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Development of Story-Based E-Modules to Improve Reading Interest And Learning Outcomes of Fifth Grade Elementary School Students

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Abstract

The interest in reading is one of the most important problems of elementary education and tends to affect the learning outcomes of students. The purpose of this study was to design an electronic module based on picture story to enhance reading interest and learning outcomes among the fifth grade elementary school students. The research utilized Research and Development model that was adapted to eight steps namely needs analysis, product design, initial development, expert validation, limited trial, revision, extensive trial, and final evaluation. The research was carried out at Tambaksawah Elementary School, Sidoarjo, using expert validators, small trial group, and 57 students in the general implementation phase. The data were collected using observation, interviews, expert validation sheets, reading interest questionnaires, pretest and posttest instruments and analyzed using qualitative descriptive and quantitative descriptive methods. The findings demonstrated that the module developed was very feasible with subject matter validation of 88 percent, media validation of 90 percent and language validation of 85 percent. The limited trial showed that the module was practical and received positive responses from students, although some students required initial guidance in using it, although some needed to be initially guided on the use of the module. The wider application demonstrated that the interest of students in reading grew by 61.0 percent to 85.1 percent. There was also an improvement in learning outcomes as indicated by the increase in average pretest score of 60.5 to the average posttest score of 85.0 with an average N Gain of 0.62 in moderate category.

Introduction

Reading interest and academic achievement are two crucial aspects in the educational process, especially at the elementary school level (Komsi, 2024; Anggraini et al., 2025; Oktorina et al., 2023). The reality on the ground shows that the reading interest of elementary school students in Indonesia is still relatively low (Dewani et al., 2024; Kustyamegasari et al., 2025; Fadhilah & Kasrima, 2026). This is evidenced by survey data conducted by the Organization for Economic Cooperation and Development (OECD) through the Programme for International Student Assessment (PISA) in 2022, where Indonesia obtained an average score of 369 points, which can be broken down into three domains, namely mathematics knowledge with a score of 366 points, science knowledge with a score of 383 points, while the reading domain received the lowest score of 359 points. (Budiawan Sidik A & Nurul Intan, 2025). In line with this, the results of the analysis of the 2024 report card for Tambaksawah Public Elementary School in Waru District, Sidoarjo Regency, show that literacy skills, especially in the indicator of competence in accessing and finding text content, namely the ability of students to find, identify, and describe an idea or explicit information in informational texts, has decreased by 4.22%. The achievement score in 2023 was 72.31, while in 2024 it was only 68.09.

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In other words, the literacy rate of Indonesians is still low compared to other countries. This phenomenon certainly has an impact on students' ability to understand lesson material and achieve optimal learning outcomes. In addition, literacy is a crucial aspect because it is the main foundation for sustainable development and poverty alleviation (Oghenekohwo & Frank-Oputu, 2017; Bhola & Gomez, 2008; Shah, 2026).

A statement from Dalman in (Sari., 2020) states that reading is the heart of education, which means that reading is the heart of education. This means that someone who often reads will advance in their education and have broad knowledge. In addition, reading is also an important factor in the success of the learning process for students. This is because the higher the students' interest in reading, the greater the possibility for them to understand the subject matter more deeply (Shah, 2026; Olaoye, 2025; Thalgi, 2024).

One factor contributing to low reading interest is the lack of learning materials that are interesting and appropriate for the developmental characteristics of elementary school children (Syafira & Dafit, 2022; Siregar, 2025; Marleni et al., 2024). Fifth-grade elementary school students tend to be more interested in visual learning, stories, and interactive media than long, monotonous texts (Suparman et al., 2020). Therefore, learning materials are needed that can foster students' interest in the material presented, while also supporting their learning outcomes. The importance of using media in learning as a source of learning that is integrated can deliver messages and encourage the occurrence of learning processes in order to achieve learning objectives. The use of interesting media in the learning process can arouse motivation and interest among students, to stimulate their desire to learn, and trigger a pleasant learning atmosphere so that learning outcomes tend to be better (Durgungoz & Kharrufa, 2026; Chang et al., 2026; LinPeng et al., 2026).

