



Developing Pancasila education e-module using Panrita Lopi context and Wordwall media to foster the fifth graders' learning motivation and national character

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Abstract

The Pancasila education e-module based on Panrita Lopi culture integrated with Wordwall media was developed to strengthen students' motivation and national character. Pancasila education is a subject that teaches Indonesia's national ideology called Pancasila, while Panrita Lopi refers to a local maritime cultural value emphasizing wisdom and craftsmanship in boat-making from South Sulawesi. This study aims to (1) develop the e-module, (2) analyze its validity, (3) analyze its practicality, and (4) analyze its effectiveness on students' motivation and national character. The method used is Research and Development (R&D) with the ADDIE development model developed by Dick and Carey, involving 29 fifth-grade students of SD Negeri 27 Matekko. The developed e-module features interactive learning content, cultural contextualization, and game-based evaluation through Wordwall media. The results indicate that the e-module is highly feasible, practical, and effective for use in learning. This is evidenced by validation results from media, material, and cultural experts, each obtaining a score of 100% (very valid). Practicality is shown by teacher responses (99%) and student responses (97%), as well as motivation (97) and national character (95) in very good categories. Effectiveness is demonstrated by an increase in pretest scores (77) to posttest (94), normal data distribution, and paired sample t-test results (sig. 0.001 < 0.05), indicating H_0 is rejected and H_a is accepted. The N-Gain result (0.7107 > 0.70) is categorized as very effective. Thus, the e-module is valid, practical, and effective, and significantly improves students' motivation and national character.

Keywords: e-module, motivation, national character, Pancasila education, Panrita Lopi culture, Wordwall

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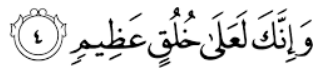
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INTRODUCTION

Pancasila education is a form of national ideology education that aims to shape citizens with character who understand their rights and responsibilities. This learning also enhances students' knowledge, critical thinking skills, and involvement in their environment (Rahmandani et al., 2024). Pancasila education focuses on embedding the Pancasila ideology into educational materials to cultivate students' character. According to Fadillah & Arwin (2025), it plays a crucial role in instilling moral values and shaping the behaviour and actions of the younger generation, guiding them to act in accordance with Pancasila principles. Pancasila education is a long-term investment for the sustainability of the Indonesian nation. Educators pass on to future generations knowledge, skills, character, and enthusiasm for Indonesia's progress (Usmi & Samsuri, 2022). In the context of character building, the Qur'an emphasises the importance of noble character, as stated in QS. Al-Qalam (68) verse 4.



which means, “and indeed, you are truly of noble character”.

As a foundational value in character education, noble character is positioned as an essential goal to be achieved by learners. This verse emphasises noble character as an ideal to be pursued in shaping students’ attitudes and behavior in everyday life. In line with this meaning, Dewi and Setiawan (2022) states that Pancasila education is not only aimed at transferring knowledge but also at shaping the character of students, making them responsible for themselves and their environment, which is in line with the mission of Pancasila education.

The mission of Pancasila education is to shape good citizens who can actively and responsibly participate in society through the development of knowledge, character, and civic skills. However, its implementation faces challenges due to technological advancement and the openness of information systems that influence the mindset of the younger generation (Ifani et al., 2025). In addition, differences in curriculum, learning methods, and educators’ understanding of Pancasila education also hinder its dissemination (Usmi & Samsuri, 2022). Therefore, innovative solutions are needed, such as integrating technology through interactive online platforms, multimedia learning, and local wisdom–based learning (Parhan & Sukaenah, 2020; Julaidar et al., 2024). Pancasila education requires innovation to address implementation challenges, as its goal goes beyond mere knowledge mastery. It seeks to cultivate students’ existential awareness as integral members of the Indonesian nation, enabling them to internalize Pancasila values not only cognitively but also as guiding principles in their daily lives (Aisyah et al., 2024). Therefore, further identification and strategies are needed to overcome the challenges in its implementation.

Observations and needs analysis conducted with the Grade V homeroom teacher at SD Negeri 27 Matekko on 15 September 2025 revealed that Pancasila education was not fully effective, as students showed low learning motivation and weak national character. The motivation questionnaire indicated that 41.2% of students lacked initiative to learn, 38.8% struggled to appreciate their learning, 41.4% found the learning environment uncondusive, and 41.2% had low interest in activities. The nationalism survey showed 35.5% of students had low concern for preserving culture, 42.2% rarely used national products, 45.5% had difficulty cooperating across differences, and 42.2% were not actively involved in national activities. Teacher interviews revealed that students’ low enthusiasm stemmed from unengaging, non-interactive media, while their interest in devices like phones and iPads showed the need for culturally integrated, interactive digital media such as e-modules.

Based on these conditions, a needs analysis shows the need for innovative learning media that can combine technology with the local cultural context in order to increase student motivation and national character. Based on the various factors described above, the causes of low learning motivation and national character among students can be illustrated through the following cause-and-effect diagram (See Figure 1).

