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Research Article

Mudapa.my.id as User-Centered Digital Civic Communication: Website-Based Pancasila Education, Student Interest, and SDG 4 in an Indonesian Vocational School

Wahit Wahyu Sugeng Prayitno, Kuncahyono*, and Agus Tinus

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Abstract

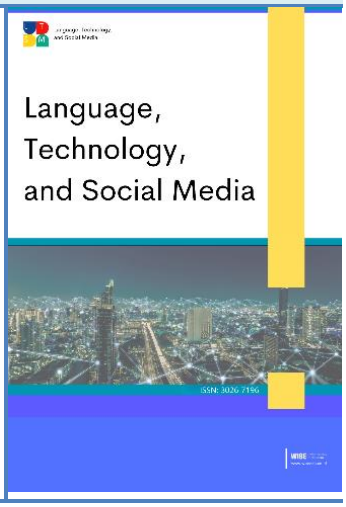
Digital civic learning is increasingly important in vocational education because civic values must remain meaningful in technology-mediated learning environments. However, Pancasila Education is still often delivered through teacher-centered explanation and static materials, reducing student interest and limiting active participation. This study developed and evaluated Mudapa.my.id, a website-based learning medium for Pancasila Education at Vocational High School (SMK) Muhammadiyah 2 Pagak, Malang, Indonesia. The study employed research and development using the ADDIE model, consisting of analysis, design, development, implementation, and evaluation. Data were collected through expert validation, classroom observation, interviews, student learning-interest questionnaires, and student response questionnaires. The platform provides role-based access for administrators, teachers, and students and includes digital materials, videos, assignments, quizzes, and LMS-supported learning activities. The findings indicate that the product was very feasible in terms of material (85.00%) and media design (86.25%), while the language dimension reached the feasible category (70.00%) after revision. Student learning interest reached 87.30%, and student response reached 91.60%, both in the very good category. These findings show that Mudapa.my.id is a feasible and well-accepted medium for inclusive, user-centered digital civic learning in vocational schools, with practical relevance for SDG 4-oriented quality education.

Keywords: Pancasila Education; Digital Civic Communication; Website-Based Learning; Learning Interest; Human-Computer Interaction; Linguistic Accessibility; SDG 4.

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INTRODUCTION

Digital transformation has changed how students access information, communicate with peers, and construct meaning in school. For civic and values education, this transformation is not merely a technical shift; it also concerns equitable access to learning, civic participation, and the quality of educational interaction in digital environments [1], [2], [3], [4]. When students are excluded from meaningful digital learning experiences, values education may be experienced only as a formal curricular requirement rather than as a living framework for responsibility, deliberation, and social justice [5], [6], [7]. In the context of Sustainable Development Goal 4, quality education requires inclusive, relevant, and learner-centered environments that help students develop knowledge, character, and participation skills [6], [7], [8].

For Indonesia, Pancasila Education occupies a strategic position because it introduces students to belief in God, humanity, unity, deliberative democracy, and social justice as the normative foundation of national life. In vocational schools, this subject is expected to help students develop civic identity, ethical awareness, and responsible digital participation. However, classroom practice frequently faces motivational and media-related challenges. Pancasila Education can still be delivered mainly through verbal explanation, textbook reading, and teacher-centered instruction, while students increasingly learn, communicate, and express identity through digital platforms, websites, visual content, and social media spaces [8], [9], [10], [11], [12].

The problem identified at Vocational High School (SMK) Muhammadiyah 2 Pagak, Malang Regency, East Java, Indonesia was related to conventional methods, limited interactive media, and suboptimal use of information technology in the learning process. Such conditions may reduce students' attention and make Pancasila Education appear less connected to their everyday life as vocational learners. The state of the art suggests that digital learning media can increase motivation, interaction, and student engagement when technology is pedagogically designed rather than used only as a presentation tool [13], [14], [15], [16]. Websites and learning management systems can also support teachers in organizing materials, videos, assignments, quizzes, and feedback while giving students more flexible access to learning resources [17], [18], [19].

