



Development of Civics e-module based on Karo culture to enhance learning outcomes

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ABSTRACT

Integrating technology in Civics Education (PKn) learning is a pedagogical urgency to improve students' understanding of citizenship material. PKn learning at SD Negeri 040564 Keriahen has not integrated technology and local content, resulting in low learning completion. This study describes the validity, practicality, and effectiveness of the Karo culture-based Citizenship Education (PKn) e-module and its impact on increasing students' insight into cultural love and understanding of rights and obligations. The method used is research and development with the ADDIE model applied to grade IV students. The study showed that the developed e-module was valid, practical, and effective. The percentage of students' learning completion classically increased in the pre-test and post-test. In addition, the increase in insight into cultural love was also shown through the N-Gain value. These findings indicate that the Karo culture-based PKn e-module improves material understanding and fosters students' love for local culture.

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ABSTRAK

Integrasi teknologi dalam pembelajaran Pendidikan Kewarganegaraan (PKn) merupakan suatu urgensi pedagogis untuk meningkatkan pemahaman peserta didik terhadap materi kewarganegaraan. Pembelajaran PKn di SD Negeri 040564 Keriahen belum mengintegrasikan teknologi dan muatan lokal, sehingga berdampak pada rendahnya ketuntasan belajar. Penelitian ini bertujuan untuk mendeskripsikan kevalidan, kepraktisan, dan keefektifan e-modul pendidikan kewarganegaraan (PKn) berbasis budaya Karo serta dampaknya terhadap peningkatan wawasan cinta budaya dan pemahaman peserta didik pada materi hak dan kewajiban. Metode yang digunakan adalah penelitian dan pengembangan dengan model ADDIE yang diterapkan pada peserta didik kelas IV. Hasil penelitian menunjukkan bahwa e-modul yang dikembangkan tergolong valid, praktis, dan efektif. Persentase ketuntasan belajar peserta didik secara klasikal meningkat pada pre-test dan post-test. Selain itu, peningkatan wawasan cinta budaya juga ditunjukkan melalui Score N-Gain. Temuan ini menunjukkan bahwa e-modul PKn berbasis budaya Karo berkontribusi dalam meningkatkan pemahaman materi serta menumbuhkan kecintaan peserta didik terhadap budaya lokal.

Kata Kunci: budaya karo; e-modul; pendidikan kewarganegaraan; rakut sitelu

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INTRODUCTION

The use of technology with unlimited access has had an impact on the erosion of Indonesian culture. Broad access to foreign cultures through media and technology has led to a decrease in interest in local culture. This phenomenon is reflected in the reduced use of regional languages, changes in traditional clothing styles, and a shift in preferences toward entertainment based on local culture (Zaennurain et al., 2024). The lack of social education that introduces cultural values from an early age has become one of the main factors in the declining concern of the younger generation for the nation's cultural heritage (Jannah et al., 2025). Therefore, systematic steps are needed to instill understanding and cultural learning from elementary school age. The lack of public awareness in maintaining local culture is further worsened by the perception that foreign cultures are more practical and relevant to the times. The lack of early teaching of local culture results in a weak appreciation of the importance of regional culture in building national identity. In addition, the rapid flow of globalization of foreign cultures accelerates the occurrence of cultural shifts in Indonesia.

The phenomenon of increasing children's interest in foreign cultures is an important indicator of the need to preserve local culture through the strengthening of culture-based learning in schools. One of the local cultural riches that has the potential to be integrated into learning at SD Negeri 040564 Keriahen is Karo culture. This culture is known through its language, traditions, and social systems, one of which is the concept of rakut sitelu. Rakut sitelu is part of the philosophy of sangkep nggeluh, which regulates a person's social status into three categories, namely sukut (the host of the traditional ceremony), kalimbubu (the party honored as a symbol of divine representation), and anak beru (the party that helps in the implementation of the ceremony) (Bangun & Ritonga, 2024; Siahaan et al., 2025). This social system not only forms the social order of the Karo people but also contains the values of rights and obligations that can be adapted in Civics Education (PKn) learning in elementary schools. The integration of these values into learning tools is expected to enrich learning while strengthening students' cultural identity. The strategy of strengthening local culture through integration into the formal education system becomes an important step in maintaining the existence of a culture that is full of noble values (Zainab et al., 2024).

The success of learning is inseparable from the availability of quality learning tools that follow the needs of the times. However, the reality in the field shows that the learning tools currently used are still largely ineffective in improving student learning outcomes. Most of the teaching materials used are still in the form of conventional textbooks without adequate technology integration. This condition demands the development of technology-based learning tools, such as electronic modules, which align with the spirit of the Merdeka Curriculum and encourage students to learn independently. The advancement of information and communication technology today has reached the world of education very massively, providing opportunities for educators to create learning that is more interesting, creative, and not monotonous (Alfiansyah, 2024). The use of technology in learning can help create a more interactive and adaptive learning experience to the needs of the times (Noverdika, 2021). Therefore, teachers are required to be able to develop and utilize technology optimally in the learning tools used so that learning becomes more effective and relevant to student development.