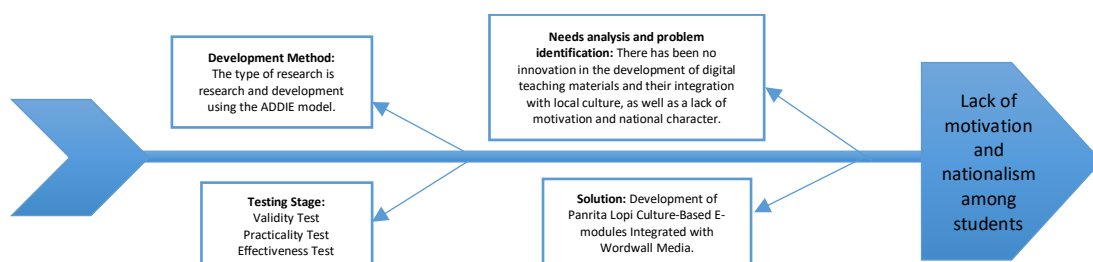


Figure 1. Cause-and-effect diagram for the needs analysis

The diagram indicates that students' low motivation and national character result from limited use of local-culture-based teaching materials and lack of digital tools like interactive e-modules, underscoring the need to develop culturally relevant e-modules that enhance motivation and nationalism.

This study develops a Panrita Lopi culture-based e-module integrated with Wordwall to enhance students' learning motivation and national character. Panrita Lopi refers to a local wisdom from South Sulawesi related to traditional boat-building knowledge and skills of the Bulukumba community, which embodies values such as cooperation, perseverance, and responsibility. By combining local cultural values with digital media, the e-module provides contextual, meaningful, and interactive learning that supports character education and strengthens national values (Celik & Baturay, 2024; Ruswinarsih, 2025; Yuliani & Anas, 2025). E-modules are digital teaching materials that allow students to learn anytime via devices like laptops and mobile phones (Yani & Oktarina, 2024). Interactive e-modules use text, images, animations, and videos to engage students and encourage active participation, and can be enhanced by integrating local culture and digital media like Wordwall (Rasyih et al., 2024).

Wordwall is an application that can function as an interactive learning medium and online assessment tool that increases student participation through unique and engaging features (Ningtia & Rahmawati, 2022; Rahmawati & Suryani, 2022; Safitri et al., 2022). Integrating technology-based learning with local cultural values is considered an innovative approach that can enhance the attractiveness and relevance of learning (Muzaki et al., 2022). Game-based learning such as Wordwall is more effective in increasing elementary students' motivation compared to static media because it provides immediate feedback, interactive challenges, and elements of competition, which can stimulate students' interest, engagement, and active participation in the learning process. Therefore, the integration of local culture-based e-modules with Wordwall digital media is expected to support students' learning motivation and strengthen their national character.

Learning motivation is defined as students' enthusiasm in the learning process (Zakiyyah et al., 2022). One factor that influences motivation is the support from teachers and parents who encourage students to actively participate in meaningful decision-making (Bureau et al., 2022). Furthermore, according to Gluoksnyte & White (2025), motivation is also influenced by an effective learning environment. Motivated students tend to be more open to discussing, sharing ideas, and completing tasks with their group mates. The positive energy from this motivation can be directed towards fostering a love for the country and pride in the nation's culture, which form the basis of students' national character.

Nationalism refers to a sense of pride and belonging toward one's homeland and nation (Saputra et al., 2023). The development of nationalism attitudes is part of character education aimed at building national character (Susanti & Prahastiwi, 2025), which can be fostered through local cultural content such as cultural diversity and folklore (Wahyani et al., 2022). In primary schools, strengthening national character is carried out through Pancasila Education by instilling knowledge and attitudes of love for the country (Saputra et al., 2023). Therefore, innovative learning approaches are needed, such as developing e-modules based on the local culture of Panrita Lopi integrated with Wordwall media.

Previous studies show that e-modules are effective in learning. Idayanti et al. (2024) found them feasible and high-quality for fifth grade students, while Razi (2024) reported high validity and practicality, with positive teacher and student responses due to ease of use, attractiveness, and support for independent learning, indicating that e-modules improve learning quality.

However, previous studies have not specifically integrated local cultural values such as Panrita Lopi with game-based digital media like Wordwall in Pancasila education learning. In addition, the use of Panrita Lopi culture as a contextual basis is still limited, even though it contains values relevant to character education, while Wordwall is chosen because it provides

interactive and engaging learning experiences that can enhance students' motivation. Based on this gap, it is necessary to develop a culture-based e-module integrated with digital media. Therefore, this study aims to develop Pancasila e-modules using Panrita Lopi culture integrated with Wordwall media to foster the motivation and character of nationalism of fifth grade students at SD Negeri 27 Matekko.

RESEARCH METHOD

This study used the ADDIE development model consisting of analysis, design, development, implementation, and evaluation (Waruwu, 2024). In the analysis stage, the researcher identified the needs of teachers and students in Pancasila education learning. In the design stage, a conceptual framework of the e-module was developed based on the needs analysis. In the development stage, the e-module was created through five learning steps: motivation and ice breaking, reading, observing, practicing, and reflection. These steps were integrated with five values of Panrita Lopi culture, namely *Appasili and Ammossi*, *Pammasangan Layara*, *Passiturukang*, *Annyorong Lopi*, and *Nipakahajikang*. Practice questions were integrated with Wordwall, and the final e-module was published via Heyzine and shared through a link for students and teachers.

