Socio-Cultural Approach through Digital Teaching Modules: A Solution to Improve Beginning Reading Skills in Elementary Schools

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Abstract

The low level of early reading skills among primary school students in Indonesia is one of the significant challenges in education. International evaluations such as PISA show that Indonesian students' basic literacy skills are still below average, affecting their overall academic development. One of the contributing factors to these low results is learning that is less relevant to students' socio-cultural context. Therefore, this study aims to investigate the effect of a socio-cultural-based digital teaching module on primary school students' beginning reading skills. This study used a quasi-experimental design with a sample of 200 grade 1 students divided into experimental and control groups. The experimental group learned using socio-cultural-based digital teaching modules, while the control group applied conventional learning methods. The instrument used was a beginning reading test with 20 questions that measured the ability to recognize letter symbols, distinguish words based on the same initial letter or syllable, and compose syllables into words. Independent Sample T-Test analyzing an independent sample, ensuring that the ty and homogeneity tests were met. The results revealed significant differences between the experimental and control groups, with the experimental group showing more significant improvement in all indicators of beginning reading ability. Further discussion showed that the socio-cultural-based approach in this module made learning more relevant, exciting and interactive for students, ultimately improving their reading comprehension and motivation. In addition, integrating digital technology in this module supports flexibility and continuity of learning, allowing students to learn according to their pace and needs. This research has important implications, namely the need for broader implementation of Socio-Cultural Based Digital Teaching Modules in primary schools to improve basic literacy. However, to ensure its successful implementation, adequate technological infrastructure support and teacher training are needed to optimize this digital-based learning in the classroom.

Keywords: *Digital Teaching Module; Socio-Cultural; Beginning Reading; Basic Literacy; Primary School; Contextual Education.*

Introduction

Beginning reading is the first step in learning to read, which is very important for primary school students, especially in the early grades (Kiili et al., 2020). At this stage, students learn about the basics of reading, such as recognizing letters and letter sounds and combining these sounds into meaningful words. The focus of this stage is to help students understand how to recognize the letters of the alphabet and pronounce them correctly to begin to construct syllables and words better. In general, beginning reading aims to build students' literacy foundation by providing essential skills that will later be useful in more advanced stages of reading. In this process, students are also introduced to familiar words that often appear in everyday life and learn to understand simple sentences. Success in this stage is measured by students' ability to recognize and pronounce words and by the extent to which they can understand the meaning of what they read. Therefore, beginning reading can be considered an essential first step in developing students' literacy. Hopefully, this stage can make students more interested and confident in reading, thus supporting them in facing more complex literacy challenges in the future.

Beginning reading plays a significant role in supporting students' literacy development, especially at the primary level (Ramadhan et al., 2023; Senter et al., 2021). The main focus of this stage is to build basic literacy skills, where students begin to recognize letters, understand phonetic sounds, and arrange letters into meaningful words. In addition, beginning reading also aims to strengthen students' phonetic and

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phonological skills, essential for correct pronunciation and spelling. This process also seeks to foster an early interest in reading by providing exciting experiences that motivate students to continue learning. Students are encouraged to understand the meaning of words and simple sentences as a basis for deeper understanding.

The benefits of beginning reading are wide-ranging, including helping to increase students' confidence in reading (Duan & Tong, 2024). Students who successfully master this skill tend to be more confident when dealing with text, which is an essential foundation for more complex literacy development. In addition, this stage also strengthens cognitive skills such as memory, concentration, and critical thinking, as reading involves a process that ranges from recognizing letters to understanding meaning (Sugaya et al., 2019). Beginning reading also supports students' language development through increasing vocabulary and understanding language structures. Not only that, but students can also broaden their social and socio-cultural horizons through texts that are relevant to the surrounding environment (Heppt et al., 2022). Finally, beginning reading instills good study habits early on, helping students build productive study habits later in life. Therefore, beginning reading needs to be developed in elementary school students.

Based on the literature review, primary school students' beginning reading skills in Indonesia are still relatively low. Research at SD Negeri Kraton Yogyakarta shows that activities that support improving reading skills have not been carried out optimally, and the lack of reading room facilities other than the library harms students' interest in reading (Wiranata et al., n.d.). Similar conditions were also found at SDN Cemorokandang 01 Malang, where many students still struggle with reading due to ineffective learning during the pandemic (Mawarni et al., 2022). In addition, at SDN 006 Tarakan, the results showed that without the implementation of learning strategies, students' reading skills remained low (Rahmawati & Dewi, 2021).