The implementation of the Merdeka Curriculum launched by the Ministry of Education, Culture, Research, and Technology (Kemendikbudristek) is a strategic step in responding to the dynamic changes in the world of education. This curriculum is designed to provide greater autonomy to teachers in designing learning that suits students' needs and local characteristics. The Merdeka Curriculum encourages the development of creativity, multiple intelligences, and the optimal formation of student character through a flexible approach. The results of observations at SD Negeri 040564 Keriahen confirm this problem. Teachers at the school are still facing obstacles in developing technology-based teaching materials, and most learning

is still based on printed teacher books. The impact is seen in student learning outcomes, especially in Civics (PKn), where student learning mastery is still low. The urgency of this research is based on the real need for teaching materials that are relevant to the life context of students and in line with the implementation of the Merdeka Curriculum, which gives teachers the freedom to develop teaching tools according to the characteristics of their students and socio-cultural environment (Ramadhan et al., 2023). In addition, the limited availability of digital teaching materials that can be accessed independently by students and the lack of integration between local values and the substance of Civics Education (PKn) learning are urgent reasons for the development of a Karo culture-based e-module.

Previous research results show that the development of e-modules contributes positively to the improvement of learning outcomes and student involvement in the learning process. E-modules designed with a contextual approach have been proven to strengthen students' understanding of the material and facilitate effective independent learning. Previous research revealed that the development of local culture-based e-modules shows a high level of practicality and has a significant impact on the learning outcomes of elementary school students (Kumalasari et al., 2023; Suantara et al., 2023). These two findings reinforce the urgency of the need for the development of local culture-based e-modules in Civics Education (PKn) learning as an effort to strengthen national values and instill cultural identity from an early age. Civics Education (PKn) learning in elementary schools with a Karo local culture-based approach that elevates the values of *rakut sitelu*. *Rakut sitelu* as part of the Karo cultural social structure has the potential for noble values such as responsibility, rights, and obligations, and mutual respect among social roles that align with the substance of Civics Education (PKn) material at the basic level (Asmah et al., 2022).

This condition shows a research gap that has not been explored in depth in the development of contextual and Karo local culture-based Civics e-modules. The development of *rakut sitelu*-based e-modules allows students not only to understand rights and obligations as citizens but also to foster cultural awareness and strengthen local identity, which is in line with the goal of forming the Pancasila student profile in the Merdeka Curriculum era. Based on these problems, this research aims to develop a learning tool in the form of an electronic module based on Karo culture with *Rakut Sitelu* value content in Civics Education (PKn) subjects at the elementary school level. This research is expected to produce innovative teaching materials, support the implementation of the Merdeka Curriculum, and improve student learning outcomes through contextual and meaningful learning. This research contributes to enriching local culture-based learning models and strengthening students' cultural identity amid the challenges of globalization.

LITERATURE REVIEW

The theoretical review in this study aims to provide a strong conceptual foundation in developing learning tools based on local culture. This review includes a discussion of the concept of electronic modules as innovative learning media that support the implementation of the Merdeka Curriculum, as well as the characteristics of Civics Education (PKn) learning as an effort to instill values and character in students. In addition, it also discusses theories about learning outcomes as indicators of learning effectiveness, as well as the concept of *rakut sitelu* in Karo culture, which represents the values of rights and obligations in community life. All the theories reviewed become the basis for developing learning tools that are relevant to students' needs and contextual with local culture.

Electronic Module (E-module)

Electronic module (e-module) is a digital teaching material designed to support independent learning through the integration of various media such as text, audio, video, and animation to make it more interesting and easier for students to understand (Sunedi & Syaflin, 2024). The e-module provides flexibility in the learning process because it can be accessed anytime and anywhere according to the needs and learning styles of each student (Navila & Tuharto, 2023). E-modules are designed to be easily

integrated with the applicable curriculum, allowing teachers to compile teaching materials that are suitable for students' cognitive abilities. In addition, the use of e-modules is considered more efficient in delivering complex material because it is supported by interactive features that can increase students' interest and attention toward the material (Alfatia et al., 2025). In cultural-themed learning, the use of project-based learning model-based e-modules has been proven to improve students' understanding of local wisdom values (Winda et al., 2024). E-modules can serve as independent teaching materials that significantly contribute to improving students' learning outcomes (Rahmawati, 2023). This shows that e-modules are not just auxiliary media but have become an important component in modern, digitally-based learning systems.