The developed e-module was validated by two media experts, two material experts, and one cultural expert. The participants consisted of 29 fifth-grade students. Data were collected using questionnaires and tests. Questionnaires were used to obtain validation, practicality, and effectiveness data, while pretest and posttest instruments were used to measure students' understanding and abilities regarding the material learned through the e-module. Data analysis was conducted using descriptive and inferential statistics with SPSS version 30, including normality tests, paired sample t-tests, and N-Gain analysis. This study is limited to a sample from one class in a single school with a total of 29 students.

RESULTS AND DISCUSSION

The result of this research is a product in the form of a Pancasila education e-module based on Panrita Lopi culture integrated with Wordwall media, which was developed through the stages of analysis, design, development, implementation, and evaluation. The discussion of the research results covers the characteristics of the e-module, the conceptual design of the e-module, its validity, practicality, and effectiveness. These five components are described to provide a comprehensive overview of the quality of the product developed, as well as its implications for increasing the motivation and national character of fifth-grade students at SD Negeri 27 Matekko.

Analysis for the characteristics of Panrita Lopi e-module needs

The Panrita Lopi culture-based Pancasila Education e-module integrated with Wordwall was developed from a needs analysis of teachers and students at SD Negeri 27 Matekko. Observations and interviews revealed the need for contextual, culturally-based, and interactive teaching materials to boost students' motivation and national character. These findings then became the basis for the design and development of e-modules, so that the characteristics of the resulting products were a direct response to the needs of teachers and students.

Teachers and students need analysis

Based on the results of observations and needs analyses conducted with the homeroom teacher of Grade V at SD Negeri 27 Matekko, Gantarang Subdistrict, Bulukumba Regency, on 15 September 2025, it was found that the implementation of Pancasila education was not yet fully optimal. This was evident in the low learning motivation and national character of the students. Based on the results of the needs analysis questionnaire, students' learning motivation was found to be relatively low. Students showed limited initiative in understanding the material,

lacked appreciation for their learning process and results, and considered the learning environment less supportive for concentration. In addition, students showed low interest and were not actively involved in the learning process.

The results of the nationalism questionnaire and interviews with the Grade V teacher showed that students' concern for preserving regional and national culture was low. They were not accustomed to prioritizing domestic products, showed limited cooperation across differences, and rarely participated in activities that foster love for the country. At the same time, students displayed high enthusiasm for using digital devices such as mobile phones and iPads, which were not yet integrated into learning. Observations and needs analysis confirmed that learning still relied on printed modules repeatedly used each year, without the use of e-modules or integration of Panrita Lopi cultural values and interactive media like Wordwall.

This situation highlighted the lack of innovative teaching materials suited to students' characteristics and needs. Therefore, the study developed a Panrita Lopi culture-based e-module integrated with Wordwall, designed systematically and contextually to support teachers, enhance student engagement and motivation, and strengthen national character, based on the independent curriculum and a deep learning approach.

Material needs analysis

The material analysis was conducted by examining learning outcomes, learning objectives, and indicators in accordance with the Merdeka Curriculum based on a deep learning approach. The material focused on cultural diversity in Unit 3, "My Identity and My Environment", specifically the integration of Panrita Lopi culture as local wisdom in Bulukumba Regency. Through this analysis, the researcher adjusted the content of the Pancasila Education e-module to support the achievement of student competencies, particularly in cultural diversity.

The scope of the material covers the cultural diversity of Indonesia, Panrita Lopi culture as local wisdom in Bulukumba Regency, the integration of Panrita Lopi cultural values in character building, the importance of respecting and preserving culture, the values of Pancasila in preserving Pinisi boat culture, and the meaning of Panrita Lopi culture in learning. In addition, the Pancasila Education e-module is also equipped with visual learning videos that aim to help students understand the material more clearly and increase their involvement in the learning process. Thus, the development of the e-module is not only oriented towards achieving knowledge competencies, but also towards strengthening the character and nationalism of students in a contextual and meaningful way.

Design stage of Panrita Lopi e-module

The design stage aimed to plan the development of a Panrita Lopi culture-based e-module integrated with Wordwall media. At this stage, a conceptual framework was created to address students' low learning motivation and national character by strengthening cultural values and using interactive learning media. The design process included the preparation of e-module components, material/content design, flowchart development, and storyboard design.

Designing e-module components

The Pancasila Education e-module design includes several components: the e-module cover, motivation and ice breaking, let's read, let's observe, let's practice, and let's reflect. These components are systematically arranged to support interactive learning, increase student engagement, and help students understand the material more effectively to achieve the learning objectives.

Content/material design

The design and development of the content/material of the Pancasila Education e-module are intended to support deep, meaningful, independent, and contextual learning in accordance with the characteristics and needs of elementary school students. The stages are as follows.

Motivation and ice breaking. The motivation and ice breaking in the learning are in line with the cultural values of *Appasili* and *Ammossi* (ritual to ward off evil) in the Panrita Lopi culture, because both emphasise the importance of building good intentions, inner peace, and self-preparedness before starting an activity, so that students are more focused and enthusiastic in following the learning process. Figure 2 presents the implementation of motivation and ice breaking activities as displayed in the e-module.



Figure 2. Motivation and ice breaking activities.

