Inovasi Kurikulum

Development of E-Modules based on Contextual Teaching and Learning (CTL) on the actualization of Pancasila values

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ABSTRACT

The teaching of Pancasila Education in this school faces challenges in applying Pancasila values practically and relevantly to students' lives, thus requiring a practical and innovative learning approach. The main objective of this research is to design an e-module that integrates CTL concepts with the material to actualize Pancasila values and test the effectiveness of using the e-module. This research uses the Research and Development method with the ADDIE model approach (Analysis, Design, Development, Implementation, and Evaluation). The researcher conducted a needs analysis to determine students' skills and knowledge about Pancasila's values. Then, the e-module design was carried out by considering CTL principles and integrating multimedia elements, such as text, images, audio, and video. The developed e-module was tested on students, and its effectiveness was measured through pre-tests and post-tests to determine the improvement in learning outcomes. The research results show that CTL-based e-modules can improve students' learning outcomes, especially in cognitive and affective aspects. The results of the development of the CTL-based e-module show that the e-module is capable of presenting learning materials engagingly and interactively, as well as facilitating students in applying the values of Pancasila in their daily lives. Interactive features, such as quizzes, simulations, and context-based discussions, help increase students' active participation in learning.

ABSTRAK

Pembelajaran Pendidikan Pancasila di sekolah ini dihadapkan pada tantangan dalam menerapkan nilai-nilai Pancasila secara praktis dan relevan bagi kehidupan peserta didik, sehingga diperlukan pendekatan pembelajaran yang efektif dan inovatif. Tujuan utama penelitian ini adalah untuk merancang e-modul yang memadukan konsep-konsep dari CTL dengan materi aktualisasi nilai-nilai Pancasila, serta menguji efektivitas penggunaan e-modul tersebut. Penelitian ini menggunakan metode pengembangan (Research and Development) dengan pendekatan model Analysis, Design, Development, Implementation, and Evaluation (ADDIE). Peneliti melakukan analisis kebutuhan untuk mengetahui keterampilan dan pengetahuan peserta didik tentang nilai-nilai Pancasila. Kemudian desain e-modul dilakukan dengan memperhatikan prinsip-prinsip CTL dan mengintegrasikan elemen multimedia, seperti teks, gambar, audio, dan video. E-modul yang dikembangkan diuji coba pada peserta didik, dan efektivitasnya diukur melalui pre-test dan post-test untuk mengetahui peningkatan hasil belajar. Hasil penelitian menunjukkan bahwa penggunaan e-modul berbasis CTL dapat meningkatkan hasil belajar peserta didik, terutama dalam aspek kognitif dan afektif. Hasil pengembangan e-modul berbasis CTL menunjukkan bahwa e-modul tersebut mampu menyajikan materi pembelajaran secara menarik dan interaktif, serta memfasilitasi peserta didik dalam mengaplikasikan nilai-nilai Pancasila dalam kehidupan sehari-hari. Fitur-fitur interaktif, seperti kuis, simulasi, dan diskusi berbasis konteks, membantu meningkatkan partisipasi aktif peserta didik dalam pembelajaran.

Kata Kunci: *contextual teaching and learning; e-modul; hasil belajar; nilai-nilai Pancasila; pendidikan Pancasila*

INTRODUCTION

Pancasila education is a compulsory subject at the secondary education level in Indonesia that aims to shape the character and personality of students based on the nation's noble values. These noble values are introduced to learners through learning content that is expected to be internalized into daily life. Thus, students are expected to have excellent personalities and national views that align with the great norms of Indonesian society (Nanggala & Suryadi, 2020). Pancasila education is not only about understanding the theory but also about applying its values in daily life. This step is a strategic investment to form a young generation with high morality and superior character that can support the nation and state (Natalia & Saingo, 2023). The Teaching Pancasila and Citizenship Education at Vocational High Schools (SMK) is expected to prepare graduates to become workers who have the spirit of Pancasila, and to become superior citizens, not only in skills and knowledge but also in attitude.