Important gaps remain. First, many studies discuss digital learning in general subjects, while fewer studies examine accessible website-based media for Pancasila Education in vocational school settings. Second, digital innovations often focus on cognitive outcomes but give less attention to student learning interest, user response, and the language accessibility of digital civic materials. Third, rural-vocational school contexts are underrepresented, although students in such contexts may face uneven infrastructure, limited teacher training, and a stronger need for low-threshold digital platforms. These gaps show the need for a user-centered, teacher-manageable, and context-sensitive website for Pancasila Education.

This study addresses those gaps by developing and evaluating Mudapa.my.id as a user-centered website-based learning medium for Pancasila Education in an Indonesian vocational school. Specifically, the study aims to: (1) describe the development process and instructional structure of Mudapa.my.id using the ADDIE model; (2) determine the feasibility of the website through material, media, and language expert validation; and (3) analyze students' learning interest and responses after using the platform. The novelty of the study lies in integrating website-based civic learning, linguistic appropriateness, and learner acceptance within the context of vocational Pancasila Education. In this way, the article contributes not only to digital media development in education but also to the discussion of how language, usability, and digital access shape inclusive

civic learning. The remainder of this article presents the literature review, methods, results and discussion, conclusion, and limitations.

LITERATURE REVIEW

Digital Civic Learning and Website-Based Instruction

Digital civic learning refers to the use of digital environments to support civic knowledge, ethical reflection, participation, and responsible communication. It is closely related to the broader concept of digital civics, which frames digital participation as a domain where citizens learn rights, responsibilities, and social interaction in technology-mediated environments [8], [9]. In schools, this means that civic learning should not only transmit norms but also provide meaningful opportunities for students to interact with content, tasks, and feedback through technologies that are familiar to their communicative habits [10], [11], [12].

Website-based instruction is particularly relevant for civic education because it can combine structured text, images, video, discussion prompts, quizzes, and assignments within one learning environment. Unlike static presentation slides, a website can organize learning pathways, provide repeated access, and support independent exploration. Digital media studies indicate that student engagement improves when the design encourages interaction, perceived usefulness, and continuity between classroom learning and learners' digital routines [14], [17], [18], [19]. Therefore, the effectiveness of a website-based civic learning medium depends not only on technology availability but also on the coherence between content, pedagogy, usability, and learners' needs.

Pancasila Education, Civic Identity, and Vocational Learners

Pancasila Education is central to Indonesian civic education because it provides a normative framework for character, national identity, democratic deliberation, and social justice. In the digital era, Pancasila Education must be positioned not as a memorization-based subject but as a reflective learning space where students connect civic values with everyday digital and social realities [20], [21], [22], [23]. This is especially important for vocational learners, whose educational orientation is often practical, applied, and task-based. A digital medium for Pancasila Education should therefore help students see civic values as relevant to professional ethics, workplace responsibility, social cooperation, and digital citizenship.

The literature on civic and values education emphasizes that students' moral and civic development is strengthened when learning activities are contextual, dialogic, and connected with real-life issues [20], [21], [22]. A website-based platform can facilitate this connection by allowing teachers to upload contextual cases, video explanations, reflective assignments, and quizzes that translate abstract civic principles into accessible learning tasks. However, the platform must also respect the local learning culture and school capacity. In this study, Mudapa.my.id is positioned as a low-threshold digital innovation that supports Pancasila Education without requiring complex infrastructure or advanced programming skills from teachers.

Human-Computer Interaction, Linguistic Accessibility, and Learning Interest

Because this study concerns a website-based learning medium, the interaction between users and the platform is a central issue. In educational technology, usability is shaped by interface organization, navigation, content clarity, task flow, and the degree to which users understand what they should do on the platform [24], [25], [26], [27]. Linguistic accessibility is part of this usability

because students engage with digital civic materials through instructions, labels, prompts, feedback, and assessment items. If the language is unclear, too abstract, or inconsistent with students' developmental level, even a visually attractive platform may fail to support meaningful learning.