Let's read. The let's read activity is in line with the Panrita Lopi cultural value of *Pammasangan layara* (See Figure 3). The meaning of *Pammasangan Layara* in Panrita Lopi culture refers to the process of setting sail as a symbol of readiness to sail and face various challenges at sea. This value reflects courage, determination, and the resolve to continue the journey despite obstacles.



Figure 3. Let's read activities.

Let's observe. The let's observe activity is in line with the value of *Passiturukang* between *Punggawa* and *Sawi* in the Panrita Lopi culture, because both emphasise that the learning process, including when students listen to and understand material through videos, should be done with sincerity and awareness that the knowledge gained will benefit themselves and others (See Figure 4).

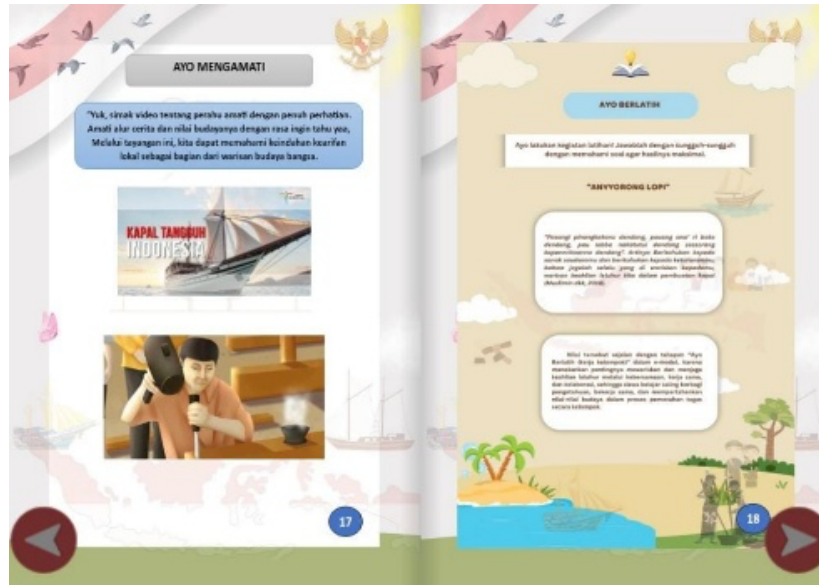


Figure 4. Let's observe activities.

Let's practise. The let's practise activity is in line with the Panrita Lopi cultural value of *Anyyorong Lopi*, as both emphasise the importance of maintaining and passing on skills through togetherness and cooperation, so that practising questions, especially in group work, encourages students to share knowledge and maintain the values learned in the task-solving process (See Figure 5).



Figure 5. Let's practice activities.

Self-reflection. Self-reflection activities in the e-module align with the Panrita Lopi cultural value of *Nipakahajikang*, which emphasizes correcting mistakes. These activities guide students to review their completed tasks, recognize their shortcomings, and make gradual improvements, helping to develop a sense of responsibility and a commitment to continual personal growth (See Figure 6).

REFLEKSI DIRI

1. Bagaimana perasaanmu setelah mengikuti pembelajaran hari ini? Apakah kamu merasa senang, tertarik, atau masih ada yang ingin kamu pelajari lagi?

2. Bagian mana dari kegiatan belajar hari ini yang paling kamu sukai, dan mengapa bagian itu terasa menyenangkan bagimu?

3. Apa hal yang menurutmu sudah kamu lakukan dengan baik selama pembelajaran, misalnya: berani bertanya, bekerja sama, atau mendengarkan teman?

4. Hal apa yang ingin kamu perbaiki atau ubah pada pembelajaran berikutnya agar kamu bisa belajar dengan lebih baik lagi?

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Figure 6. Self reflection activities.

Flowchart design

The flowchart is designed to visualise the stages of e-module usage, starting from the presentation of material, student learning activities, to the reflection stage, including the integration of Panrita Lopi culture-based interactive quizzes on Wordwall media. On the menu page (Home), the flowchart displays nine main menus, namely cover, foreword, table of contents, motivation and ice breaking, let's read, let's listen, let's practise, let's reflect, and bibliography. Each menu is connected via arrow navigation buttons that automatically direct students to the selected section.

Storyboard design

A storyboard is a development of a flowchart that shows the sequence of learning content in an e-module. In the Panrita Lopi culture-based Pancasila education e-module integrated with Wordwall, the storyboard includes a cover page, foreword, and table of contents for navigation. The main section consists of motivation and icebreaker activities, *let's read* for material understanding, *let's observe* with learning videos, *let's practice* with Wordwall-based exercises, and *let's reflect* for evaluation. The final section provides a bibliography as a reference source for the e-module development.

The conceptual design of the Panrita Lopi culture-based Pancasila Education e-module integrated with Wordwall media was developed based on the needs analysis, which revealed low learning motivation, insufficient reinforcement of students' national character, and reliance on printed teaching materials that did not integrate local cultural values. In response, a digital e-module was created to combine Panrita Lopi cultural values with interactive Wordwall media, offering a more contextual, engaging, and meaningful learning experience. At this stage, learning

objectives and research instruments, including learning tools, a nationalism and motivation questionnaire, expert validation sheets, and a learning outcome test, were also developed.

The product design involved systematically arranging the material structure and flow. The e-module was packaged as a digital flipbook using Heyzine, while visual elements were designed in Canva to create an attractive and interactive appearance. Panrita Lopi cultural values, such as hard work, mutual cooperation, responsibility, and love of the homeland, were integrated into Pancasila Education materials. Wordwall was utilized as an interactive practice tool, providing students with immediate feedback.