The adoption of e-modules in the education world is a strategic step to address the challenges of digital learning in the modern era. Teaching materials presented through e-modules have been proven to be more interactive and easily accessible, thus encouraging increased learning effectiveness (Fadli, 2024). The application of e-modules provides high learning flexibility because students can adjust the time and place of learning according to their preferences (Fujiarti et al., 2024). The improvement of students' academic competence, such as conceptual understanding, has been found to increase significantly through the use of e-modules (Milanti et al., 2023). The implementation of e-modules allows teachers to adapt learning strategies according to the individual needs of students in the spirit of the Merdeka Curriculum (Fatina et al., 2024). Students' learning motivation has also shown improvement when they are actively involved in using interactive e-modules developed with modern learning principles (Ardani & Febrianto, 2024). The use of e-modules in digital learning is not only a practical solution but also reflects the need for pedagogical transformation oriented toward technology and independent learning (Hidayati et al., 2024). Well-structured and relevant e-module development can become a main instrument in creating effective and meaningful learning amidst the dynamics of national curriculum changes (Setyanto et al., 2024).

Civics Education (PKn) Learning

Civics Education (PKn) is an extension of citizenship education that emphasizes civic guidance. PKn in elementary schools is important for students in forming citizens who understand and are able to carry out their rights and obligations to become intelligent, skilled, and characterful Indonesian citizens as mandated in Pancasila and the 1945 Constitution (UUD 1945). The role of the teacher to equip and develop value attitudes and morals in students in elementary schools is certainly necessary. However, the development of value attitudes and morals in students is impossible to achieve if they do not understand the concept of values and morals themselves (Setiawan, 2022). The concept of values, attitudes, and morals is actually already contained within the scope of the Civics Education (PKn) subject, focusing on the formation of citizens who understand and carry out their rights and obligations to become skilled, intelligent, and characterful citizens in accordance with the mandate of Pancasila and the 1945 Constitution.

PKn learning in elementary schools has a number of fundamental goals in shaping students' character and personality. One of its objectives is to cultivate democratic awareness from an early age so that students can appreciate diversity and understand the importance of active participation in community life (Munthe et al., 2023). In addition, PKn learning is designed to form intelligent, skilled, and characterful citizens in accordance with the values of Pancasila and the 1945 Constitution (Bukoting, 2023). PKn learning activities also aim to develop critical, rational, and creative thinking skills in responding to complex citizenship issues (Desnita & Salminawati, 2024). Another goal is to foster a sense of love for the homeland, national spirit, and instill the values of nationalism as a foundation in the life of the nation and state (Fortuna & Aeni, 2024). PKn learning is also expected to shape Pancasila-based citizens, namely individuals who uphold the nation's noble values and are able to implement them in daily life (Setiawati et al., 2024).

Learning Outcomes

Learning outcomes are students' abilities after learning, which include cognitive, affective, and psychomotor abilities (Moko et al., 2022; Sudirman et al., 2024). PKn learning outcomes in elementary schools reflect students' achievements in understanding national values, democracy, and responsibilities as good citizens. These achievements can be improved through interactive and contextual learning approaches, such as the learning community model which has been proven effective in increasing students' engagement and understanding of PKn material (Ahmad & Hidayat, 2020). Problem-based learning models based on the Merdeka Curriculum can also encourage students to think critically and solve real problems, which contributes to improved learning outcomes (Indriyani et al., 2023). Internal factors such as motivation and learning interest also significantly affect students' PKn academic performance, indicating that learning approaches need to consider students' psychological aspects (Zihura et al., 2024). Culture-based PKn learning outcomes not only emphasize cognitive mastery but also the emotional and social involvement of students in understanding the noble values living within local cultures, so that students can internalize the meaning of nationalism through traditional wisdom close to their daily lives.

Karo Local Culture

Culture-based PKn learning at the elementary school level aims to instill national values through an approach rooted in local wisdom. The integration of local culture into teaching and learning activities has been proven to strengthen students' character and increase their understanding of democratic and national values (Juliani et al., 2024). This process can be seen through the use of cultural elements such as folklore, traditional arts, and social practices relevant to students' daily lives (Raihan et al., 2023). The application of local culture as part of school culture internalizes the values of religiosity, mutual cooperation, responsibility, and environmental care (Lubis et al., 2025). Increased learning motivation, cultural understanding, and academic achievement can be achieved through learning approaches that place culture as an important part in developing student competencies (Nurlina et al., 2024). The use of local values and wisdom in PKn learning also strengthens national identity and broadens students' national insight amidst diversity (Jaya & Sudarsana, 2024). The character values promoted in culture-based learning can be instilled through teacher role models, habituation activities, and the creation of a supportive school environment (Asfiati et al., 2025).