Pancasila education is often considered abstract and challenging to understand by students, mainly because the learning approach tends to be theoretical and conventional, such as lectures and memorization. (Siona & Rustandi, 2023). This causes a low level of understanding and learning outcomes for students, especially at the SMK level (Mulyani, 2020; Sulfemi, 2019; Sutrisno, 2020). Lectures do not provide real experiences or contextual situations relevant to students' daily lives. Learning in SMK needs to be more relevant and applicable so that students can understand the application of Pancasila values in daily life. An approach like this is important to help learners understand the application of values in their work or life context. Achieving a learning objective will be more difficult if teachers do not use teaching materials (Aisyah *et al.*, 2020). The development of teaching materials needs to pay attention to the characteristics of students, the format of learning activities, and the educational context so that the teaching materials are relevant and effective in supporting the learning process.(Amini *et al.*, 2024).

One of the teaching materials that is important to consider using in the learning process is learning media. Learning media itself has an important role in facilitating the delivery of information. Choosing the right media can help students understand the teacher's material (Degeng *et al.*, 2021). Hasan *et al* in the book "*Media Pembelajaran*" explain that the role of media in learning is crucial and equivalent to learning methods, because the methods used in the learning process will usually affect the selection of media that can be integrated and adapted to the learning situation.

Along with technological advances, learning using technology is very influential in increasing students' motivation and participation in learning (Talaksoru *et al.*,2024). The selection of easy, engaging, and fun learning media, such as digital flipbooks, can be an alternative to traditional learning media.(Hadiapurwa *et al.,* 2021). Kurniawan and Kuswandi, in the book "Pengembangan E-Modul sebagai Media Literasi Digital pada Pembelajaran Abad 21," explain that one of the uses of interactive learning media, such as e-modules, is starting to be introduced as an alternative 21st-century learning solution. E-modules transform from printed/traditional modules used in direct learning, which utilize technology to create a more flexible and interactive learning experience (Rokhmania & Kustijono, 2017). E-modules are learning materials designed independently to achieve specific learning objectives, organized systematically into the smallest learning units, and displayed in a digital format. These e-modules are equipped with audio, video, animation, and navigation elements that make the learning experience more interesting for the user (Manzil *et al.*, 2022).

Previous research has shown that e-modules can potentially improve learning outcomes of Pancasila and Citizenship subjects (Milanti *et al.*, 2023; Ramadhan *et al.*, 2023). However, most existing studies have not fully integrated the contextual learning approach in e-modules, especially in Pancasila Education. Existing modules still cause some learners to have difficulty linking what they have learned with how the knowledge can be applied in the future (Gafur, 2010). Whereas to become something that continues to be

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embedded in meaningful learning, facts, concepts, principles, and procedures as subject matter must be internalized through discovery, reinforcement, linkage, and integration through contextual learning. Therefore, Kurniawan and Kuwandi in the book "*Pengembangan E-Modul sebagai Media Literasi Digital pada Pembelajaran Abad 21*" state that an attractive e-module has the characteristics of an independent teaching material, which presents illustrations that support learning material and has a contextual nature.

Contextual teaching and learning (CTL) needs to be based on principles and learning strategies that encourage the creation of five forms of learning: relating, experiencing, applying, cooperating, and transferring (Gafur, 2010). The learning process should be related (relevant) to the existing prerequisite knowledge of learners. Learners need direct experience through exploration, discovery, inquiry, investigation, research, etc. Learners need to apply the facts, concepts, principles, and procedures learned in other situations and contexts, which is a high level of learning, more than just memorization. Cooperation in the context of exchanging ideas, asking and answering questions, interactive communication between fellow learners, learners and teachers, learners and resource persons, solving problems, and working on tasks together. Knowledge and skills that have been acquired are not just to be memorized but can be used or transferred to other situations and conditions (Gafur, 2010). CTL can also significantly influence 21st-century skills (Anjela *et al.*, 2024; Nurmeli & Idris, 2024; Ramadansur *et al.*, 2023; Rokhmania & Kustijono, 2017). E-modules can be integrated with innovative learning models believed to improve learning outcomes. Using e-modules makes learning more interesting, interactive, and effective in delivering material through images and videos (Winatha, 2018).