The e-module features five main menus motivation and icebreaker, let's read, let's listen, let's practice, and let's reflect designed to engage students, present contextual material with local cultural values, reinforce understanding through videos, provide interactive Wordwall quizzes, and help internalize Pancasila values. By combining local culture with digital interactivity, it effectively boosts motivation and strengthens national character, supporting Pancasila Education for fifth graders at SD Negeri 27 Matekko. The product can be seen in Appendix.

Developing stage

The validity of the Panrita Lopi culture-based Pancasila education e-module integrated with Wordwall was ensured through production, expert validation, and limited trials, covering content, design, cultural integration, and Wordwall use to confirm its feasibility and effectiveness.

The production

The production stage of the Panrita Lopi culture-based Pancasila Education e-module integrated with Wordwall media was carried out using Heyzine (digital flipbook) and Canva to create an attractive design suitable for students. The material was compiled from books and scientific sources, then enriched with learning videos from YouTube and interactive evaluation activities through Wordwall. The development process included material preparation, design editing, structure and navigation design, integration of interactive media, addition of audio-visual elements, functional testing, and publication as a digital flipbook.

The expert validation results

The media developed in this study is a Pancasila education e-module based on Panrita Lopi culture, integrated with Wordwall and delivered via the Heyzine platform to support learning. Its validity was assessed by media, material, and cultural experts. Media and material experts each gave a score of 100, with recommendations to adjust the cover design and enlarge the font for readability, while cultural experts suggested correcting the term *Pammasangan Papan Layara* to *Pamassangan Layara*. After these revisions, the e-module was rated 100 by all validators, placing it in the 81%-100% feasibility range and categorizing it as strongly valid.

Revisions

Revision, following validation by instrument, media, material, and cultural experts, ensures the Panrita Lopi culture-based Pancasila Education e-module with Wordwall is suitable for use. The first instrument validator recommended no changes, while the second suggested adding a student response questionnaire.

In the media expert validation, the first validator approved the e-module as is, while the second recommended adjusting the cover to better reflect the Panrita Lopi cultural theme. In the material expert validation, the first validator also stated that the material could be used without revision, whereas the second validator recommended increasing the font size to improve readability for teachers and students. Meanwhile, the Panrita Lopi cultural expert suggested revising the spelling of a cultural term in section 2 of the e-module, changing *Pamasangan Papan Layara* to *Pamassangan Layara* because the previous term was considered

inaccurate. All suggestions and revisions from the validators were followed up by the researcher. After these revisions, the e-module was declared feasible and approved for further testing in the learning process.

Implementation stage

The practicality of the Pancasila education e-module was evaluated through observations of learning implementation and questionnaire responses from teachers and students in small and large group trials. This evaluation aimed to assess the ease of use of the Pancasila culture-based e-module integrated with Wordwall media.

The small group testing results

In the product trial on January 19, 2026, at SD Negeri 27 Matekko, the Pancasila culture based Pancasila Education e-module integrated with Wordwall was tested with 15 fifth-grade students. Teachers observed the learning process and evaluated the e-module's practicality using observation sheets and teacher and student response questionnaires.

Observation results. Observation of the implementation of learning using the Pancasila education e-module for class V of SD Negeri 27 Matekko was observed by the class V teacher. The observer observed the implementation of learning using the Gutman assessment scale, namely the answer choices Yes and No. Yes if implemented and No if not implemented. The scores and criteria can be seen in the Table 1.

Table 1. Results of observations on learning implementation

Observer	Score	Category
Class V homeroom teacher	$\frac{14}{15} \times 100 = 93$	Very good

Based on the observer's observations in the table above, the overall learning implementation was deemed very appropriate/excellent. The observer's assessment showed that the learning implementation achieved a score of 93, which is in the 81%–100% range, making it a very good qualification.

Student response questionnaire results. A questionnaire was completed by fifth-grade students, using a rating scale with the options of very practical, practical, not practical, and very impractical. Scores and criteria are presented in Table 2.

Table 2. Student response questionnaire results

Observer	Score	Category
Fifth grade students (15 students)	96	Very good

Based on student responses, the Pancasila education e-module was generally deemed highly practical. A fifth-grade teacher's response received a score of 96, placing it in the highly practical category, with a percentage range of 81%–100%.

The large group testing results

In the large group testing, the Pancasila culture-based Pancasila education e-module integrated with Wordwall was implemented on January 26, 2026, at SD Negeri 27 Matekko with 29 fifth-grade students. The teacher acted as an observer and evaluated the practicality of the e-module through observations of learning implementation and questionnaires from teachers and students.

Observation. Observation of the implementation of learning using the Pancasila education e-module for class V of SD Negeri 27 Matekko was observed by the class V teacher. The observer

observed the implementation of learning using the Gutman assessment scale, namely the answer choices Yes and no. Yes if implemented and No if not implemented. The scores and criteria can be seen in Table 3.

Tabel 3. Results of observations on learning implementation

Observer	Score	Category
Class V homeroom teacher	$\frac{15}{15} \times 100 = 100$	Very good

Students' response. A questionnaire was conducted to assess fifth-grade students' responses to the practicality of the Pancasila Education e-module at SD Negeri 27 Matekko. The questionnaire used a rating scale with four options: very practical, practical, not practical, and very impractical. The corresponding scores and criteria are presented in Table 4.