Karo culture has a kinship system known as *rakut sitelu*, which literally means "three bonds." This system consists of three main elements: *Kalimbubu* (the giver of the bride), *sembuyak* or *senina* (siblings), and *anak beru* (the receiver of the bride). *Rakut sitelu* functions as the foundation in the social structure of Karo society, regulating the roles and responsibilities of individuals in various traditional ceremonies and daily life (Sazali et al., 2023). *Kalimbubu* is considered as "*Dibata ni idah*" or "the visible God," who must be respected and honored because they are believed to bring blessings and give life to a person. *Anak Beru* acts as the executor in traditional ceremonies, assisting *Sukut*, the host party in a traditional ceremony or ritual. These three roles are dynamic and can change depending on the context and ongoing kinship relationships. The *Rakut Sitelu* system does not recognize castes but emphasizes balance and mutual respect among community members (Rambe et al., 2025). This concept is also part of *sangkep nggeluh*, which means the wholeness of a person's life, reflecting the importance of social and cultural relationships in Karo community life. Understanding and applying *rakut sitelu* in daily life helps strengthen cultural identity and maintain harmony in the Karo community (Tarigan, 2020).

PKn learning based on Karo culture is a contextual approach that combines local values in the process of civic education to strengthen cultural identity and students' character from an early age. Through the integration of the *rakut sitelu* concept — *kalimbubu*, *sembuyak*, and *anak beru* — education not only teaches the cognitive aspects of citizens' rights and obligations but also shapes social awareness through living and functional cultural relations in Karo society. The social structure in *Rakut Sitelu* represents the practice of deliberative democracy, respect for authority, and mutual cooperation, which are in line with

the values in PKn such as active participation, responsibility, and justice. Placing local culture as a learning framework allows students not only to understand national values theoretically but also to internalize and practice them in real life based on the cultural experiences they know and live by (Soraya & Padila, 2024). Therefore, PKn learning based on Karo culture is not only a medium for preserving local wisdom but also a pedagogical strategy capable of nurturing strong, cultured, and democratic citizens.

METHODS

This research is a development study aimed at producing an e-module based on Karo culture by integrating the values of *rakut sitelu* into the material on rights and obligations in Civics Education (PKn) subjects at the elementary school level. The development model used is ADDIE, which includes five systematic stages: analysis, design, development, implementation, and evaluation. This approach was chosen because it can produce learning tools that are valid, practical, and aligned with the local context. The analysis stage includes needs analysis, student characteristics analysis, and curriculum analysis to ensure the e-module aligns with the learning outcomes of the Merdeka Curriculum. In the design stage, the material, visual appearance, and evaluation instruments are designed by contextually incorporating the values of Karo culture. The development stage focuses on the preparation and validation of the e-module by subject matter experts, media experts, and language experts, followed by revisions based on the feedback obtained. Implementation is carried out through a limited trial in grade IV to assess the implementation of learning and student responses to the e-module. The evaluation stage aims to evaluate the effectiveness and practicality of the e-module through analysis of learning outcomes data, implementation, and student responses, serving as the basis for concluding the quality of the developed product. Data analysis was conducted through tests of validity, item difficulty level, and discrimination power with the help of SPSS and Microsoft Excel. Instrument reliability was tested using the KR-20 formula to ensure the consistency of the measurement results. The improvement in student learning outcomes was analysed using N-Gain to assess the impact of using the e-module on student understanding. All of these procedures were designed to ensure product quality and the validity of findings in the development of the Karo culture-based e-module.

RESULTS AND DISCUSSION

This section presents the results of each development stage of the Karo culture-based e-module on the topic of rights and obligations, which was carried out based on the ADDIE model. The research results are described systematically from needs analysis to product evaluation. Each finding is discussed regarding relevant theories and previous research findings to gain a deeper understanding of the effectiveness and practicality of the e-module in improving Civics (PKn) learning outcomes for elementary school students.

Analysis Stage

The analysis stage was carried out to identify the need for developing a Karo culture-based PKn e-module on the topic of rights and obligations. Observations and interviews were conducted with fourth-grade teachers at SD Negeri 040564 Keriahen in January 2025 to obtain an overview of the school's condition, learning tools, and the ongoing learning process. The results of the analysis showed that although printed modules were available as learning tools, there was no integration of local cultural values, particularly Karo culture, in the material delivered. This condition became an important basis for designing the development of a more contextual and relevant e-module with the students' environment.

The analysis of student characteristics showed that the research subjects were aged between 9–10 years and were at the stage of concrete operational development. Based on interview results and a preliminary test, it was found that students' understanding of the material on rights and obligations was still low,

especially in answering questions related to local culture. In addition, many students' PKn daily test scores had not reached the minimum mastery criteria (KKM). In the curriculum analysis, the researcher examined the relevant core and basic competencies of the learning material and compiled the structure of the material based on the Merdeka Curriculum. The focus of the review was on the material about rights and obligations for fourth-grade students in the first semester, which then became the main foundation in developing the content of the Karo culture-based e-module.