Learning interest is also an important construct because it influences attention, enjoyment, persistence, and willingness to engage in academic tasks [15], [16], [17], [18], [19]. In a digital learning environment, interest is shaped by the perceived relevance of the content, the attractiveness of the media, the clarity of the instructions, and the sense of agency that students experience. Therefore, the evaluation of Mudapa.my.id through expert validation, learning interest, and student response is appropriate for assessing the early feasibility and acceptance of the product. This framework also aligns with human-computer interaction concerns because the product must function as an understandable, accessible, and useful learning environment rather than merely as a repository of materials [28], [29], [30], [31], [32].

METHODS

Research Design

This study employed research and development (R&D) using the ADDIE instructional development model. ADDIE was selected because it provides a systematic yet flexible sequence for designing educational products: analysis, design, development, implementation, and evaluation [13]. The model was appropriate because the study did not merely test an existing medium; it produced, validated, revised, and implemented a website-based learning medium in a real school context. The design allowed the researchers to connect school needs, product development, expert judgment, user experience, and final evaluation in one coherent process.

Research Site and Participants

The study was conducted at SMK Muhammadiyah 2 Pagak, Malang Regency, East Java, Indonesia. The research involved a Pancasila Education teacher, grade X students, expert validators, and users of the developed website. The validation stage involved material, media, and language experts. The field response stage involved 50 students who completed the learning interest and student response questionnaires. Teacher and student interviews were also used to obtain qualitative feedback; the original development record included interviews with three teachers and 15 students during the try-out and revision process.

Product: Mudapa.my.id Website-Based Learning Media

Mudapa.my.id was designed as a website-based learning environment for Pancasila Education. The system uses role-based access for administrators, teachers, and students. Administrators manage users and dashboard functions; teachers organize categories, classes, digital materials, videos, assignments, and evaluation activities; and students access classes, learning materials, assignments, and quizzes. The product was intended to make Pancasila learning more visual, interactive, flexible, and supportive of independent learning. Figure 1 presents the conceptual pathway of the product.