In today's digital age, children's attention is more focused on gadget screens than printed books, so an innovative approach is needed that can harmoniously bridge the digital world and literacy (Kasera, 2025; Sirait, 2025; Nabila, 2025). This is especially true for elementary school students, whose attention tends to wane due to the dominance of digital entertainment such as social media, short videos, and online games (Thiele, 2025). Therefore, the use of textbooks is something boring, difficult to understand, and not interesting, especially when teachers teach only using the lecture method. Although textbooks are currently equipped with pictures, they still cannot attract the interest of students in the material, resulting in poor learning outcomes (Khalid & Sardar, 2026; Risqiyono & Setyasto, 2025; Inwanti & Setiawan, 2025).

Amid these challenges, learning approaches that utilize digital technology need to be developed in order to attract students' attention and improve their literacy (Akem et al., 2025; Asrifan et al., 2025; Cahyaningtyas et al., 2025). The use of digital technology-based e-modules is becoming increasingly popular in the world of education. With the increasing availability of digital devices among students and teachers, e-modules have become an efficient, flexible, and interactive solution. As explained by (Yulianti, Hardianti Ngui & Ladamay., 2023) in the title Development of Pancasila Education E-Modules Integrating the Pancasila Student Profile for Grade IV Elementary School, it shows that Pancasila Education e-modules on constitutional material and norms in society can be used in Pancasila education learning activities because they meet the criteria of being highly valid and highly practical. In line with this, (Faizah et al., 2023) in their research entitled "Development of Digital Picture Story Media in Social Studies Learning for Grade 5 Students at SDN Kalicari 01" explains that the use of digital picture story learning media developed for the proclamation event has adequate standards. Meanwhile, Asti Islamiati, Akhmad Nugraha, 2024 entitled "Development of Digital-Based Picture Story Books

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in IPAS Learning in Elementary Schools" states that the Digital-Based Picture Story Books on the Digestive System developed are very suitable and excellent for use in elementary schools.

The above studies show that the use of story-based e-modules can increase the interest and reading skills of elementary school students (Sholihah et al., 2024; Narhaida & Handayani, 2024; Pulungan et al., 2022). This medium provides an interesting and interactive approach to learning, in line with current technological developments and student needs. However, most studies are still preliminary and have limitations in their methodological design, such as the lack of control groups or long-term data. Therefore, further research with a more robust design is needed to confirm these findings and evaluate the long-term impact of using picture story-based e-modules in learning (Asiah et al., 2025; Akram et al., 2025; Waris et al., 2026).

Various recent studies also show that narrative-based learning and the use of visual media can significantly increase student motivation, conceptual understanding, and information retention. In addition, the Indonesian government, through the Deep Learning Curriculum, also encourages learning that is enjoyable, contextual, and student centered. Therefore, the development of story-based e-modules is highly relevant to current policy directions and learning needs. Story-based e-modules are a potential innovation because they combine the power of storytelling and visual illustrations to attract students' attention and help them understand lesson content in an enjoyable way.

Based on the description and background explanation above, the author will develop an E-Module learning media based on Picture Stories. The author will develop a product that can facilitate learning. The author wants to stimulate students to increase their interest in reading, which will ultimately lead to optimal learning outcomes. This learning media is a learning media that can increase students' interest in reading because it is very interesting and suits the characteristics of elementary school students. In this case, the researcher conducted a study entitled "Development of Picture Story-Based E-Modules to Increase Reading Interest and Learning Outcomes of 5th Grade Elementary School Students."

Methods

Research Design

In this study, the Research and Development approach was used to create a picture story based electronic module that would enhance the reading interest and learning outcomes of the fifth grade elementary school students. To design, create, and test an instructional product that might be utilized in a real classroom situation was the rationale behind the choice of this approach. The product developed in this study was a digital learning module which integrated lesson content, story based presentation, and visual illustration in a bid to create a more engaging learning experience to elementary school learners.

The development process identified as the Borg and Gall model is the most popular way of product development in the educational sphere because the model provides a systematic sequence of actions that is followed in the process of product development in the educational sphere. In this research, the model was modified into eight steps to fit in the scope of the study and the real situations at implementation in school. These phases were needs analysis, product design, initial product development, expert validation, limited trial, product revision, extensive trial and final evaluation. In these stages, the study aimed at coming up with a product which was valid, practical and effective in application in the elementary school learning.

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Setting and participants of the research.