Table 1. Fourth Grade Student Test Scores at SD Negeri 040564 Keriahen

Academic Year	Student Score	Criteria	Number of Students	Percentage
Odd 2023/3024	Score < 65	Not yet finished	16	67%
	Score ≥ 65	Finished	8	33%
Even 2023/2024	Score < 65	Not yet finished	18	75%
	Score ≥ 65	Finished	6	25%

Source: Grade V Homeroom Teacher of SD Negeri 040564 Keriahen

Based on the data in Table 1, only 33% of students reached mastery in the odd semester of the 2023/2024 academic year, and that number decreased to 25% in the even semester. The low mastery level indicates the need for strategic changes in the learning process. According to the classroom teacher, students' low learning outcomes were due to a lack of learning motivation and boredom in participating in learning activities. This condition strengthens the assumption that the existing learning tools have not been able to foster student learning motivation, so the development of local culture-based learning tools packaged in a modern and innovative way is needed to significantly improve students' learning outcomes.

Design Stage

The design stage aimed to design a Karo culture-based e-module on the topic of rights and obligations for fourth-grade elementary school students. This process consisted of three main components: material planning, product design planning, and validation instrument planning. Material planning was arranged based on indicators that had been developed following the basic competencies and learning objectives. The rights and obligations material was contextualized by integrating the values of Karo culture, particularly the rakut sitelu concept. Supporting material was obtained from the fourth-grade PKn textbooks, thematic e-books, as well as visual sources from Google Pictures and photographs depicting the daily life of the Karo community, in line with a realistic learning approach.