Tabel 4. Student response questionnaire results

Observer	Score	Category
Fifth-grade students (29 students)	97	Very good

Based on the results of student responses, the Pancasila education e-module was generally categorized as very practical. The fifth-grade teacher's response also showed a score of 97, which falls within the 81%–100% qualification range, indicating that the e-module is very practical to use in learning.

Teacher response questionnaire. Teacher responses to the practicality of using the Pancasila Education e-module were assessed by fifth-grade teachers. The assessors filled out a questionnaire on teacher responses to the practicality of using the Pancasila education e-module using a rating scale, with the answer choices being very practical, practical, impractical, and very impractical. The scores and criteria are shown in Table 5.

Tabel 5. Teacher response questionnaire results

Observer	Score	Category
Class V homeroom teacher	$\frac{80}{85} \times 100 = 95$	Very good

Based on the teacher response results, the Pancasila education e-module was categorized as very practical. The fifth-grade teacher gave a score of 95, which falls within the 81%–100% qualification range, indicating that the e-module is very practical for use in learning.

The practicality of the Panrita Lopi culture-based Pancasila education e-module integrated with Wordwall media was demonstrated through learning implementation observations and teacher and student response questionnaires. In the small group trial, learning implementation scored 93 (very good), and in the large group trial 100 (very high), showing a structured, interactive, and well-organized learning process. Teachers effectively connected material to students' real-life experiences and local culture, while students actively engaged through quizzes and educational games on Wordwall, enhancing participation and confidence. Teacher and student responses were also high, with averages of 95–96 in the small group and 97–99 in the large group, indicating that the e-module is easy to use, engaging, and supportive of learning. Its practicality was strengthened by easy access, clear instructions, attractive design, structured layout, and the integration of Panrita Lopi cultural values, providing meaningful, contextual learning (Manurung et al., 2025; Dwihana et al., 2025).

The integration of Wordwall media further enhanced practicality by offering interactive learning activities that increase motivation and support assessment. According to Husna and Kusumadewi (2025), Wordwall is effective for interactive learning and assessment design.

Firdaus et al., (2025) added that Wordwall also supports cognitive, affective, and social development by fostering cooperation, responsibility, and respect, which are key values in Pancasila Education. The combination of ease of use, clear and attractive design, integration of local culture, and interactive digital media makes the Panrita Lopi culture-based e-module highly practical and suitable for implementation in fifth-grade learning.

Evaluation stage on the effectiveness of Panrita Lopi e-module

The effectiveness of the Pancasila education e-module was assessed using nationalism and motivation questionnaires, as well as pretest and posttest results from fifth-grade students at SD Negeri 27 Matekko in both small and large group trials. The test aimed to determine how effectively the Panrita Lopi culture-based e-module integrated with Wordwall media improves students' motivation and national character.

Effectiveness evaluation in the small group testing

The small-group effectiveness test involved 15 fifth-grade students at SD Negeri 27 Matekko, using questionnaires on motivation and national character, along with pretest and posttest results.

Motivation questionnaire results. A questionnaire on students' motivation was used in a small group trial to determine the effectiveness of the Pancasila Education e-module based on Panrita Lopi culture integrated with Wordwall media. Data were obtained by completing the questionnaire after learning using the e-module. The questionnaire results are presented in Table 6.

Table 6. Motivation questionnaire results

No	Indicator of Learning Motivation	Minimum Score	Maximum Score	Percentage
1	There is a desire and wish to learn	78	80	97.5%
2	There is appreciation in learning	79	80	98.7%
3	Creating a conducive learning atmosphere	77	80	96.2%
4	Interest in learning	80	80	100%
	Average			98%

After using the Panrita Lopi culture-based Pancasila education e-module integrated with Wordwall, students' motivation indicators showed high percentages: desire to learn 97.4%, appreciation in learning 98.3%, conducive learning atmosphere 96.6%, and interest in learning activities 99.1%. Overall, the average was around 98%, indicating that students' learning motivation is very high.

National character questionnaire results. A questionnaire on national character was also used in a small group trial. The questionnaire results are presented in Table 7.

Table 7. Results of the national character questionnaire

No	Indicators of National Character	Minimum Score	Maximum Score	Percentage
1	Preserving Indonesian culture	76	80	95%
2	Using national/local products	75	80	95%
3	Working together with others despite different ethnicities, religions, and skin colors	77	80	96%
4	Involvement in participating in national activities	76	80	94%
	Average			95%

In small group trials, the national character indicators showed high percentages: preserving Indonesian culture 95%, using national/local products 95%, cooperating across differences 96%,

and participating in national activities 94%. Overall, the average was 95%, indicating that students' national character is very high.

Pretest-posttest results. The learning outcomes of Pancasila education in the small group trial showed an increase. The pretest scores consisted of a frequency of 2 (13.3%) in the low category, 6 (40%) in the moderately high category, and 7 (47%) in the high category with an average of 60. After the use of the e-module, the posttest scores increased to 4 (27%) in the high category and 11 (73.3%) in the very high category with an average of 88. Thus, the learning outcomes of students in Pancasila Education in the small group trial were included in the high category.