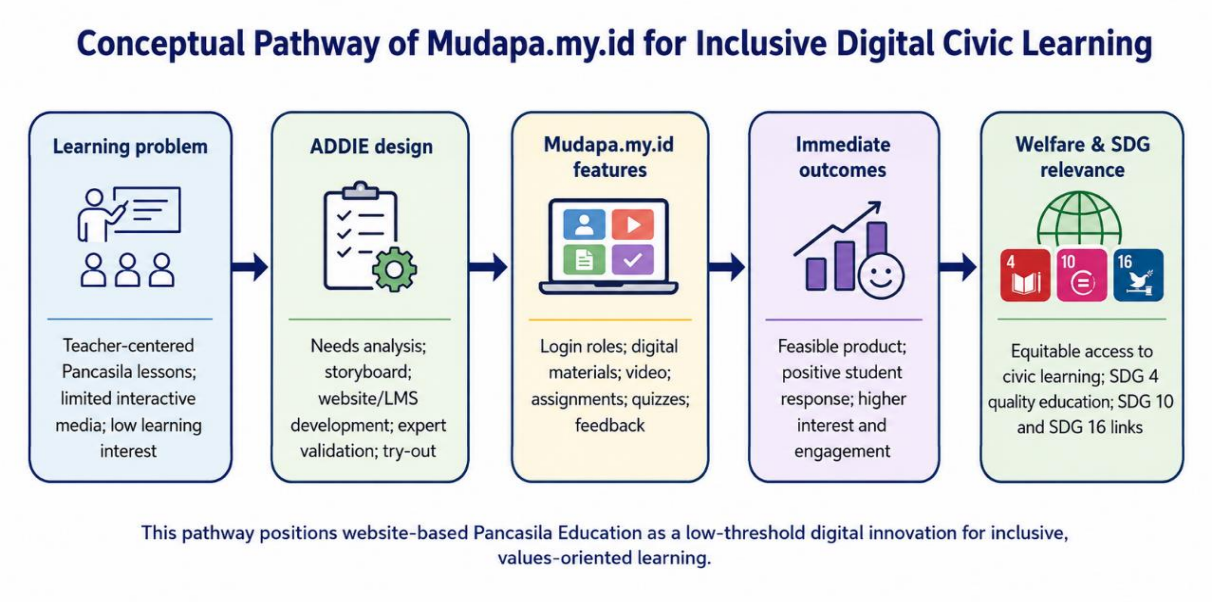


Figure 1. Conceptual pathway of Mudapa.my.id for digital civic learning, social welfare, and SDG relevance

Development Procedure

The ADDIE stages were operationalized through needs analysis, storyboard planning, website development, expert validation, implementation, and final evaluation. Table 1 summarizes the development procedure and the expected outputs of each stage.

Table 1. ADDIE-based development procedure for Mudapa.my.id

ADDIE stage	Main activity	Data/evidence	Output
Analysis	Identify problems in Pancasila Education, student learning interest, media needs, and school facilities	Observation, teacher interview, and student needs data	Need for attractive, accessible, website-based media
Design	Prepare storyboard, role flow, learning materials, instruments, and assessment plan	Storyboard for administrator, teacher, and student roles	Media blueprint and validation instruments
Development	Build Mudapa.my.id with digital materials, videos, assignments, and quizzes	Website prototype and LMS features	Initial product ready for expert validation
Implementation	Use the website in Pancasila Education learning and collect user feedback	Observation, interviews, and student questionnaires	Revised product and field response data
Evaluation	Analyze expert validation, student interest, and student response	Likert-scale validation and questionnaire results	Final feasibility and engagement profile

Instruments and Data Analysis

Data were collected through validation sheets, observation, interviews, documentation, student learning-interest questionnaires, and student response questionnaires. Expert validation instruments used a four-point Likert scale. Student questionnaires also used a four-point scale consisting of strongly agree, agree, disagree, and strongly disagree. Quantitative data were analyzed using descriptive percentages by dividing the obtained score by the maximum possible score and multiplying by 100. Qualitative data from observation and interviews were reduced into themes describing usability, interactivity, student engagement, teacher facilitation, and revision needs. This mixed descriptive interpretation is appropriate for an early-stage development study that aims to establish feasibility and user acceptance rather than causal effectiveness [33], [34].

Ethical Considerations

The study was conducted in the school learning context with teacher involvement. Student identities were not presented in the article. Data were reported in aggregate form, and the website was used as an educational medium for Pancasila learning rather than as a tool for collecting sensitive personal information. Participation in interviews and questionnaires was treated as part of the educational evaluation process, and responses were used only to improve the learning medium and report the study findings.

RESULTS AND DISCUSSION

Results

Website Development and Role-Based Learning Structure

The first result concerns the structure of Mudapa.my.id as an LMS-supported website. The product documents three central user roles: administrator, teacher, and student. The administrator role supports account and dashboard management. The teacher role supports class management, learning categories, digital materials, assignments, and review of student answers. The student role supports registration or login, class access, digital materials, assignments, and quizzes. This role-based design is important because a website-based learning medium must not only display content; it must also organize the learning workflow so that teachers and students can interact with the same environment in different but complementary ways.