The results of the Program for International Student Assessment (PISA) test also show the low reading ability of Indonesian students. Based on the 2018 PISA report, Indonesian students' reading literacy score is 74 out of 79 participating countries, with an average score of 371, far below the OECD average of 487. This low score indicates that many students in Indonesia are not able to comprehend simple reading texts well and struggle to interpret more complex information. These finding underscores students' low reading literacy skills at the international level, including at the beginning reading stage.

The results of this literature review are supported by the initial reading measurement of 200 primary school students. The results can be seen in the following table:

Table 1. Results of measurement of elementary students' beginning reading ability

Beginning Reading Ability Indicators	Average Score
Recognizing vowel letter symbols	45.00
Recognize consonant letter symbols	43.50
Distinguish words that have the same initial letter	42.75
Distinguish words that have the same initial syllable	40.25
Composing syllables into a word	41.50
Total Average Score	**42.60**

Based on the measurement results, students' beginning reading skills in each indicator show a low average score. The indicator of recognizing vowel letter symbols has the highest average score of 45.00. However, this figure is still relatively low and shows that many students struggle to recognize vowel letters accurately. Meanwhile, the indicator of recognizing consonant letter symbols has an average score of 43.50, indicating that students also experience obstacles in recognizing consonant letters accurately. On the indicator of distinguishing words with the same initial letter, the average score was 42.75. In contrast, on the indicator of distinguishing words with the same initial syllable, the average score was slightly lower at 40.25. These results show that students struggle distinguishing words based on similar initial sounds or structures. The indicator for composing syllables into words also showed a low score of 41.50, indicating that students could not combine syllables optimally to form a complete word. Overall, the average score for all indicators was 42.60, which falls within the low range. These findings underscore the need for more intensive

specialized interventions and more effective learning strategies to improve primary school students' beginning reading.

The literature review results, and initial measurements stated that students' reading skills were low. Based on the analysis conducted by the researchers, the low reading ability of elementary school students is caused by the learning process of beginning reading in elementary schools, which still has several weaknesses and needs to be addressed immediately. One of the main problems is the lack of integration of socio-cultural context in teaching materials. This condition makes students feel disconnected from the reading material, making the learning process unfamiliar and less relevant. As a result, students' interest and motivation to learn to read tend to decline. On the other hand, existing teaching approaches are often monotonous and less interactive, so they do not attract students' attention enough. Learning that focuses too much on technical aspects, such as letter recognition and phonetics, often neglects character education, which is essential for introducing socio-cultural values, ethics and environmental awareness.

The use of technology in early reading learning is also minimal, so the learning process seems static and does not utilize the existing digital potential. The teaching style is often one-way and unvaried, so it cannot adapt to the various learning styles of students, whether visual, auditory or kinesthetic (Erita et al., 2024; Fitria et al., 2023; Sukma et al., 2024; Zainil et al., 2024). In addition, students' access to learning resources is generally limited to a specific time and place, for example, in the classroom or library, which hinders the opportunity for students to learn independently and sustainably. With these conditions, efforts to improve early reading skills are not optimal, so a more contextual, interactive and flexible approach is needed to make learning more effective and exciting for students.

Previous research has developed a socio-cultural-based digital teaching module to overcome the challenges in early reading learning. This module is an interactive learning tool that combines material with local socio-cultural elements around students, utilizing digital technology such as text, images, video, and audio. This way, learning becomes more relevant, exciting and meaningful for elementary school students.

This module offers several key advantages. First, the material presented is contextualized, making it closer to students' daily experiences. Secondly, this module can increase interest and motivation to learn with a more exciting approach. In addition, the module also includes character education, which helps students understand essential values in life. Because it utilizes digital technology, the module is interactive and flexible. It can be accessed anytime and supports various learning styles, whether visual, auditory, or kinesthetic. With all these advantages, this module can potentially improve students' beginning reading skills effectively and sustainably.

Previous research on socio-cultural-based digital teaching modules has reached the development and validation stages. At this stage, the module has been designed and considered feasible by experts for early reading learning. However, the research is still limited to the development process and validity testing, not yet touching on the module's effectiveness in improving elementary school students' reading skills. Therefore, further research is needed to evaluate the effect of this module on students' beginning reading skills. Further research focuses on understanding how this socio-cultural-based digital module can support students' reading skills, especially in recognizing letters, distinguishing words, and assembling words from syllables. This follow-up research is essential to ensure the module is theoretically valid and practical to improve elementary school students' reading skills.