This research aims to overcome the lack of CTL-based e-modules in Pancasila and Citizenship subjects at the Vocational High School (SMK) level. This research develops a CTL-based e-module specifically designed to teach Pancasila values. The innovation of this research lies in applying the CTL approach that connects the material with the real-life context of students, thus facilitating more relevant and applicable learning. This e-module is also equipped with interactive features such as quizzes and contextual projects to increase learners' active participation in the learning process. Thus, this research is expected to contribute to improving the effectiveness of Pancasila Education learning in SMK.

LITERATURE REVIEW

E-Modules

Teaching modules are a choice of assistance utilized in the teaching process. Along with technology development, teaching modules are transformed into electronic modules/e-modules (Qotimah, 2022; Sidiq, 2020). Electronic modules are independent learning resources for students that are presented in an organized, interactive, and attractive manner in specific educational units. This learning resource is in electronic format, with each educational activity linked to a signpost that makes learners more likely to interact with the program. They include instructional videos, animations, and written or interactive topics that enhance learning. Moreover, it can be accessed through a computer or smartphone, thus creating interest and variety in learning (Wulandari *et al.*, 2022).

The central concept of e-modules is a learning tool that supports independent learning by utilizing technology so that students can access and learn the material independently. Supriyanti, in her book "Pengembangan Modul Pembelajaran Berbasis Teknologi Informasi dan Komunikasi," states that e-modules also use interactive multimedia elements to deepen understanding and increase students' interest in learning. The advantages of e-modules in learning are 1) Flexibility and accessibility: Learners can access the material at any time, even outside of school hours, and repeat material that has not been understood as needed.(Manggala *et al.*, 2024)2) Increased learner participation: Interactive elements in e-modules encourage learner participation and understanding difficult material (Amelia *et al.*, 2024); Integration of Learning Media. This is conveyed by Arsyad in the book "*Media Pembelajaran*" that e-

modules are able to combine various types of media to enrich the learning experience and attract learners' interest in the material; 4) Independent Learning: E-modules support students to learn independently, while increasing their sense of responsibility for the learning process (Indahri, 2020); 5) Equitable Access to Education: Making it easier for learners in remote areas to access materials, thus helping to reduce the education gap (Azis, 2021); 6) Rapid Material Update: Updates in e-module materials can be made quickly, ensuring learners get the latest information (Rahmadhani & Efronia, 2021); 7) Technology Skills Development: E-modules can improve learners' technological skills which are important for their future (Miftachurohmah, 2024); and 8) Increased Learning Motivation: It is explained by Fadjarajani et al. in the book "*Media Pembelajaran Transformatif*" that e-modules combine fun and interactive elements to increase learners' motivation in the teaching process. The use of developed products in teaching and learning activities is valid and practical, and the e-modules have successfully improved learning outcomes in various subjects (Masruroh & Agustina, 2021; Pradana *et al.*, 2020).

Contextual Learning and Teaching (CTL)

Contextual teaching and learning (CTL) based learning usually incorporates direct experience in the learning process, so that students not only gain theoretical knowledge, but can also develop a more applicable scientific understanding (Lestari *et al.*, 2022; Riza *et al.*, 2024). CTL is a learning approach that emphasizes the active involvement of learners by connecting subject matter with real-world problems. This approach aims to develop higher-order thinking skills by integrating knowledge, personal experience, and its application in everyday life. CTL focuses on learners as the center of learning, where they are active in the learning process and become creative and critical problem solvers. This method is designed to make learning more fun and less monotonous. Although this approach is highly recommended for curriculum implementation, its practical application is still limited (Putri *et al.*, 2024). CTL involves seven main components in learning: constructivism, inquiry, questioning, learning community, modeling, reflection, and authentic assessment (Yanti, 2022).