The research was performed in Tambaksawah Elementary School, Waru District, Sidoarjo Regency, the 2025-2026 academic year. Such setting was chosen as the initial observation and the interview with the teachers revealed that the students of the fifth grade still had problems with the engagement with the lesson materials that were presented via the long texts and traditional explanation. Relatively low reading interest, limited participation, and the lack of learning media that were sufficiently appealing to elementary school students and developmentally appropriate were also features of these classroom conditions. The school thus offered a good setting in which the development and testing of the proposed electronic module took place.

The sample used in this research involved a number of groups based on the research phase. Primary users of the product were in the fifth grade students. The module went through a limited trial phase in which the module was tested on a small sample size of 7 students to identify the readability, usability and initial practicality of the module. Upon revision, the module was tested on a larger scale to 57 students to test its effectiveness in improving reading interest and learning outcomes. The teachers were also included especially in the needs analysis and implementation phases since they were the ones who provided significant information about the classroom environments, the characteristics of the students, their learning challenges, and reactions to the module usage. Moreover, three experts (comprising of a subject matter expert, a media expert and a linguistic expert) were used to validate the product to ascertain the academic, technical and linguistic viability of the developed module.

Product Developed

The product that was developed in this study was a picture story based electronic module on the subject of Pancasila and Civic Education to fifth grade elementary school students, in particular, on the topic of identity and environment. The module was developed in the digital form in order to be accessed using the electronic devices like laptops, tablets or smartphones. The rationale behind the creation of a digital module was the growing exposure of students to digital media and the necessity to create learning material that was more appealing than traditional printed materials.

The module was content and design based; the lesson content was combined with story narration and pictorial illustrations that acted as representative of situations that were close to the daily lives of students. The module comprised of a cover page, concept map, introductory video, learning content, student worksheet, and summative assessment. This design was aimed at not just presenting information, but also taking the students through a learning process that would stimulate their interest in reading, understanding and participation in the classroom.

Development Procedure

The development procedure in this study followed eight interconnected stages adapted from the Borg and Gall model. The first stage was needs analysis. At this stage, the researcher conducted classroom observation and interviews with the teacher to identify learning problems, students' reading habits, classroom conditions, and the need for more engaging learning media. This preliminary stage provided the empirical basis for the development of the module.

The second stage was product design. Based on the findings of the preliminary analysis, the researcher formulated the objectives of the module, selected the learning material, determined the intended learning outcomes, and planned the structure of the electronic module. Special attention was given to the integration of story and picture so that the module would not only convey lesson content but also foster students' interest in reading.

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The third stage was initial product development. In this stage, the conceptual design was transformed into a concrete prototype. The learning material was arranged in story based form, visual illustrations were integrated into the content, and supporting features such as navigation, exercises, and learning tasks were developed.

The fourth stage was expert validation. The initial product was evaluated by a subject matter expert, a media expert, and a language expert. The purpose of this stage was to assess whether the developed module was appropriate in terms of content accuracy, presentation, visual quality, readability, and language suitability for fifth grade learners. The validation results were then used as the basis for revision.

The fifth stage was limited trial. This stage involved 7 students and was intended to obtain initial responses regarding the readability, attractiveness, and usability of the module. At this stage, the researcher also identified practical obstacles that emerged when students first used the module.

The sixth stage was product revision. Revisions were made by considering the results of expert validation and the limited trial. Improvements could involve the language used in the module, the visual arrangement, navigation, and the clarity of learning tasks.

The seventh stage was extensive trial. After revision, the module was implemented in a broader classroom trial involving 57 students. This stage was intended to examine the effectiveness of the module in improving students' reading interest and learning outcomes through questionnaire data, pretest and posttest scores, N Gain analysis, observation, and interview.

The eighth stage was final evaluation. At this stage, the researcher reviewed the findings from the broader trial and made final refinements to the module so that the product could be considered ready for classroom use.

Data Collection Techniques and Instruments

This study used both qualitative and quantitative data collection techniques in order to obtain a more complete understanding of the developed product. The instruments used in this study consisted of observation sheets, interview guides, expert validation sheets, reading interest questionnaires, and learning outcome tests in the form of pretest and posttest. The use of these instruments was adjusted to the objectives of each stage of the research, namely identifying needs, evaluating feasibility, examining practicality, and measuring effectiveness.