Previous research on early reading skills in primary schools shows various approaches, but none examined the effect of socio-cultural-based digital teaching modules on early reading skills. For example, research at SD Negeri Kraton Yogyakarta identified supporting and inhibiting factors for early reading skills, such as the availability of facilities and students' interest in reading. However, it did not involve digital teaching modules (Wiranata et al., 2021). Another study compared the Know-Want To Know-Learned (KWL) learning method with the sound method to improve reading skills but still used a conventional approach (Rahmawati & Dewi, n.d.). In addition, there is the development of pop-up book media and the use of letter card media that focuses on print media, not digital, and does not involve socio-cultural elements (Daindo, 2023). Another study developed a Structural Analytic Synthetic (SAS)-based beginning reading module. However, the module did not use a socio-cultural or environmental approach and was not in a digital format (Silfhina et al., 2022). With the development of a reading module based on the Structural

Analytic Synthetic (SAS) method, the module did not use a socio-cultural or environmental approach and was not in a digital format. Thus, this research is an innovation that combines a digital approach with socio-cultural elements to improve primary school students' beginning reading skills, which has never been done before. Therefore, this study aims to determine the effect of socio-cultural-based digital teaching modules on primary school students' beginning reading skills.

This research is fundamental because it seeks to address the low level of beginning reading skills of primary school students in Indonesia, which has a significant impact on their literacy development and academic achievement. In addition, this study aims to evaluate the effectiveness of the socio-cultural-based digital teaching module, which has previously only been tested for validity. By understanding the impact of this module, we can see whether a technology-based approach integrated with a socio-cultural context can significantly improve students' beginning reading skills. Through this research, we support more relevant, contextualized and interactive learning strategies, improving access and quality of basic literacy in Indonesia. The results of this study are expected to serve as a reference for educational approaches that are more suited to the needs and characteristics of students, as well as improving reading teaching methods at the primary level.

Literature Review

Socio-cultural Based Digital Teaching Module

Socio-cultural-based Digital Teaching Modules are digitally designed teaching materials to support reading learning while integrating local socio-cultural elements. The module is presented in digital format, making it easily accessible through electronic devices such as computers, tablets or smartphones. The content is organized to reflect socio-cultural values and environmental issues relevant to students' lives, making learning more meaningful (Daindo, 2023; Rahmawati & Dewi, 2021.).

This module aims to improve students' beginning reading skills with a more interactive and relevant approach, integrating socio-cultural elements into learning. In addition, the module seeks to strengthen students' digital literacy, increase their motivation to learn, and deepen their understanding of local socio-culture and the importance of protecting the environment (Silfhina et al., 2022). Through this approach, students learn to read and better understand and appreciate their socio-cultural identity and the environment around them.

The benefits of this module are seen in more contextualized learning, where students can more easily understand the material because the content is close to their daily lives (Wiranata et al., n.d.). In addition, students can also develop digital literacy and awareness of socio-culture and the environment, which can increase learning motivation and support the preservation of these values. With high accessibility, this module provides more flexibility for students to learn independently, anywhere and anytime (Daindo, 2023).

Beginning Reading

Beginning reading is the first step in mastering literacy, where students begin to understand letter symbols and associate them with the sounds they represent. At this stage, students learn to recognize and distinguish vowels and consonants, identify syllable patterns, and construct words from combinations of letters and syllables. This stage is critical because it forms the literacy foundation needed to read more complex words and texts in the future (Agasisti et al., 2022; Greenburg et al., 2025).

Indicators of Beginning Reading Ability:

- Recognize vowel and consonant letter symbols:

  Students can visually identify and distinguish vowels (a, i, u, e, o) and consonants (b, c, d, etc.) and know the sound associated with each letter.

- Distinguish words with the same initial letter:

  Students can distinguish words that begin with the same letter, for example, distinguishing between "cat" and "car," even though both begin with the letter 'c.'

- Distinguishing words with the same initial syllable:

  Students can distinguish words that have the same initial syllable, such as "market" and "marble," where both begin with the syllable "mar."

- Composing syllables into words:

  Students can combine several syllables into a whole word, for example, composing the syllables "pen" and "cil" into the word "pencil."

These indicators reflect essential basic skills in beginning reading, which form the basis for more advanced literacy development (Deng et al., 2023; Zou et al., 2023)

Research Methodology

This study used a quasi-experimental design to determine the effect of socio-cultural-based digital teaching modules on elementary school students beginning reading skills. The research sample consisted of 200 grade 1 students divided into two groups. The control group comprised 100 students who received conventional learning, while the experimental group also comprised 100 students who applied socio-cultural-based digital teaching modules.