CTL encourages learners to connect their learning process with the reality of life, improving problem-solving skills. This approach uses various methods, such as group discussions and projects, which create a more active and interactive learning atmosphere (Reddy & Revathy, 2024). Research shows that using e-modules impacts the learning achievement of learners who stand out (Admayanti *et al.*, 2024).

METHODS

The research conducted was development research (R&D) using the ADDIE approach: analysis, Design, Development, Implementation, and Evaluation (ADDIE) in learning products in e-modules "Aktualisasi Nilai-Nilai Pancasila dalam Kehidupan Sehari-hari." The ADDIE model was chosen because of its superiority in developing systematic and practical learning products (Spatioti et al., 2022). The ADDIE model has a revision process at each stage, so the e-module development is expected to be more structured. **Figure 1** below shows the stages of the ADDIE model**.**
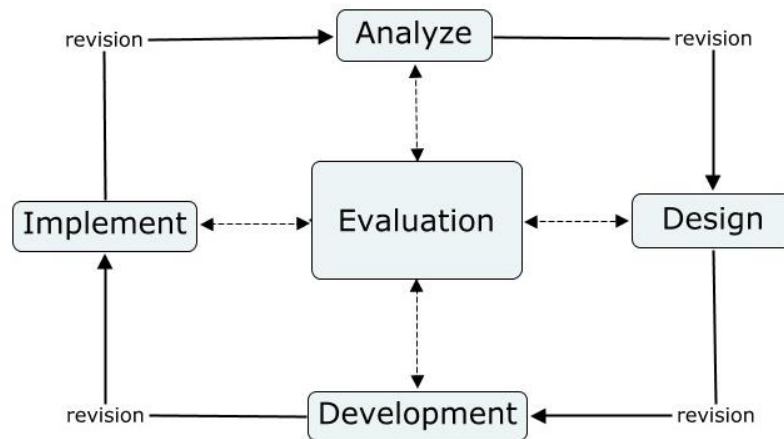
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Figure 1. ADDIE model
Source: *Spatioti et al. (2022)*

The main stage is the analysis stage. In this process, researchers analyzed the needs of prospective users of the developed e-module. Analysis activities were carried out at SMK Negeri 1 Kertak Hanyar to find out with analysis activities including 1) literature study related to the material of the application of Pancasila values in the daily lives of students; 2) interviewing prospective users to find out the needs of prospective e-module users. This step is carried out to design e-modules according to the planned learning needs. The media selection is based on the results of task analysis and field studies, as well as considering the characteristics of learners and product development objectives.

Furthermore, module design is carried out at the design stage based on the findings from the analysis stage. This module design includes learning objectives, relevant materials, and learning strategies according to students' character. In the development flow, the module was designed in a format that is easy to understand and practical to implement, including illustrations, case studies, and reflections that can help learners apply the values of Pancasila in their activities. The e-module was tested on a small group of learners for feedback.

At the implementation stage, the module is successfully implemented in the teaching process, where students are invited to actualize Pancasila's values directly in everyday situations, such as in social interactions and joint activities. Finally, at the Evaluation stage, the module's effectiveness is assessed based on learning outcomes and feedback from learners and educators. This evaluation also includes analyzing whether it can achieve the overall learning objectives.

The book "Instructional Design: The ADDIE approach" by Branch explains that the ADDIE approach provides a clear framework for systematic module development and allows for continuous modification based on feedback received during the implementation process. Data analysis using non-parametric statistics in this product development was analyzed with the Wilcoxon Signed Rank Test. The Wilcoxon Signed Rank Test was conducted to determine whether there was a significant difference between two paired data (pre and post test) that were not normally distributed. Data was analyzed with the help of IBM SPSS 25 software.

