLUSION

From what this study has shown, the development of Pasalku.ID using the ADDIE model proved successful in producing a learning tool that works effectively in real classroom settings. Expert validation, including assessments of content accuracy, interface design, and the overall learning flow of the application,

indicates that the product aligns well with the needs of teachers and students studying constitutional material. Their feedback was generally positive, noting that the application feels easy to navigate, visually appealing, and suitable for the current digital learning environment. The improvement in students' cognitive scores also strengthens the idea that Pasalku.ID helps them understand constitutional topics that they often find confusing. Instead of relying on long blocks of text, students were able to learn through structured features and transparent visual displays that made the material more approachable and easier to digest. Nevertheless, the application is not without limitations. There are several directions for further improvement, such as adding more varied learning activities, including constitutional case scenarios, short simulations, or discussion rooms where students can exchange ideas and interpretations. Developing Pasalku.ID integrating with a native mobile application is another option, particularly since many students rely heavily on smartphones for daily learning. It would also be beneficial to test this application across different types of schools and grade levels to understand how well it functions in various contexts, including its potential contribution to developing civic attitudes and digital citizenship skills, which are increasingly essential in Pancasila Education today.

AUTHOR'S NOTE

The author declares that there is no conflict of interest regarding the publication of this article. The author confirms that the article's data and content are free of plagiarism.

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