The instrument used in this study was a beginning reading test with 20 items that measured the leading indicators of beginning reading ability. The indicators measured include recognizing vowels and consonants, distinguishing words with the same initial letter, distinguishing words with the same initial syllable, and composing syllables into whole words. This instrument has been declared valid after going through a content validation process by experts. Its construct validity was also tested through reliability, distinguishing power, difficulty level, and exploratory factor analysis.

The reliability test results showed a Cronbach's α value of 0.912, which indicates high consistency in measuring beginning reading ability. The test's distinguishing power and difficulty level showed item-rest correlation values above 0.680, which means that the questions have a strong correlation with the variables measured. Bartlett's test showed a p-value <0.005, indicating that the items were significantly correlated with each other, allowing further factor analysis.

The following are the results of the eigenvalue calculation.

Table 2. Eigenvalue calculation

Eigen Calculation	Initial Eigenvalues
Factor 1	7.9214
Factor 2	0.6187
Factor 3	0.4234
Factor 4	0.3152
Factor 5	0.2748
Factor 6	0.0975
Factor 7	0.0302
Factor 8	-0.0621
Factor 9	-0.0854
Factor 10	-0.1437

This result indicates the presence of one dominant factor, which is supported by the scree plot with one window, indicating that this instrument mainly measures one dimension, namely the beginning reading ability of primary school students.

Data analysis was conducted using the Independent Sample T-Test technique using the Jamovi statistical application, to test for significant differences between the mean scores of the two groups. This analysis aims to determine the effectiveness of socio-cultural-based digital teaching modules in improving beginning reading skills, compared to conventional learning methods.

Results and Discussion

Results

After the two groups were given different lessons-the control group with conventional reading methods and the experimental group using Socio-cultural Based Digital Teaching Modules-researchers conducted a beginning reading test to assess the effects of the two types of lessons. The results of this test were analyzed and summarized in the following table:

Table 3. Tabulation of control group and experimental group data

	Experiment Class	Control Class
N	100	100
Missing	0	0
Mean	87.5	62.1
Median	88	61
Mode	88.0	60.0
Sum	8750	6210
Standard Deviation	6.32	7.04
Minimum	70	45
Maximum	98	80

Before proceeding to hypothesis testing using the Independent Sample T-Test, researchers ensured that the data met the necessary statistical assumptions. Normality and homogeneity of variance tests were conducted to ensure normal data distribution and homogeneous variance between groups. The results of the normality test are presented as follows:

Table 4. Normality test results

Normality Test (Kolmogorov-Smirnov)	W	p
Student Score	0.986	0.062

From Table 4. A p value greater than 0.05 indicates that the data is normally distributed. Furthermore, the results of the variance homogeneity test are as follows:

Table 5. Homogeneity test results

Homogeneity of Variances Test (Levene's)	F	df1	df2	p
Student Score	2.45	1	198	0.118

From Table 5, with $p = 0.118$ (greater than 0.05), the variance between the two groups is declared homogeneous, thus fulfilling the conditions for using the Independent Sample T-Test.

The researcher then conducted an Independent Sample T-Test to test the following hypothesis:

- H0: There is no significant difference in beginning reading ability between students who follow conventional learning and students who use socio-cultural-based digital teaching modules.
- Ha: There is a significant difference in beginning reading skills between students who follow conventional learning and students who use socio-cultural-based digital teaching modules.

The t-test results are presented as follows:

Tabel 6. Independent samples t-test

Independent Samples T-Test	Statistic	df	p
Student Score	Student's t	29.8	**p < 0.001**

From Table 6, with a p value <0.001 (smaller than 0.05), H0 is rejected, which means that there is a significant difference in the ability to read early between students who study with conventional methods and students who use socio-cultural-based digital teaching modules. This proves that there is a significant effect of using socio-cultural-based digital teaching modules on the beginning reading ability of elementary school students.

Discussion

The results showed a significant difference in beginning reading ability between students who followed conventional learning and those who used the Socio-Cultural Based Digital Teaching Module. Based on the Independent Sample T-Test results, the experimental group using this module achieved a higher mean score compared to the control group. With a p value of <0.001, this difference is considered statistically significant, indicating that the socio-cultural-based digital teaching module has a positive impact on improving primary school students' beginning reading skills. This significant difference can be seen from the data showing that the average score of the experimental group was 87.5, while the control group was only 62.1. This indicates that students who learn using the socio-cultural-based module have better skills in terms of recognizing vowels and consonants, distinguishing words with the same initial letter or syllable, and composing syllables into whole words.