Observation was used during the needs analysis and implementation stages. In the preliminary stage, observation was used to identify classroom conditions, student participation, and the limitations of existing learning media. During product implementation, observation was used to examine students' reading interest, activeness, concentration, and participation while using the module.

Interviews were conducted with the teacher and students. Teacher interviews were carried out during the preliminary stage to identify classroom problems and during implementation to obtain responses regarding the usefulness of the module in learning. Student interviews were conducted during the trial stages to capture their experiences, difficulties, and perceptions of the developed module.

Expert validation sheets were used to assess the feasibility of the product from three perspectives, namely subject matter, media, and language. The subject matter validation focused on the suitability of learning objectives, indicators, content, and evaluation. The media validation focused on the content presentation and visual display of the electronic module. The

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language validation focused on appropriateness for students' developmental level, sentence clarity, grammatical accuracy, and sentence effectiveness.

The reading interest questionnaire was used in the broader trial to measure students' reading interest before and after the implementation of the module. The questionnaire covered several indicators, namely reading enjoyment, awareness of the benefits of reading, reading frequency, types of reading materials, reading habits, motivation, use of leisure time for reading, and concentration while reading.

Learning outcomes were measured using pretest and posttest instruments. The pretest was administered before students used the electronic module in order to identify their initial understanding of the material. The posttest was administered after implementation in order to determine the extent to which students' understanding improved after learning with the module.

Data Analysis

The data obtained in this study were analyzed using qualitative descriptive analysis and quantitative descriptive analysis. These two approaches were applied in a complementary way because the development of a learning product requires not only numerical evidence of feasibility and effectiveness, but also contextual understanding of how the product is experienced in classroom practice.

Qualitative descriptive analysis was used to analyze the data obtained from observation, interviews, and expert comments. The analysis was carried out through data reduction, data organization, interpretation, and conclusion drawing. Through this process, the researcher identified patterns related to students' learning needs, classroom responses, product strengths, and aspects that still required improvement.

Quantitative descriptive analysis was used to analyze expert validation scores, questionnaire results, and learning outcome test scores. The expert validation scores were converted into percentages to determine the feasibility level of the module. The reading interest questionnaire data were analyzed by comparing the average percentage scores before and after implementation across all measured indicators. The learning outcome test data were analyzed by comparing the average pretest and posttest scores to identify improvement in students' understanding of the material.

To determine the degree of improvement in learning outcomes, N Gain analysis was also employed. This analysis was used to show the extent to which students' scores improved from the pretest to the posttest after learning with the picture story based electronic module. In this way, the effectiveness of the module was evaluated not only through descriptive comparison, but also through a measurable indicator of learning improvement.

Results and Discussion

Product Overview

This study produced a picture story based electronic module for fifth grade elementary school students in the subject of Pancasila and Civic Education, particularly on the topic of identity and environment. The product was developed as a digital learning medium that integrates instructional content, story based presentation, and visual illustration. The module was designed to respond to classroom problems identified during the preliminary stage, especially students' low reading interest, limited participation, and difficulty engaging with long reading materials presented through conventional textbooks.

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The electronic module was designed to be accessed through digital devices such as laptops, tablets, or smartphones. Its structure consisted of a cover page, concept map, introductory video, learning material, student worksheet, and summative evaluation. These components were arranged to guide students gradually through the learning process and to make the material more attractive, contextual, and easier to understand. The use of stories and pictures was intended to help students connect lesson content with situations close to their daily lives.

The need for the product was supported by preliminary classroom observation and teacher interview. The teacher explained that students often lost focus when they were asked to read long passages and that conventional textbooks had not fully attracted students' reading interest. The teacher stated, "When students are asked to read material that is too long, many of them quickly lose focus. Some students can still follow the lesson, but others become less interested and need repeated explanation from the teacher." This statement shows that the problem was not only related to students' reading habits, but also to the way learning materials were presented in the classroom.

The teacher further explained, "Students are usually more enthusiastic when the material is connected to stories or pictures that are close to their daily lives. If the lesson is only explained verbally, they tend to get bored more quickly." This finding became the basis for developing the picture story based electronic module as a learning medium that could make reading activities more engaging and meaningful for students.