Effectiveness evaluation in the large group testing

The large group effectiveness test involved 29 fifth-grade students at SD Negeri 27 Matekko, using motivation and national character questionnaires along with pretest and posttest results.

Motivation questionnaire results. A questionnaire on students' motivation was used in a large group trial to determine the effectiveness of the Pancasila education e-module based on Panrita Lopi culture integrated with Wordwall media. Data were obtained by completing the questionnaire after learning using the e-module. The questionnaire results are presented in Table 8.

Table 8. Motivation questionnaire results

No	Indicator of Learning Motivation	Minimum Score	Maximum Score	Percentage
1	There is a desire and wish to learn	78	80	97.5%
2	There is appreciation in learning	77	80	96.3%
3	Creating a conducive learning atmosphere	78	80	97.5%
4	Interest in learning	79	80	98.8%
	Average			97%

Based on the results of the learning motivation questionnaire analysis in large groups, the percentage of the desire and desire to learn indicators was 97.5%, appreciation in learning 96.3%, a conducive learning atmosphere 97.5%, and interest in learning 98.8% as the highest. The average percentage reached 97%, which indicates that student learning motivation is in the very high category.

National character questionnaire results. A questionnaire on national character was also used in the large group trial. The questionnaire results are presented in Table 9.

Table 9. Results of the national character questionnaire

No	Indicators of National Character	Minimum Score	Maximum Score	Percentage
1	Preserving Indonesian culture	76	80	95%
2	Using national/local products	75	80	94%
3	Working together with others despite different ethnicities, religions, and skin colors	77	80	96%
4	Involvement in participating in national activities	76	80	95%
	Average			95%

In the large group trial, national character indicators were: preserving Indonesian culture 95%, using national/local products 94%, cooperating across differences 96%, and participating in national activities 95%. The overall average was 95%, indicating students' national character is very high.

Pretest-posttest results. The learning outcomes of Pancasila Education of fifth grade students of SD Negeri 27 Matekko showed an increase. The pretest scores consisted of a frequency of 4

(13.7%) quite high, 12 (41.3%) high, and 13 (44.8%) very high with an average of 77. After the use of the e-module, the posttest score became 29 (100%) in the very high category with an average increase to 94. Thus, student learning outcomes are included in the high category.

A normality test using the Shapiro–Wilk method via IBM SPSS Statistics showed that both pretest (0.103) and posttest (0.164) data were normally distributed, as the significance values were greater than 0.05. To examine the differences in learning outcomes before and after using the Panrita Lopi culture–based Pancasila Education e-module integrated with Wordwall media, a paired t-test was conducted. The results showed a significance value (Sig. 2-tailed) < 0.001, indicating a significant difference between pretest and posttest scores. The mean difference of -16.966 further confirms the increase in student scores after using the e-module.

In addition, an N-Gain test was conducted to measure the level of improvement in student learning outcomes. The average N-Gain score was 0.7107, which falls into the very effective category. These results indicate that the e-module is highly effective in improving both students' learning motivation and their national character in fifth-grade students at SD Negeri 27 Matekko.

Discussion on the development of Panrita Lopi e-module

Based on a feasibility test conducted through validation by material experts, media experts, and cultural experts, the Pancasila Education e-module based on Panrita Lopi culture integrated with Wordwall media was categorized as very appropriate. Furthermore, the results of the practicality test, assessed by teachers and referring to the implementation of learning using the e-module, indicated a very appropriate category. Furthermore, a review of students' motivation and national character regarding the use of the Pancasila Education e-module based on Panrita Lopi culture integrated with Wordwall media showed a very high category.

These findings indicate that the Pancasila Education e-module meets quality standards for content and presentation and is able to increase student engagement through the integration of local culture and interactive Wordwall activities, making learning more meaningful. Thus, the Pancasila Education e-module based on Panrita Lopi culture integrated with Wordwall media is deemed appropriate, practical, and effective for use in supporting the learning process.

The effectiveness of the Panrita Lopi culturebased Pancasila Education e-module integrated with Wordwall media was evaluated using pretest and posttest results, a 16-item learning motivation questionnaire, and a 15-item national character questionnaire. In the small group trial with 15 students, the average pretest score was 60, indicating low initial understanding of the material, while the posttest score increased to 88, reflecting improved conceptual understanding and the ability to relate Pancasila values to the local cultural context. Dwihana et al. (2025) emphasized that a contextual approach is effective in instilling character values because it makes learning meaningful and centered on students' real-life experiences.

In the large group trial with 29 students, the pretest average was 77, categorized as good but requiring reinforcement, while the posttest score rose to 94, categorized as very good. This indicates that the e-module effectively strengthened students' mastery of the material and helped them comprehensively connect Pancasila values with Panrita Lopi culture (Fadillah et al., 2025; Untari & Khoirunnisa, 2025). Statistical analysis supported these results: the Shapiro–Wilk normality test showed significance values of 0.103 (pretest) and 0.164 (posttest), confirming normal data distribution. A paired t-test yielded Sig. (2-tailed) <0.001, indicating a significant difference between pretest and posttest scores, with a mean difference of -16.966. The N-Gain score of 0.7107 (>0.70) further categorized the improvement as very effective. The availability of technological resources, including smart TVs, laptops, WiFi, and student mobile devices, facilitated interactive use of the e-module and Wordwall, enhancing student engagement.