RESULTS AND DISCUSSION

Development Stage of Contextual Teaching and Learning (CTL)-based E-Module

The development of e-modules is driven by the need for learning media to facilitate learning Pendidikan Pancasila dan Kewarganegaraan (PKn). The final product of the development is in digital form and designed using the Canva application. After analyzing, the next step is to design and develop the e-

module. The initial design of making this e-module achieved optimal results by preparing 1) conducting literature studies or referring to sources that discuss procedures for making pocketbooks; 2) conducting interviews related to structuring school culture; 3) preparing all the materials needed to make pocketbooks, including designs, covers, PDF files, and other components that support learning materials; 4) using the Canva application.

Specifications of Developed E-Modules.

In appearance, this developed module is an electronic book in the form of Portable Document Format (PDF), whose use can be accessed through the Google Drive application. This CTL-based e-module measures 15.5 cm in height and 23 cm in width. Meanwhile, the file size of this e-module is 28 MB. This e-module consists of two categories of pages, 106 core pages and eight opening or dedication pages. This e-module also has a customized cover design consisting of front and back pages. The e-module display can be seen in **Figure 2** below.

Figure 2. CTL E-Module display
Source: Research 2024

Feasibility Test Results of Contextual Teaching and Learning-based E-Modules

After product development, the product was tested for feasibility. In the usability aspect, the material expert gave an assessment score of 16 out of a maximum score of 16 (100%), while the second material expert gave 15 out of a maximum score of 16 (93.8%). In the accuracy aspect, each material expert assessed 16 out of a maximum score of 16; the percentage of each expert's assessment was 00%. Regarding ease, each expert agreed to assess 20 out of a maximum score of 20 (100%). Each expert then assessed 16 out of a maximum score of 16, and the percentage of this assessment was 100% on the attractiveness of teaching materials. The average percentage of the two experts is 99.26, meaning that the material in this CTL-based e-module is declared very feasible and can be used as a choice of teaching materials for learning Citizenship Education. **Table 1** shows the assessment of each aspect by material experts.

Tabel 1. Assessment of Each Aspect of Validation by Material Experts

No	Aspect	Total Score of Material Expert	Score Max	Percentage (%)
1	Usability	14	16	87,50
2	Accuracy	19	20	95,00
3	convenience	13	16	81,25
4	Attractiveness	16	16	100,00
	Total	**62**	**68**	
	Total average (%)			**91,18**

Source: Research 2024

The developed e-modules were also assessed by teaching material experts to determine the effectiveness of the developed learning teaching materials. Teaching materials were validated by two expert lecturers of learning teaching materials from the faculty of social sciences and the faculty of education. A material expert assessed the first teaching material validation, and a media expert assessed the second. Teaching material experts assessed four aspects of assessment, consisting of 4 instruments assessing aspects of usefulness, six instruments assessing aspects of accuracy, four instruments assessing aspects of convenience, and three instruments assessing aspects of attractiveness. **Table 2** shows the assessment of each aspect by media experts.

Tabel 2. Assessment of Each Aspect of Validation by Media Experts

No	Aspect	Total Score of Material Expert	Score Max	Percentage (%)
1	Usability	15	16	93,75
2	Accuracy	15	16	93,75
3	convenience	16	16	100,00
4	Attractiveness	15	16	93,75
	Total	**61**	**64**	
	Total average (%)			**95,31**

Source: Research 2024

The results of the first teaching material expert assessment gave a teaching material assessment score of 61 out of a maximum score of 68. The percentage of teaching material assessment obtained was 89.71%, and notes were not provided for improvement. The first teaching material expert suggested adding relevant illustrations or images to the learning material. The second teaching material expert gave the maximum assessment score, with an assessment score of 68, and a percentage of 100%. The second teaching material expert gave suggestions so that the teaching materials developed could be accessed on the Google Book Store or other e-book providers. Table 3 shows the interpretation of each expert.