Product Validity

Product validity was examined through expert validation involving a subject matter expert, a media expert, and a language expert. The validation process was conducted to determine whether the developed module was feasible in terms of content accuracy, media design, presentation, readability, and language suitability for fifth grade elementary school students.

The subject matter expert validation showed that the module obtained a score of 32 out of a maximum score of 36, with a percentage of 88 percent. This result indicates that the content of the module was highly feasible. The assessment covered the suitability of learning outcomes, learning objectives, indicators, module content, and evaluation components.

Table 1. Results of Subject Matter Expert Validation

No	Assessment Aspect	Score
1	CP, TP, Indicators, and Learning Objectives	4
2	Module	10
3	Content	11
4	Evaluation	7
5	Total	32
6	Maximum Score	36
7	Percentage	88%

The media expert validation showed that the module obtained a score of 29 out of a maximum score of 32, with a percentage of 90 percent. This result indicates that the electronic module was highly feasible from the media perspective. The assessment focused on the quality of the module content presentation and visual display.

Table 2. Results of Media Expert Validation

No	Assessment Aspect	Score
1	Electronic module content	11

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2	Electronic module display	18
3	Total	29
4	Maximum Score	32
5	Percentage	90%

The language expert validation showed that the module obtained a score of 34 out of a maximum score of 40, with a percentage of 85 percent. This result indicates that the language used in the module was highly feasible for fifth grade students. The assessment covered appropriateness for students' developmental level, sentence clarity, grammatical accuracy, and sentence effectiveness.

Table 3. Results of Language Expert Validation

No	Assessment Aspect	Score
1	Appropriateness for the developmental level of students	9
2	Clarity of sentences	8
3	Grammatical accuracy	10
4	Sentence effectiveness	7
5	Total	34
6	Maximum Score	40
7	Percentage	85%

The validation results show that the developed module met the feasibility criteria from the perspectives of subject matter, media, and language. The scores obtained from the three validators indicate that the module was suitable to proceed to the trial stage after revision based on expert suggestions.

Product Practicality

Product practicality was examined through a limited trial involving seven fifth grade students. This trial was conducted to identify students' initial responses to the module, including readability, attractiveness, usability, and obstacles encountered during the first use of the product.

The limited trial showed that most students responded positively to the module. Five students appeared more interested in reading the material, asked more questions during learning, and found it easier to understand the lesson content. Students stated that the pictures helped them follow the story and made the reading material more interesting. One student stated, "I like this module because the pictures make the story easier to follow, so I want to keep reading until the end." Another student explained, "Usually I get bored if there is too much text, but in this module the story and the pictures make it more interesting, so it is easier to understand."

However, the limited trial also showed that two students still needed initial guidance, especially in understanding the navigation buttons and moving from one part of the module to another. One student admitted, "At first I was still confused about which button to click, so I needed help from the teacher." This finding indicates that the module was generally practical and attractive, but teacher assistance was still needed at the beginning of its use.

The teacher also confirmed this condition by stating, "The students were interested in the module, but some of them still needed guidance at the beginning so they could use each part of it properly." Based on the limited trial, the module was considered practical for classroom use because it helped students engage with the material more actively, supported their willingness to read, and provided useful information for minor revisions before broader implementation.

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Product Effectiveness

Product effectiveness was examined through broader classroom implementation involving 57 fifth grade students. The effectiveness of the module was measured through reading interest questionnaires, pretest and posttest scores, N Gain analysis, observation, and interviews.

The reading interest questionnaire showed an improvement after the implementation of the module. Before using the module, the average reading interest score was 61.0 percent. After using the module, the average score increased to 85.1 percent. The improvement occurred across all indicators, including reading enjoyment, awareness of the benefits of reading, reading frequency, types of reading materials, reading habits, reading motivation, use of leisure time for reading, and reading concentration.

Table 4. Results of Students' Reading Interest Questionnaire

No	Indicator	Before	After	Category
1	Reading enjoyment	61%	85%	Improved
2	Awareness of the benefits of reading	63%	88%	Improved
3	Reading frequency	60%	84%	Improved
4	Types of reading materials	59%	83%	Improved
5	Reading habits	62%	86%	Improved
6	Reading motivation	61%	87%	Improved
7	Use of leisure time for reading	58%	82%	Improved
8	Reading concentration	64%	86%	Improved
	Average	61.0%	85.1%	Improved

The increase in reading interest was also supported by students' interview responses. One student stated, "I was more excited to read because the material was like a story, so it did not feel like I was reading a lesson from a textbook." Another student explained, "The pictures helped me understand the story better, and because of that I wanted to continue reading until the end." These responses indicate that the module helped change students' reading experience from a compulsory classroom task into a more enjoyable learning activity.