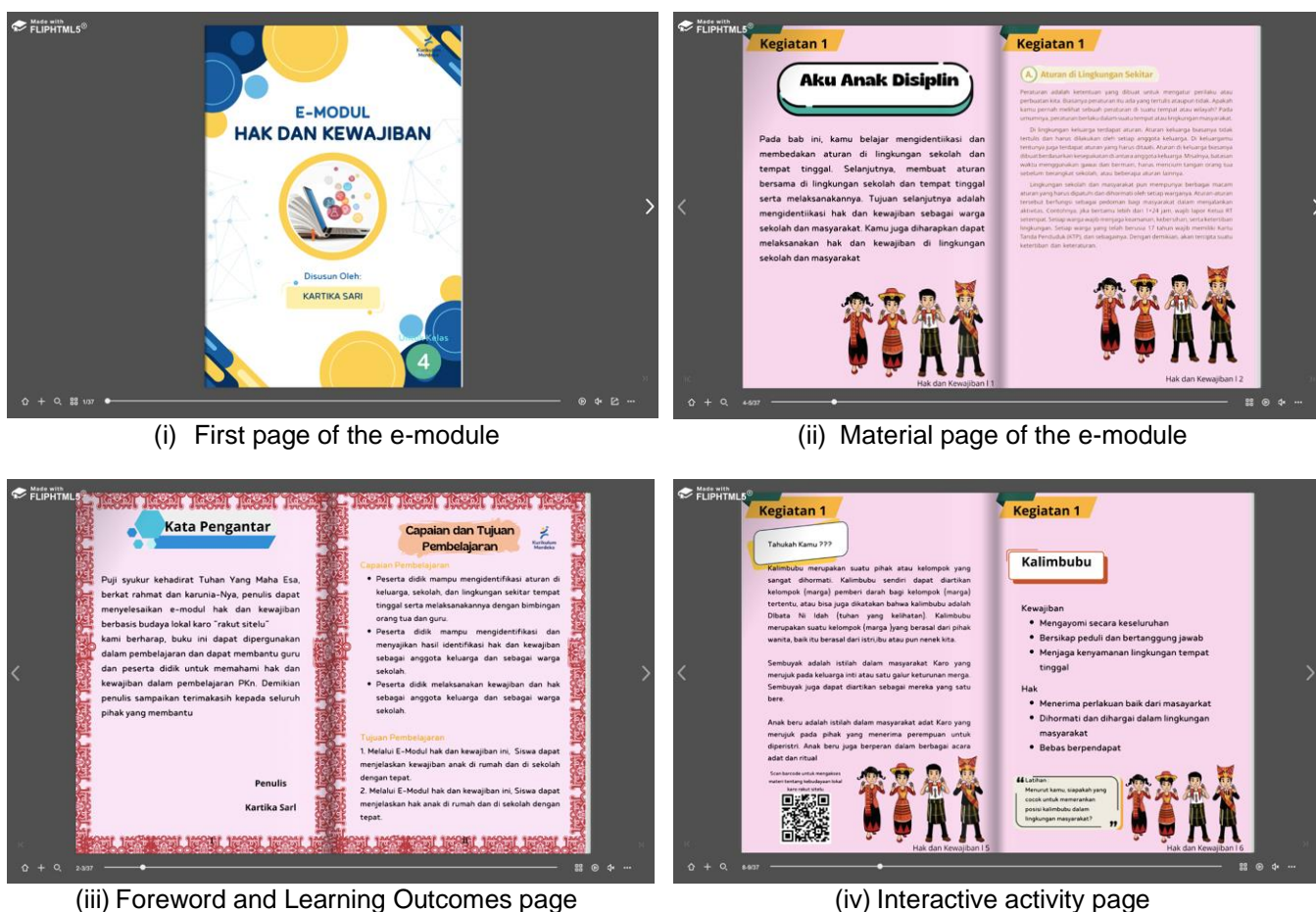


Figure 1. Display of the Karo Culture-Based E-Module
Source: 2025 research

Product design planning was adapted to the characteristics of students who are at the concrete operational stage, so the e-module layout was designed to be attractive and communicative using Canva, as shown in **Figure 1**. The module structure included key elements such as the cover, user guide, table of contents, basic competencies, learning activities, evaluation, glossary, and bibliography. In addition, this stage also included the planning of validation instruments in the form of assessment questionnaire using a Likert scale. The questionnaire included assessment aspects in terms of content, media, language, and learning design. Each aspect was elaborated into assessment indicators, accompanied by space for comments, suggestions for improvement, and conclusions from validators regarding the feasibility of the developed product.

Development Stage

The development stage aimed to realize the design of the Karo culture-based PKN e-module into a concrete product. The development process began by preparing tools and materials such as a laptop, Microsoft Word software, the Canva application, and visual and video materials to support the content. The next step was to actualize the product design, which included collecting and arranging the material on rights and obligations, integrating Karo cultural figures into the module, creating the cover page using Canva, and laying out the design to be attractive and suitable for the characteristics of elementary school students. The completed e-module preparation was followed by printing and preparation for validation and further trials. At this stage, both instrument and product validation were conducted. Instrument validation

included questionnaires and tests, each reviewed by experts. The questionnaire consisted of three scoring aspects: material, design, and language, accompanied by descriptions of scoring items to avoid bias.

The validation results showed several suggestions for improvement, such as simplifying the language, enhancing the visual aesthetics, and strengthening the relevance of the material to students' lives, which were accommodated in the final revision. Meanwhile, test instrument validation was carried out through a calibration process to ensure validity, reliability, item difficulty level, and item discrimination index so that the instruments could be used to measure the e-module's effectiveness. The e-module development process, which had been arranged based on the previous planning and design stages, required a feasibility assessment before use in learning. Therefore, product validation was conducted to ensure the e-module met quality standards in terms of content, design, and language.

Table 2. Content Expert Scoring

Aspect	Validation I	Validation II
Compatibility with core and basic competencies	4	4
Clarity of learning indicators	3	4
Clarity of learning objectives	2	4
Motivation provision	3	3
Systematic presentation	3	3
Accuracy of learning material sequence	3	3
Accuracy of procedure	3	3
Clarity of usage instructions	4	4
Provision of practice for concept understanding	2	4
Opportunities for students to practice independently	2	4
Inclusion of summaries	3	4
Accuracy of test instructions	3	3
Test and scoring quality	3	3
Content relevance with the test	3	3
Compatibility with knowledge development	2	3
Timeliness/relevance of features	3	3
Latest references	2	3
Student involvement in learning	3	4
	Total Score	51/72
	Percentage	70%
		62/72
		86%

Source: 2025 research

The validation results in **Table 2** show an increase in the score from the first to the second validation. In the first validation, the total score obtained was 51 out of 72, with a feasibility percentage of 70%. After improvements based on expert feedback, the second validation resulted in a score of 62 out of 72, with a feasibility percentage of 86%. This score increase indicates that the improvements made have enhanced the module's quality, especially in the aspects of indicator and learning objective clarity, systematic presentation, relevance of material to scientific development, and student involvement in learning. The developed e-module can be categorized as feasible for use in the learning process after this validation stage.

Product validation by the content expert was conducted to ensure that the content of the Karo culture-based PKn e-module on rights and obligations aligned with scientific principles, was relevant to the basic competencies, and effective in conveying learning messages. This validation was conducted in two stages. In the first validation, the content expert provided several important suggestions, including the need to explain the activities shown in the figures, provide a deeper explanation of the relationship between the material and the rakut sitelu cultural values, and offer concrete examples that show the relationship between rights and obligations and local culture. These suggestions formed the basis for revising the module before proceeding to the second validation. The assessment of the e-module's feasibility was not limited to the content aspect but also included media as a critical component in presenting information that is engaging and easy for students to understand.

Validation by the media expert was conducted twice, and the results provided several constructive suggestions. Some suggestions from the media expert included reducing the illustrations on the front cover so that students' attention is not only focused on the figure but also on the module title. The validator also emphasized the importance of selecting figures that are relevant to the subject matter, placing the supervisor's name below the primary author's name, and avoiding excessive use of colors and illustrations on the foreword and table of contents pages. Furthermore, the validator suggested that each figure used should include a source caption underneath to maintain accuracy and credibility.