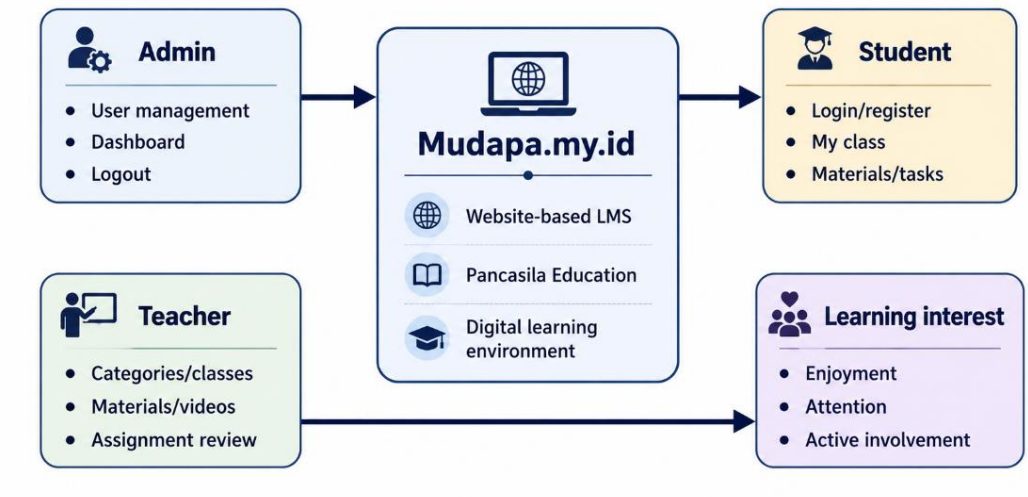


Figure 2. Role-based architecture and learning flow in Mudapa.my.id

From the perspective of instructional design, the role architecture helps transform Pancasila Education from a one-directional delivery model into a more interactive learning process. Students can access materials beyond classroom explanation, while teachers can prepare and organize tasks in a digital space. This structure is particularly relevant for vocational schools because students often respond better to practical, visual, and task-oriented learning environments [27], [28], [29], [30].

Expert Validation of the Website-Based Learning Media

Expert validation showed that Mudapa.my.id was feasible for implementation. The material expert score reached 85.00%, the media expert score reached 86.25%, and the language expert score reached 70.00%. The material and media components were categorized as very feasible, while the language component was feasible after revision. The language validation result indicates that digital civic learning media should not only be visually attractive but also linguistically appropriate for vocational students. Expert comments emphasized the need for more interactive presentation, better alignment with Pancasila content, higher-order thinking questions, and technical improvements such as operable front-page tools and student dashboard feedback.

Table 2. Expert validation results for Mudapa.my.id

Validator aspect	Mean score	Percentage	Category	Main implication
Material expert	3.40	85.00%	Very feasible	Content aligns with Pancasila values; add contextual examples.
Media expert	3.45	86.25%	Very feasible	Design is suitable; improve operability, feedback, and dashboard interactivity.
Language expert	2.80	70.00%	Feasible	Adjust language to student characteristics and add higher-order thinking questions.
Overall validation profile	-	80.42%	Feasible to very feasible	Product is appropriate after expert-based revision.

The lower language validation score is theoretically important. It shows that digital civic learning requires attention to linguistic accessibility, clarity of commands, readability of materials, and cognitive level of questions. For a subject such as Pancasila Education, where students must interpret values, cases, and reflective tasks, language is part of the interface and part of the pedagogy. Therefore, improving language quality directly contributes to platform usability and learning accessibility [31], [32], [35].

Student Interest after Using Mudapa.my.id

The student learning interest questionnaire involved 50 respondents and 10 items. The maximum score was 2000, calculated from 50 respondents, 10 items, and the highest score of 4. The total obtained score was 1746, producing a percentage of 87.30%. This result indicates that student interest was in the very good category. Most indicators reached more than 85.00%, with the highest score found in Y10 (92.00%) and the lowest in Y2 (83.50%). The distribution suggests that the

website encouraged enjoyment, attention, enthusiasm, curiosity, and active involvement in Pancasila learning.