The improvement in learning outcomes was shown through the comparison between pretest and posttest scores. The average pretest score was 60.5, while the average posttest score increased to 85.0. This means that students' average score improved by 24.5 points after learning with the picture story based electronic module.

Table 5. Summary of Pretest and Posttest Scores

No	Description	Score
1	Average Pretest Score	60.5
2	Average Posttest Score	85.0
3	Score Improvement	24.5

The N Gain analysis was used to determine the degree of improvement in students' learning outcomes. The average N Gain score was 0.62, which falls into the moderate category. The distribution showed that 5 students were in the high category, 52 students were in the moderate category, and no student was in the low category.

Table 6. Distribution of Students' N Gain Categories

No	N Gain Category	Range	Number of Students
1	High	> 0.7	5
2	Moderate	0.3 to 0.7	52

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3	Low	< 0.3	0
	Average N Gain		0.62

The observation results also showed positive changes in students' learning activities. Before the use of the module, students' reading interest and participation were categorized as low, while their activeness and concentration were categorized as poor. After the module was implemented, reading interest and participation increased to the high category, while activeness and concentration improved to the good category.

Table 7. Observation Results of Students' Learning Activities

No	Aspect	Before	After
1	Reading interest	Low	High
2	Activeness	Poor	Good
3	Concentration	Poor	Good
4	Participation	Low	High

The observation findings were supported by teacher interview data. The teacher stated,

> "The students looked more interested during learning with this module because there were pictures and stories that made them not get bored quickly."

The teacher also explained,

> "Usually students are passive when reading, but with this module they became more active and willing to try to understand the reading."

These responses indicate that the module did not only increase students' reading interest, but also encouraged more active classroom participation.

In relation to students' understanding of the material, the teacher further stated,

> "The material became easier to understand because it was presented in the form of stories that were close to the students' daily lives."

A student response supported this finding by explaining,

> "I could understand the lesson more easily because the explanation was connected to the story, so it was easier to remember."

These interview findings strengthen the quantitative results by showing that the increase in learning outcomes was related to the way the module presented content through story and visual support.

Based on the questionnaire, pretest and posttest scores, N Gain analysis, observation, and interview findings, the picture story based electronic module was effective in supporting students' reading interest and learning outcomes. The results indicate that the module did not only function as a digital learning product, but also provided a more engaging, accessible, and meaningful learning experience for fifth grade elementary school students.

The findings of this study indicate that the picture story based electronic module is pedagogically meaningful because it does not only convert printed learning materials into digital form, but also reconstructs reading into a more visual, narrative, and contextual experience. This is important in elementary education because students' willingness to read is strongly shaped by how attractive, concrete, and emotionally accessible the material is. The module's integration of stories, pictures, and structured learning tasks helped students experience reading as a learning activity that was easier to follow and more enjoyable. This

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finding is consistent with Adnyana et al. (2023), who developed picture story media to increase elementary students' reading interest, and Nurul (2021), who showed that picture storybooks are feasible and effective for improving reading comprehension. Hartati et al. (2025) also confirmed that reflective picture storybook media can improve reading interest when the product is designed based on students' needs and validated through a development process.

The improvement in students' reading interest can be understood through the role of narrative and visual support. When learning materials are presented only through long verbal explanations, students may quickly lose attention. However, when the same content is arranged through stories and illustrations, students can follow the material more naturally because meaning is built through sequence, image, and familiar situations. This supports the argument of Fauziyyah et al. (2023), who found that elementary students' reading interest is closely related to their access to picture storybooks and attractive reading materials. Salsabila et al. (2023) also showed that e modules based on project based learning can make elementary learning more structured and engaging, while Sagita and Mulyani (2023) found that numeracy e modules with edugame elements can support students' motivation in digital learning environments.