Analysis of the results of this study shows that socio-cultural-based digital teaching modules are more effective in providing contextual and relevant learning experiences for students. This effectiveness is reflected in the improvement of students' abilities in each indicator of beginning reading. In the first indicator, recognizing vowel and consonant letter symbols, students in the experimental group showed better understanding. They recognized and pronounced letters more quickly because the teaching materials were presented in the form of text, images, and audio that contained socio-cultural elements that were familiar to them. The second indicator, distinguishing words with the same initial letter, also showed better results in the experimental group. The module provides more contextualized exercises, where students learn through words that are relevant to their socio-cultural lives. This makes learning more meaningful, as students can relate the material to real experiences in their environment.

In the third indicator, distinguishing words with the same initial syllable, significant improvement was also seen in the experimental group. This module uses visual and audio features that help students more easily recognize the difference in syllable sounds. In addition, the use of stories or dialogues related to the socio-cultural context makes students more interested and motivated to learn. The fourth indicator, namely composing syllables into words, showed the most significant improvement. Students in the experimental group were more proficient in arranging syllables correctly, thanks to the interactive exercises provided by the module. These exercises allowed students to directly practice and receive instant feedback, which helped them correct mistakes and improve their understanding in composing words from syllables.

This study states that the use of socio-cultural-based digital teaching modules has a significant influence on primary school students' beginning reading skills. This finding offers a new contribution to the literature, as its approach differs from previous studies that tend to rely on conventional learning methods and media without involving digital technology or cultural and environmental contexts. Most of the previous studies used traditional approaches. For example, at SDN Cemorokandang 01 Malang, reading cards were used to improve students' beginning reading skills. Although the results were positive, this approach was still limited to print media and did not integrate social, cultural or environmental elements (Mawarni et al., 2022). Similarly, research at MI Nurus Shibyan Ambat, Tlanakan Pamekasan used the picture card-based syllable method to improve beginning reading skills. The main focus was on syllable learning, but without including social, local cultural or environmental elements in the process (Wiranata et al., n.d.)

Another study at SDN 14 Pontianak Kota adopted the role playing method to improve students' interest and reading skills. Although it provided good results, this approach remained conventionally based and had not utilized digital modules or integrated culture and the environment (Isnaini et al., 2021). Different from these studies, this research combines digital technology with cultural and environmental elements, demonstrating a more contextualized and innovative approach. It enriches the educational literature by

proposing a new approach that integrates digital technology, culture and environment in early literacy learning. The results show that culture and environment-based digital teaching modules are not only effective in improving students' early reading skills but also relevant to their daily lives, making learning more meaningful and connected to students' realities.

The socio-cultural-based digital teaching module is proven to be effective in improving primary school students' beginning reading skills. The module is designed with a contextual approach, where the teaching materials integrate local socio-cultural elements familiar to students, such as customs, social activities, and folklore. This approach makes students feel more connected to the material being studied, thus increasing their interest and motivation in learning to read (Quilez-Robres et al., 2021; Tomasine, 2024). This interest is reinforced by the interactivity offered by digital technology, such as videos, animations, quizzes, and digital-based games that support students' various learning styles-visual, auditory, and kinesthetic (Drew et al., 2024; Schiefer et al., 2021).

Besides focusing on mastering technical reading skills, this module also integrates character values through content containing themes of cooperation, mutual respect and tolerance. This not only enriches students' literacy skills but also broadens their horizons about the moral values prevailing in their social environment, in line with the character-based education policy (Beresford et al., 2022; Witsenboer et al., 2022). Furthermore, this socio-cultural-based approach is proven to increase students' intrinsic motivation because they feel the material being learned is relevant to their daily experiences. As a result, they are more motivated to understand and remember the material better.

Another advantage of this module is its flexibility, where students can access the materials anytime and anywhere, both at school and at home. This flexibility supports more independent learning, allowing students to learn at their own pace (Hemelt & Lenard, 2020; Oppermann et al., 2023). In addition, the immediate feedback provided by the module helps students correct mistakes immediately, improving accuracy in reading, while building their confidence as learning progress can be seen in real time. With all these factors, the socio-cultural-based digital teaching module not only proved to be statistically effective, but also provided a more meaningful and in-depth learning experience for elementary school students.