Table 3. Student learning interest indicators after the use of Mudapa.my.id

No.	Indicator	Score	Percentage	Interpretation
1	Interest in accessing digital Pancasila materials	171	85.50%	Very good
2	Sustained attention during website-based learning	167	83.50%	Good
3	Enjoyment of visual and multimedia materials	174	87.00%	Very good
4	Curiosity toward website learning activities	172	86.00%	Very good
5	Motivation to complete digital assignments	174	87.00%	Very good
6	Active involvement in quiz-based activities	178	89.00%	Very good
7	Perceived relevance of Pancasila content	174	87.00%	Very good
8	Willingness to learn independently through the website	176	88.00%	Very good
9	Confidence in using the learning platform	176	88.00%	Very good
10	Overall enthusiasm toward Mudapa.my.id	184	92.00%	Very good
Overall	10 items	1746/2000	87.30%	Very good learning interest

This finding is consistent with the theory that learning interest functions as an entry point for deeper engagement. Interest can increase attention, persistence, and willingness to explore content beyond minimum task completion [15], [16], [17]. In this study, the website provided varied access through materials, videos, assignments, and quizzes, which likely made the civic content feel less abstract and more connected with students' digital learning habits [18], [19], [30].

Student Response to the Website-Based Learning Media

Student response was even stronger than the interest score. The response questionnaire produced a total score of 1832 out of 2000, or 91.60%. Each indicator was in the very good category, ranging from 88.00% to 95.50%. The highest indicator was X4 (95.50%), followed by X9 (95.00%) and X1 (94.50%). These results show that students responded positively to the visual display, usability, learning features, and perceived usefulness of the website. In practical terms, the positive response indicates that the website is not only valid according to experts but also accepted by learners as users.

Table 4. Student response indicators toward Mudapa.my.id

No.	Indicator	Score	Percentage	Interpretation
1	Attractive appearance of the website	189	94.50%	Very good
2	Ease of login and navigation	176	88.00%	Very good
3	Clarity of learning materials	187	93.50%	Very good
4	Usefulness of videos and digital features	191	95.50%	Very good
5	Ease of completing assignments	182	91.00%	Very good
6	Clarity of quiz instructions	177	88.50%	Very good
7	Suitability of website for Pancasila learning	181	90.50%	Very good
8	Comfort in using the student dashboard	179	89.50%	Very good
9	Perceived benefit for independent learning	190	95.00%	Very good
10	Overall satisfaction with Mudapa.my.id	180	90.00%	Very good
Overall	10 items	1832/2000	91.60%	Very good student response