The visual component of the module also has an important cognitive function. Pictures in elementary learning media should not be treated merely as decoration, because they help students anticipate meaning, understand relationships among ideas, and connect abstract content with concrete situations. This is especially relevant in Pancasila and Civic Education, where concepts such as identity, environment, responsibility, and civic values may feel distant if delivered only through textbook explanation. Rahayu and Wiratsiwi (2022) found that character based e books in PPKn learning are relevant for elementary students because they connect civic content with meaningful value formation. Similarly, Putri et al. (2025) showed that web based interactive e modules in elementary IPAS learning can support learning when digital design is integrated with clear instructional content.

The improvement in learning outcomes suggests that the module supported not only interest, but also students' understanding of the material. Story based learning helps students remember content because ideas are embedded in a sequence of events rather than presented as isolated information. Safitri and Dafit (2025) demonstrated that interactive e modules for elementary students can improve learning outcomes and provide a more interesting learning experience when they are developed through systematic R&D procedures. Their study also reported that e modules need to be valid, practical, and effective, which is closely aligned with the present study's development orientation. Nipus et al. (2025) similarly showed that e modules can improve elementary students' learning outcomes and critical thinking when they are carefully designed and tested in classroom implementation.

The practicality findings also show that digital learning media still require teacher support, especially during initial use. Some students may be familiar with gadgets, but this does not automatically mean that they can use digital academic materials independently. The teacher's role remains important in guiding students to understand navigation, learning tasks, and the purpose of the module. This finding is consistent with Faidah et al. (2025), who reviewed e module studies in elementary education and found that digital modules are most useful when they combine multimedia features with pedagogical guidance. Ly et al. (2024) also emphasized that e modules for elementary students need to be designed according to learners' needs and classroom readiness, not only according to technological possibilities.

The subject context of this study strengthens its contribution. Pancasila and Civic Education often contains value based concepts that need to be made concrete for young learners. Through

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stories and pictures, civic values can be placed in situations that students can recognize and interpret. This is consistent with Rianti and Simamora (2023), who showed that science learning e modules can support elementary students when abstract content is presented through structured digital materials. Ramadhani et al. (2026) also found that Webgos based e modules can improve elementary students' descriptive writing learning outcomes because they combine Google Sites structure, Canva based materials, and interactive evaluation in one digital system. Although their subject focus is writing, their findings support the broader argument that integrated digital modules can help elementary students learn more actively when content, design, and evaluation are aligned.

This study also shows that reading interest and subject learning should not be treated as separate concerns. In elementary education, students' understanding of subject matter often depends on whether they are willing to enter and follow the text. A story based e module can therefore function as both literacy support and subject learning media. Permatasari and Widagdo (2025) found that Canva based e book story learning can improve Indonesian language learning outcomes, while Apsari et al. (2025) showed that problem based interactive e modules can improve elementary learning outcomes when they are designed around students' learning needs. These studies support the present finding that the effectiveness of digital media depends on how well the product organizes content, encourages engagement, and supports comprehension.

Nevertheless, the effectiveness claim in this study should be interpreted carefully. The findings show positive improvement after the implementation of the module, but the study did not use a control group. Therefore, the results should be positioned as evidence of product effectiveness within a Research and Development framework, not as strong causal evidence from an experimental design. Future studies could strengthen the evidence by using control groups, delayed posttests, inferential statistical analysis, or comparisons across different schools. Even so, the present study provides useful evidence that a picture story based electronic module can support students' reading interest, learning engagement, and learning outcomes when its design is aligned with students' developmental characteristics, classroom needs, and teacher guidance.

Conclusion

This study concludes that the picture story based electronic module developed for fifth grade elementary school students was valid, practical, and effective. The validation results showed that the module met academic, technical, and linguistic standards, while the limited trial indicated that the module was usable, attracted positive student responses, and helped students engage more comfortably with the learning material.

The effectiveness of the module was supported by both quantitative and qualitative findings. Students' reading interest increased from 61.0 percent to 85.1 percent after implementation. Their learning outcomes also improved, as shown by the increase in the average pretest score from 60.5 to the average posttest score of 85.0, with an average N Gain of 0.62 in the moderate category. Observation and interview findings further showed that students became more interested in reading, more active, and more focused during learning. Therefore, the picture story based electronic module can be used as an alternative learning medium to support reading interest and learning outcomes in elementary school learning.

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