Table 3. Media Expert Scoring

Aspect	Validation I	Validation II
Accuracy of color selection	4	4
Attractive cover	3	4
Font consistency	3	4
Spacing consistency	4	3
Illustration suitability with character	3	3
Color contrast	3	3
Layout consistency	3	3
Harmony of front and back covers	3	4
Physical appearance encourages reading interest	4	4
Student engagement in learning activity	3	4
Easy and clear usage instructions	4	4

Aspect	Validation I	Validation II
Balance between text and illustration	4	3
Appropriate line spacing	2	3
Illustration relevance to content	3	4
Average	3.20	3.6
Percentage	80%	90%

Source: 2025 research

Based on the results of media expert validation in **Table 3**, there was a score increase from the first to the second validation. In the first validation, the e-module obtained an average score of 3.20 with a feasibility percentage of 80%. After revisions based on expert suggestions, the score increased to 3.6, with a feasibility percentage reaching 90%. The assessed aspects included accuracy of color selection, consistency in fonts and spacing, suitability of illustrations with characters, balance between text and figures, and clarity of usage instructions. This score increase reflects significant improvements in the e-module's design and visual elements, making the resulting product more feasible and attractive as a digital learning medium.

The next validation stage was conducted by the language expert to ensure that the e-module met linguistic aspects following proper and correct Indonesian language rules. The validation process included assessment of language rules, communicative aspects, clarity of symbols or terms, and alignment with student developmental stages. Based on the first validation, the e-module received a total score of 36 out of 50 points with a percentage of 70%, while in the second validation it increased to 46 out of 50 points with a percentage of 90%. This increase shows that the revisions made based on the language expert's suggestions successfully corrected the weaknesses in the module's initial version.

Some important notes from the language expert included corrections to improper punctuation, especially in the foreword and usage instructions sections. Additionally, word choice (diction) was also highlighted, such as changing "diinginkan" to "yang Anda inginkan," "silahkan" to "silakan," and replacing "untuk" with "guna" in more formal contexts. Capitalization errors were also corrected to align with current spelling rules. Moreover, the validator emphasized the importance of consistent use of conjunctions, especially on the initial pages of the e-module. These suggestions were accommodated in the product revision, resulting in a final version of the e-module with higher language quality that is clear and easily understood by students.

Implementation Stage

The implementation stage in the ADDIE development model is a critical phase to test the feasibility and practicality of the developed product in an actual learning context. In this study, the practicality aspect of the e-module was analyzed using two approaches: observation of learning implementation and student responses to the use of the product. The practicality test aimed to measure the extent to which the learning tool could be effectively and efficiently applied in the classroom. One of the main indicators of practicality is the achievement of a learning implementation score within the "Moderate" category or higher ($3 \leq IO < 4$). In addition, the product is declared practical if students' responses to the e-module fall within the "Interested" category. Effectiveness was measured through the administration of a pre-test and post-test to students.

The pre-test was given before the learning process began to assess students' initial knowledge of the rights and obligations material, while the post-test was administered after the full series of learning sessions, which lasted four meetings. The purpose of administering these two tests was to identify improvements in students' learning outcomes following the application of the Karo culture-based e-module. The product effectiveness test results showed a significant improvement in students' learning mastery. During the pre-test, only 5 out of 26 students (19.2%) achieved mastery, while 21 students (80.8%) were categorized as not yet mastering the material. Improvement was observed in the post-test results, where 20 students (77%) achieved mastery and only 6 students (23%) remained below mastery. The average class score also increased from 54 in the pre-test to 78.6 in the post-test. Based on these results, it can be concluded that the developed product is effective in improving classical learning mastery for the rights and obligations material.

Based on observations during the first trial, the implementation of learning was evaluated through three main aspects: 1) implementation of learning steps; 2) implementation of the classroom social system; and 3) implementation of the management reaction principle supported by the available system. These three aspects were observed to ensure that the learning process facilitated by the e-module proceeded according to the instructional design developed earlier. The improvement in student learning outcomes in Grade IV was analyzed using the N-Gain calculation derived from the difference between the pre-test and post-test scores. The average N-Gain score of 0.5 indicates that the improvement in student learning outcomes falls within the "Moderate" category, with a gain percentage of 50%. Based on the analysis results, it was found that 1 student scored an N-Gain above 0.7, indicating an increase in Cultural Appreciation Insight in the "High" category. A total of 21 students scored within the range of $0.3 < g \leq 0.7$, categorized as "Moderate," while 4 students scored at or below 0.3 and were placed in the "Low" category.

Evaluation Stage

The evaluation stage is the final part of the research and development process. Evaluation was conducted to review the feedback provided by teachers and Grade IV students of SD Negeri 040564 Keriahen as direct users of the product. The main objective of this stage was to obtain feedback to determine the extent to which the research objectives were achieved and the effectiveness of the developed e-module product. The evaluation was carried out systematically as a form of reflection and to determine follow-up actions for product improvement.