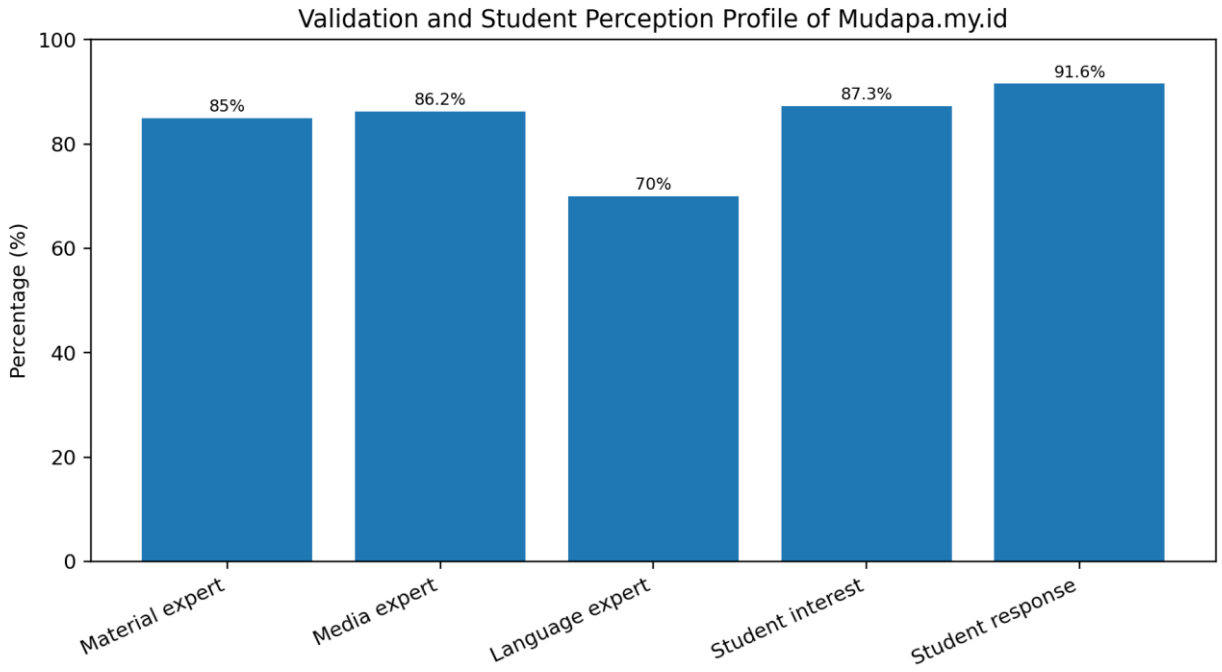


Figure 3. Validation, student interest, and student response profile of Mudapa.my.id

The positive student response is pedagogically meaningful because educational technology often fails not because it lacks features, but because students and teachers do not perceive it as usable, relevant, or easy to integrate into learning routines. Mudapa.my.id was built with accessible web technology and school-based roles, making it easier to connect with existing classroom practice. This supports the argument that low-threshold digital innovation can be more sustainable

than complex applications requiring advanced infrastructure or specialized technical expertise [24], [25], [26], [27].

Qualitative Interpretation of the Development and Implementation

The qualitative evidence from observation and interviews helps explain the quantitative findings. Teachers noted that the website reduced dependence on lecture-based delivery because materials, videos, and assignments could be organized in a more systematic format. Students reported that learning became more attractive because the materials were supported by digital content and quizzes. Expert feedback also showed that the product required iterative revision, especially in terms of language clarity, technical operability, interactivity, and student feedback. These findings show that the quality of website-based learning depends on the combination of content validity, media usability, language accessibility, and pedagogical scaffolding.

Table 5. Qualitative themes from expert feedback, observation, and interviews

Theme	Evidence from development and implementation	Interpretive meaning
Student engagement	Students showed high interest (87.30%) and positive response (91.60%).	Digital materials, videos, and quizzes increased emotional and behavioral engagement.
Teacher facilitation	Teachers used the website during Pancasila learning and provided feedback after implementation.	The website supported teachers as facilitators rather than replacing teacher guidance.
Usability and access	Role-based menus enabled administrators, teachers, and students to use different functions.	Clear user roles helped organize the learning process in a school context.
Revision needs	Experts suggested better interactivity, dashboard feedback, appropriate language, and higher-order thinking questions.	Media quality improved through iterative validation and revision.
SDG and welfare relevance	The website provided more flexible access to values education in a vocational school.	Accessible digital civic learning supports quality education and inclusive learning opportunity.

Discussion

The findings indicate that Mudapa.my.id is a feasible and well-received medium for Pancasila Education. The high material and media validation scores suggest that the website has adequate instructional quality and technical usability. The language validation score, although lower than the other components, is especially useful because it identifies a common challenge in digital learning media: attractive design is insufficient if language, questions, and instructions are not aligned with students' developmental level and cognitive demand. The revision comments therefore strengthen the article by showing that product feasibility was achieved through expert-informed improvement rather than simple acceptance of the first prototype [31], [32], [35].

The student interest result is important because Pancasila Education requires students to interpret values, reflect on social issues, and connect civic principles with real life. When the subject is taught only through static explanation, students may regard it as abstract, repetitive, or disconnected from their vocational identity. By contrast, Mudapa.my.id provided digital materials,

videos, assignments, and quizzes that helped students interact with content in a more varied way. The 87.30% interest score suggests that students experienced the learning process as attractive and motivating, consistent with studies showing that interest and digital engagement can support persistence and learning participation [15], [16], [17], [18], [19].

The student response score of 91.60% further confirms user acceptance. This result supports the argument that technology-enhanced learning is more effective when it is designed around user needs, school workflow, and accessible interface structures [24], [27], [28], [29], [30]. In the present study, role-based access made the platform understandable for administrators, teachers, and students. The website therefore functioned as a learning environment rather than merely as a file storage system. This distinction is important because digital learning quality depends on how technology reorganizes interaction, not only on whether materials are placed online.