Table 3. Interpretation of Each Expert

No	Aspect	Validator	Skor Max of Theoretical	Empirical Score	Percentage	Interpretation
1	Material	Material Expert	68,00	62	91,18%	Very Feasible
2	Media	Media Expert	64,00	61	95,31%	Very Feasible
	Average		**66,00**	**61,50**	**93.18%**	**Very Feasible**

Source: Research 2024

Material and media experts' validation results showed an average score of 93.18% with very feasible criteria. The feasibility results of the developed e-module were obtained because this e-module was prepared by paying attention to the aspects of preparing a good e-module. This e-module was developed by paying attention to e-module aspects, including 1) clear learning objectives; 2) attractive graphic design; 3) ease of accessibility; 4) clear language use; 5) clear presentation of material. The validation sheet prepared considers these aspects, which are then summarized in 4 aspects of the feasibility of teaching materials, so that this e-module can get maximum validation results. Feedback from experts also received a positive response overall, and suggestions for improvements that can build electronic module products.

Practicality Test Results of E-Modules based on *Contextual Teaching and Learning* (CTL)

After testing the feasibility of the Contextual Teaching and Learning (CTL)-based e-module, the practicality of the e-module was tested. This e-module obtained aspects of acceptance of teaching materials from prospective users, with an average of below 80% at the small-scale practicality test stage. This is because in the early stages of developing teaching materials, this e-module still has shortcomings, such as the lack of selected images and illustrations, incomplete material, and inconsistent paragraphs. These deficiencies were obtained from suggestions for improvement by prospective users. This e-module obtained an average increase of 7% at the large-scale user trial stage, illustrated in **Figure 3**. The e-module has been developed and improved according to experts' suggestions from prospective users at the small-scale trial stage.
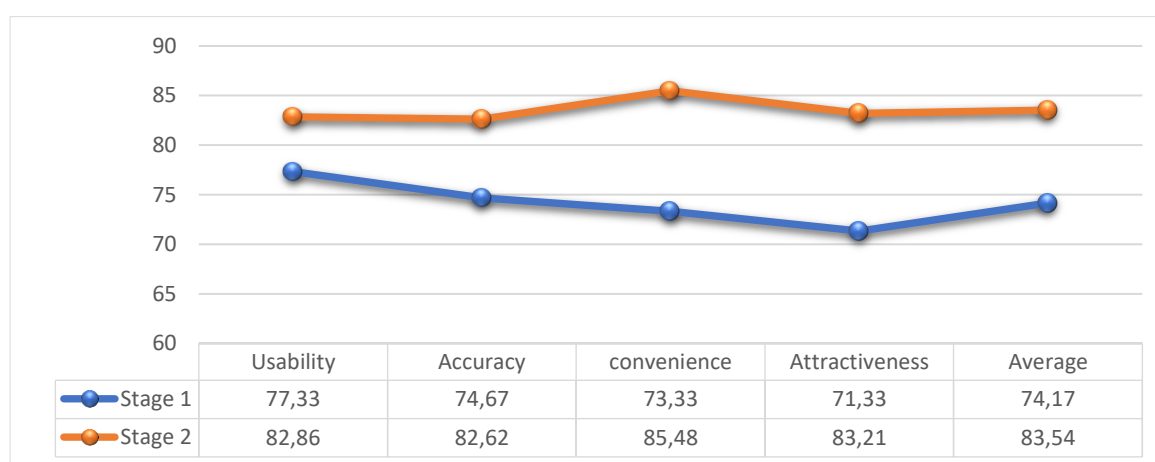
	Usability	Accuracy	convenience	Attractiveness	Average
Stage 1	77,33	74,67	73,33	71,33	74,17
Stage 2	82,86	82,62	85,48	83,21	83,54

Figure 3: Increase in Prospective User Assessment on Large-Scale Trial
Source: Research 2024

The effectiveness test of the developed e-module was conducted to measure Creativity, Critical Thinking, Communication, and Collaboration (4C) skills using modified 4C skill indicators. Testing is done by utilizing pre-test and post-test instruments. The test was conducted on 46 students of SMK Negeri 1 Kertak Hanyar. **Table 4** shows the results of the normality test.