The results of this study have several important implications for the development of educational policies and learning practices in primary schools in Indonesia. The success of the Socio-Cultural Based Digital Teaching Module in improving students' beginning reading skills shows that an approach that is relevant to the socio-cultural context as well as technology-based can be an effective solution in improving students' basic literacy skills. First, the findings of this study confirm that socio-cultural-based modules can significantly improve basic literacy, particularly in terms of beginning reading. This empirical evidence shows that the combination of digital technology and the local socio-cultural context produces a more positive impact than conventional methods (Cirino et al., 2024; Reid et al., 2023). This supports national efforts to improve the quality of basic literacy in Indonesia, especially to address students' low literacy performance at the international level, as seen in the PISA results.

Secondly, this study highlights the importance of changing teaching approaches in primary schools. More contextualized learning, with materials relevant to students' socio-cultural lives, was found to be more effective in motivating students and improving their understanding of reading materials. This fact indicates that teachers need to be encouraged to use teaching materials that are appropriate to students' socio-cultural backgrounds, in line with the concept of contextual learning that focuses on the relevance of materials to students' daily lives.

Furthermore, the success of this module highlights the important role of teachers as facilitators in digital-based learning. Teachers need adequate training and mentoring to integrate technology with socio-culturally relevant teaching materials (Gilbert et al., 2022; Naef & Lefsrud, 2023; Nursaid et al., 2024; Satria & Arief, 2024). This suggests that investment in developing teachers' competencies to utilize socio-cultural-based digital modules is necessary to make the learning process more interactive and engaging for students.

In addition, this study emphasizes the importance of improving technology infrastructure in schools. Digital-based learning, such as the one in this module, requires the support of digital devices, internet access and adequate software (Ginting & Ramadhan, 2024; Salo et al., 2022; Ying et al., 2024; Zainil et al., 2023). The government and education stakeholders need to prioritize improving access to technology in primary schools, given that technology is the key to accelerating the improvement of education quality in this digital era.

This module also shows the potential to integrate character education through socio-cultural-based literacy. Students are not only taught to read technically but are also invited to understand relevant local cultural values, such as cooperation, mutual respect and tolerance. This shows that literacy serves not only as an academic skill but also as a tool for developing students' character and social awareness, supporting national education goals that emphasize the importance of character education from an early age.

Finally, the use of this socio-cultural-based digital module can help reduce the gap in access to quality education, especially in remote areas. The module provides materials that are more easily accessed flexibly, both at school and at home, allowing students from different backgrounds to have a more equal and quality learning experience.

Conclusions

This study proves that the Socio-Cultural Based Digital Teaching Module has a significant impact in improving primary school students' beginning reading skills. Statistical test results showed a clear difference between the experimental group that used this module and the control group that applied conventional learning methods. The experimental group recorded higher average scores on all beginning reading indicators, such as recognizing vowel and consonant letter symbols, distinguishing words based on the same initial letters and syllables, and composing syllables into words. The success of this module can be attributed to its contextual, interactive and socio-cultural value-based approach, which makes learning more relevant and interesting for students. This socio-cultural approach not only helps students understand the language technically, but also encourages their involvement in interpreting texts that reflect local culture and values. In addition, the use of digital technology in this module is proven to increase students' learning motivation, allowing them to learn through various styles as well as receiving immediate feedback. Overall, this digital teaching module is not only effective in developing beginning reading skills, but also in line with the objectives of character education in primary schools. The results of this study underscore the importance of contextual-based learning approaches and the integration of digital technology in primary education. The findings also provide significant implications for education policy development in Indonesia, which can utilize this module as a strategy to improve students' basic literacy equally, especially in schools with diverse socio-cultural backgrounds. Thus, the Socio-Cultural Based Digital Teaching Module should be considered as an innovative, effective and relevant learning alternative in improving primary school students' beginning reading skills. However, successful implementation requires the support of adequate technological infrastructure and appropriate teacher training, so that the integration of this module in classroom learning can be optimized.

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Authors' contributions

All the authors collaborated in the elaboration of the data collection instrument and process. Nur Azmi Alwi and Ary Kiswanto Kenedi worked mainly in the Introduction. Arwin, Tin Indrawati and Yesi Anita worked mainly in the methodology, results, discussion, and conclusions. Irwandi and Asnawi wrote, edited, and revised the whole paper in English language.

Author ethical declarations

We confirm that the work has not been published elsewhere in any form or language

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Declaration of interests

The authors declare that they have no known competing financial interests or personal relationships that could have appeared to influence the work reported in this paper.

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