Based on the evaluation results, the following data were obtained: 1) learning implementation was categorized as "Well Implemented"; 2) improvement in student learning outcomes through N-Gain analysis showed that one student was in the "High" category ($g > 0.7$), 21 students were in the "Moderate" category ($0.3 < g \leq 0.7$), and four students were in the "Low" category ($g \leq 0.3$); 3) classical learning mastery increased from 19.2% in the pre-test to 77% in the post-test; and 4) the average student response questionnaire score to the e-module was 3.28, falling in the "Interested" category. Although the practicality of the module has been met, its level of effectiveness still requires improvement, as it has not yet reached the minimum classical mastery standard of 85%.

Following up on the evaluation results, several improvements to the product are needed. First, revisions should be made to the lesson plan (RPP), particularly in the learning activities section. Steps need to be detailed with clear time allocations so that learning does not feel rushed. Additionally, the teacher's role in learning should be directed to be less dominant as the source of knowledge and more as a facilitator. Second, in problem-solving activities based on realistic learning, systematic and easy-to-understand steps should be developed so that learning implementation becomes more focused and meaningful.

Discussion

The process of validating data collection instruments such as questionnaires and tests, as well as learning tools in the development of the Karo culture-based PKn e-module on the topic of rights and obligations, showed results that met the validity criteria. This validity included content validity, which measures how well the module design aligns with learning objectives, as well as construct validity, which assesses consistency among module components. Data collection instrument validation was conducted first to ensure the credibility of the data obtained before product testing. The questionnaire validation results showed that several aspects of the questionnaire needed improvement, such as the alignment of indicators with questions and the use of ambiguous language. Once declared valid, the questionnaire instrument was followed by test instrument validation, which produced valid results with items demonstrating good discrimination power and high reliability.

The test instrument validation results indicated that most essay questions were deemed valid, with varying levels of difficulty. Reliability testing of the test instrument showed a score of 0.719, which means the test instrument is reliable. Both the questionnaire and test instruments are now considered ready for use in collecting data, including scores from validators regarding the module and learning tools. The study revealed that the developed module was categorized as "highly valid" based on scoring by content, media, and character education experts (Ardani & Febrianto, 2024). However, the aspects of language and module design were not examined in that study, prompting the researchers to conduct follow-up research to evaluate the module's feasibility in terms of language, content, and design.

At the validation stage, significant improvements were recorded between the first and second validations in terms of content, product design, and language. The content validation score increased from 72% in the first validation to 92% in the second; the product design score increased from 78% to 94%; and the language score improved from 72% to 92%. These validation results show that the product underwent substantial enhancements and was categorized as highly feasible for trial after improvements in several aspects. Overall, the validation results show that the module and learning tools meet feasibility criteria and can be used in the learning process. This e-module is considered practical based on learning implementation observations and student responses. The practicality of learning tools can be determined through student response scoring and learning implementation, while learning implementation can be analyzed through observations to assess teacher management and student activity (Fatina et al., 2024). The development of this e-module is a form of innovation by teachers in utilizing digital technology in learning to improve students' learning outcomes (Hadiapurwa et al., 2021; Susilana et al., 2022).

Observation results showed that the Karo culture-based PKn e-module on the rights and obligations material obtained a score of 3.06, categorized as "Well Implemented," fulfilling the practicality criteria in terms of learning implementation. Student response scoring was conducted to determine the level of interest and ease in understanding the module. The questionnaire results showed an average score of 3.28, indicating that students were interested in the e-module. The appealing design of the module, including its supportive figures, played an important role in increasing student engagement (Zainab et al., 2024). The e-module presents the material in the form of a concise module and can be used anytime and anywhere by students as long as they have access to the e-module (Hadiapurwa et al., 2021). This e-module can be categorized as practical because it meets the practicality criteria in terms of learning implementation and has received positive responses from students, indicating the effectiveness of the module in the learning process.

Indicators of learning effectiveness can be seen from the achievement of learning mastery above 80%, time efficiency, and positive student responses to the learning process (Fadli, 2024). Based on post-test analysis, the cultural appreciation insight test results showed that during the first trial, student learning mastery had not yet reached the classical criterion. The pre-test results showed that 19.2% of students achieved mastery, while the post-test reached 77%. Based on these findings, it can be concluded that the

Karo culture-based PKN e-module on the rights and obligations material developed in this study can help students achieve classical learning mastery. It can be concluded that the developed module is effective according to the predetermined criteria.

CONCLUSION

The Karo culture-based e-module on rights and obligations that was developed has met the criteria of validity, practicality, and effectiveness, with validation from content, design, and language experts showing results of being highly feasible. The practicality of the module is reflected in the observation of learning implementation and the students' responses, which indicated interest. In addition, this module is effective, as evidenced by the increase in student learning mastery in the post-test and the improvement in cultural appreciation insight. This research provides implications for researchers, students, teachers, and schools, who can utilize this module as an effective, practical, and innovative learning resource, and offers suggestions for further research in developing similar modules for other topics.

AUTHOR'S NOTE

The author declares that there is no conflict of interest related to the publication of this article. The author affirms that the data and content of the article are free from plagiarism.

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