Tabel 3. Result of The Normality Test

One-Sample Kolmogorov-Smirnov Test		
	Pre-Test	*Post-Test*

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One-Sample Kolmogorov-Smirnov Test			
N		56	56
Normal Parameters[a,b]	Mean	75.1477	90.9814
	Std. Deviation	6.16457	5.59687
Most Extreme Differences	Absolute	.207	.224
	Positive	.203	.224
	Negative	-.207	-.219
Test Statistic		.207	.224
Asymp. Sig. (2-tailed)		.000[c]	.000[c]

a. Test distribution is Normal.

b. Calculated from data.

c. Lilliefors Significance Correction.

Source: Research 2024

The results of the normality test in **Table 4** using the Shapiro-Wilk test are the sig. Pre-test value of 0.004 and the sig. Post-test value of 0.001. The sig. The pre-test and post-test values are smaller than 0.05, meaning the data obtained is not normally distributed. Researchers then chose the non-parametric statistical Wilcoxon signed rank test to determine the effect of CTL-based e-module teaching materials in developing students' 4C skills (Creativity, Critical Thinking, Communication, Collaboration). The results of the Wilcoxon signed rank test obtained can be seen in **Table 5** as follows.

Tabel 4. The Result of The Wilcoxon Rank Test

Wilcoxon Rank Test				
		N	*Mean Rank*	*Sum of Ranks*
PostTest PreTest	- Negative Ranks	0[a]	.00	.00
	Positive Ranks	56[b]	28.50	1596.00
	Ties	0[c]		
	Total	56		

a. posttest < pretest

b. posttest > pretest

c. posttest = pretest

Source: Research 2024

The Wilcoxon Rank Test results in **Table 5** in this study did not show any negative ranks. Negative rank values were not found in the N parameter, mean rank, or sum rank. This shows that there is no reduction in the results before and after the test given to students. This table shows that 46 learners experienced a strengthening of 4C skills from the pre-test and post-test results. This is evidenced by the N positive rank, which shows that the number 46 for all learners has increased. The average increase or rank is 23.50, while the sum of positive ranks or the sum of ranks is 1081.00. In the data obtained, there is no similarity in the pre-test and post-test scores as evidenced by the ties value is 0. **Table 6** shows the results of the Wilcoxon signed rank test calculation.

Tabel 5. The Result of The Wilcoxon Test Statistics

Test Statistics[a]	
	Posttest-pretest
Z	-6.589[b]
Asymp. Sig. (2-tailed)	.000
a. Wilcoxon Signed Ranks Test	
b. Based on negative ranks.	

Source: Research 2024

The Wilcoxon signed rank test calculation results obtained a value of Z = -5.945 with the acquisition of asymp sig. (2-tailed) 0.000 <0.05. These results indicate that the acquisition of asymp sig. (2-tailed) is less than 0.05, which means that there is an effect of using e-modules based on contextual teaching and learning to support 4C skills in Pancasila Education lectures. The Wilcoxon signed rank test results are the results of a non-parametric statistical test, meaning that the results only apply to the trial group and need to be proven further for different class conditions.

The developed e-module quantitatively received a relatively high product acceptance score and effectiveness. This can be seen in the results of the validation of the e-module material, with a score of 91.18%, and from the validation results received from the media expert of 93.18%, which means it is within very feasible criteria. At the small-scale practicality test stage, the score was 74.17% while the large-scale score was 83.54%. This means that this e-module has received a decent practicality score from prospective users and can be used as a learning reference for them. Meanwhile, the effectiveness test results using the Wilcoxon signed rank test calculation obtained a value of Z = -6.589b with asymp sig. (2-tailed) 0.000 <0.05, meaning that the use of CTL-based e-modules has an impact in encouraging student learning outcomes on the material aspect of applying Pancasila values in daily routines.