The study also contributes to social welfare-oriented education by positioning civic learning as an inclusive developmental resource. Social welfare in education is not limited to material assistance; it includes fair access to meaningful learning, student confidence, participation, and the ability to engage with values needed for collective life [35], [36], [37]. Mudapa.my.id supports this welfare dimension by helping students access Pancasila learning in a more engaging digital environment. Its relationship with SDG 4 is direct because it promotes quality education through interactive, accessible, and learner-centered media. Its indirect relationship with SDG 10 and SDG 16 lies in its potential to reduce learning-opportunity gaps and strengthen students' understanding of civic values, social justice, and peaceful participation [38], [39], [40], [41].

The language dimension offers a specific contribution to the scope of language, technology, and social media studies. Although this research did not analyze social media analytics, it examined a digital environment in which students encounter civic language through online materials, menus, instructions, quizzes, and feedback. This is relevant because students' digital communication practices increasingly shape how they interpret educational texts, civic values, and participation norms [10], [11], [12], [46], [47]. Mudapa.my.id therefore demonstrates how a school website can mediate language, technology, and civic meaning in a local educational context.

Despite these strengths, the findings should be interpreted carefully. The study used descriptive validation and response data rather than an experimental design with a control group. Therefore, the article can claim feasibility, positive response, and high learning interest, but it should not overclaim causal improvement in academic achievement. Future studies should add pretest-posttest measurements, comparison classes, learning analytics, and longer implementation periods to determine whether the website improves civic knowledge, values internalization, critical thinking, digital citizenship, and actual civic behavior [42], [43], [44], [45].

CONCLUSION

This study developed Mudapa.my.id as a website-based learning medium for Pancasila Education using the ADDIE model. The product includes role-based access for administrators, teachers, and students, and supports digital materials, videos, assignments, quizzes, and LMS-based learning activities. Expert validation showed that the medium was very feasible in terms of material (85.00%) and media (86.25%) and feasible in terms of language (70.00%) after revision. Student learning interest reached 87.30%, while student response reached 91.60%, both in the very good category. These findings show that Mudapa.my.id is an accessible and promising digital civic learning medium for vocational school students. The study contributes to SDG 4-oriented quality

education by offering a practical model for integrating digital media into values education, while also supporting broader social welfare goals through inclusive access, student engagement, and civic participation. Theoretically, the study reinforces the importance of integrating usability, linguistic clarity, and learner acceptance in website-based civic education. Practically, it provides teachers with a manageable model for organizing Pancasila learning through digital materials, assignments, and quizzes without replacing the pedagogical role of classroom guidance.

LIMITATIONS

The study was limited to one vocational school and relied mainly on expert validation, student questionnaires, observation, and interviews. The design was appropriate for product development, but it did not include a control group, pretest-posttest analysis, or long-term measurement of civic behavior. Further research should use experimental or quasi-experimental designs, larger samples, and longer learning cycles. Future work should also examine whether website-based Pancasila Education affects critical thinking, civic attitudes, collaborative behavior, digital citizenship, and long-term internalization of Pancasila values. In addition, future studies should conduct more detailed usability testing and language-accessibility analysis to examine how interface language, instructions, and feedback influence students' interaction with digital civic materials.

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AUTHOR CONTRIBUTION

W.W.S.P. conceptualized the study, developed the product, collected data, and drafted the initial manuscript. K. supervised the research design, media development, data interpretation, and manuscript refinement. A.T. supervised the Pancasila Education content, civic education framing, and final manuscript revision. All authors read and approved the final manuscript draft.

CONFLICT OF INTEREST

The authors declare no conflict of interest.

DECLARATION OF USE OF AI IN SCIENTIFIC WRITING

The authors used ChatGPT and Grammarly during the preparation of this manuscript to assist with language editing, academic clarity, and consistency of expression. All generated or edited content was carefully reviewed, verified, and revised by the authors, who take full responsibility for the final content of the manuscript.

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