Learning motivation was also very high in both trials. In the small group, the average motivation score was 98, while in the large group it was 95. The desire and eagerness to learn scored 97.4% and 97.5%, recognition for learning scored 98.7% and 96.3%, the conducive

learning environment scored 96.2% and 97.5%, and interest in learning activities scored 100% and 98.8% for small and large groups, respectively. These results demonstrate that the e-module, with its structured, interactive, and culturally contextual design, effectively increased students' motivation. Wordwall integration contributed to this by providing immediate feedback and interactive quizzes and games, fostering engagement, cooperation, and responsibility as essential values in Pancasila Education (Dwihana et al., 2025; Fadillah et al., 2025; Untari & Khoirunnisa, 2025).

Overall, these findings indicate that the Panrita Lopi culture-based Pancasila Education e-module integrated with Wordwall media is highly effective in improving students' conceptual understanding, motivation, and ability to internalize Pancasila values through a meaningful, contextual, and interactive learning experience.

Students' high learning motivation was largely driven by the interactive Wordwall media, which offers quizzes and educational games. Studies by Lisandra et al. (2025) and Khoiriyah et al. (2025) confirm that interactive, game-based media increase engagement and motivation by actively involving students in learning.

Students' high learning motivation was strongly influenced by the interactive Wordwall media, which provides quizzes and educational games that actively engage them in the learning process. Research by Lisandra et al. (2025), Khoiriyah et al. (2025), Azzahra et al. (2025), and Milanti et al. (2023) supports that such interactive, game-based media enhance student engagement and motivation by involving them directly in learning activities. The use of national products scored 95% and 94%, showing students' appreciation for domestic products. Cooperation despite differences in ethnicity, religion, and skin color achieved the highest score of 96% in both trials, demonstrating students' ability to work together, respect one another, and help peers during activities, particularly while completing Wordwall quizzes and group assignments. Participation in national activities scored 94% in the small group and 95% in the large group, indicating greater involvement in understanding national values.

The improvement in national character was influenced by the integration of Panrita Lopi cultural values within the e-module. Values such as Appasilli and Ammosi foster religious awareness and gratitude, Pamassangan Layara emphasizes unity and steadfastness, Passiturukkan antara Punggawa and Sawi highlights cooperation in achieving goals, Anyyorong Lopi reflects responsibility and usefulness, and Nipakahajikkang promotes reflection and self-improvement. These cultural values were incorporated into learning activities, ensuring that the e-module not only strengthens cognitive understanding but also actively shapes students' national character.

The findings of this study also align with previous research by Siregar et al. (2024) who stated that the Pancasila student profile-based e-module is effective in cultural learning; Baeroh et al. (2025) who showed that the SIBUDI e-module has very high validity and improves learning outcomes with an average of 78.62; and Dewanti et al. (2024) who obtained a validity of 82.17% and a student response rate of 86.5%.

Based on the overall results of these studies, it can be concluded that the Pancasila Education e-module based on the Panrita Lopi culture integrated with Wordwall media is valid, practical, and effective, and is able to improve learning outcomes, learning motivation, and the national character of fifth-grade students at SD Negeri 27 Matekko.

CONCLUSION

The Panrita Lopi culture-based Pancasila education e-module integrated with Wordwall media is valid and practical for teaching fifth-grade students at SD Negeri 27 Matekko. Media and material expert validations scored 100%, cultural expert validation also scored 100% (highly valid), and research instrument validation scored 94.5% and 94.75% (valid). In terms of practicality, learning implementation observation scored 100%, teacher responses 99%, and

student responses 97%, all within the practical category. In terms of effectiveness, the average student learning motivation score was 97 and the average nationalism score was 95, both of which were categorized as excellent. In addition, there was an increase in the average pretest score from 77 to 94 on the posttest. Thus, the Panrita Lopi culture-based Pancasila Education e-module integrated with Wordwall media proved to be valid, practical, and effective, and could increase and strengthen the motivation and national character of fifth-grade students at SD Negeri 27 Matekko.

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DECLARATION

Author contribution

All authors contribute in the research and/or writing the paper, and approved the final manuscript.

Andi Arbaina Conceptualizing the research idea, leading the investigation, setting up the methodology, analyzing data, and writing the first draft.

Muhammad Nawir Conceptualizing the research idea, reviewing the validity of the methodology, supervising the data collection, assisting the investigation, enriching the data analysis.

Abdul Azis Conceptualizing the research idea, reviewing the validity of the methodology, supervising the data collection, assisting the investigation, enriching the data analysis.

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Conflict of interest

All authors declare that they have no competing interests.

Ethics declaration

We as authors acknowledge that this work has been written based on ethical research that conforms with the regulations of our institutions and that we have obtained the permission from the relevant institutes when collecting data. We support the International Journal on Education Insight (IJEI) in maintaining the high standards of personal conduct, practicing honesty in all our professional practices and endeavors.

The use of artificial intelligence

We do not use any generative AI tools to write any part of this paper.

Additional information

Not available.

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APPENDIX

The detailed developed product of Panrita Lopi e-module can be accessed through the following URL: <https://heyzine.com/flip-book/e142d7e01e.html>