Discussion

E-modul berbasis CTL yang dikembangkan membuktikan keefektifan dalam mengoptimalkan hasil belajar peserta didik dalam aspek substansi aktualisasi nilai-nilai Pancasila dalam keseharian. Efektivitas ini ditunjukkan melalui peningkatan signifikan skor *post-test* dibandingkan *pre-test*, sebagaimana terukur melalui uji *Wilcoxon Signed Rank Test*. Hasil ini konsisten dengan penelitian sebelumnya yang menggarisbawahi potensi CTL dalam membuat pembelajaran lebih relevan dan aplikatif bagi peserta didik (Gafur, 2010; Ramadhan et al., 2023).

This e-module successfully integrates multimedia elements that are not only informative but also interactive, such as text, images, audio, video, quizzes, simulations, and context-based projects. These elements increase learners' motivation to learn and actively participate in learning. Integrating interactive elements improves learners' participation and understanding (Pratama et al., 2024). The interactivity allows learners to be directly involved in practical learning experiences, in line with the principles of CTL, namely relating, experiencing, applying, cooperating, and transferring (Gafur, 2010). In addition, this e-module is comprehensively designed with attention to ease of navigation, attractive appearance, and clarity of material delivery. Features such as context-based projects allow learners to understand the relevance of Pancasila values in their real-life situations, such as social interactions or contributions within the school and community environment. The ADDIE development model with 5 stages starting from analysis, design, development, implementation and evaluation applied has successfully helped researchers in carrying out research systematically, practically and carried out in sequentially directed stages (Izach et al., 2024; Rahmawati et al., 2023; Rejeki et al., 2023).

The improvement of 4C skills is one of the significant contributions of using this e-module. Learners' creativity skills are enhanced through simulation activities and projects that require problem solving with innovative approaches. Critical thinking skills are developed through quizzes and reflective questions that encourage learners to analyze and evaluate concepts. The importance of communication and collaboration in 21st century teaching is facilitated through group discussions and cooperation on project-based tasks. The use of e-modules in the teaching and learning process makes these activities more interesting, effective, and dynamic, and has a positive impact on mastery of competencies in the field of Pancasila education knowledge (Friska et al., 2023). The combined use of e-modules with CTL can effectively improve learning outcomes (Anggraini et al., 2023). E-modules developed with CTL-based materials can provide examples of the application of learning materials in everyday life, so that students more easily understand and apply the values of Pancasila (Arifuddin et al., 2023; Saputra & Usmeldi, 2021). The results of e-module development are not limited to improving students' cognitive understanding, but also enriching the affective dimensions and 21st century skills, important in dealing with global world problems and the needs of the modern workforce. By providing a holistic learning experience, this e-module successfully answers the challenges of Pancasila Education, which is often considered abstract and less relevant.

CONCLUSION

The results of this study imply that the development of CTL-based teaching materials can be an effective strategy in learning Pancasila Education, especially at the SMK level. By adopting this approach, students are equipped with theoretical knowledge and trained to internalize and apply the values of Pancasila in everyday life. The success of this e-module also inspires the development of similar teaching materials in other subjects. As a future step, integrating e-modules with mobile-based and offline e-learning platforms can be a solution to increase their accessibility and flexibility. However, some challenges were still found in the pilot stage, especially related to the completeness of the material and the less-than-optimal use of illustrations in the early stages of development. This indicates the need for improvement in graphic design and material presentation structure to make it more comprehensive and attractive. In addition, the accessibility of e-modules that still depend on the internet is also a concern, especially for students in areas with limited technological infrastructure. The results of the development of CTL-based e-modules are helpful as a basis for evaluation for further research with different topics, such as integrating models, approaches, and other media in Pancasila education subjects.

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