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Integrating Cultural Literacy and Digital Literacy in Indonesian Language Learning to Strengthen Students' National Resilience

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Abstract

This study aims to examine the effectiveness of integrating cultural literacy and digital literacy in Indonesian language learning to strengthen students' national resilience. A mixed methods approach with a sequential explanatory design was employed, involving elementary school students as research subjects. Data were collected through tests, observations, interviews, and documentation, and analyzed using quantitative and qualitative techniques. The results show that the integration of cultural and digital literacy significantly improves students' reading comprehension, as indicated by a high N-Gain score (0.71) in the experimental group compared to the control group (0.46). In addition, students' cultural literacy and digital literacy increased, particularly in understanding cultural values, evaluating information, and using digital media responsibly. Learning engagement also improved, with students demonstrating more active, interactive, and reflective participation. Qualitative findings reveal that students better understand cultural values when learning is connected to real-life contexts, while teachers perceive this approach as more effective and creative. The study concludes that integrating cultural and digital literacy is an effective strategy to support sustainable education and strengthen students' national resilience.

[Penelitian ini bertujuan untuk menguji efektivitas integrasi literasi budaya dan literasi digital dalam pembelajaran bahasa Indonesia untuk memperkuat ketahanan nasional siswa. Pendekatan metode campuran dengan desain penjelasan sekuensial digunakan, dengan melibatkan siswa sekolah dasar sebagai subjek penelitian. Data dikumpulkan melalui tes, observasi, wawancara, dan dokumentasi, dan dianalisis menggunakan teknik kuantitatif dan kualitatif. Hasil penelitian menunjukkan bahwa integrasi literasi budaya dan digital secara signifikan meningkatkan pemahaman membaca siswa, yang ditunjukkan oleh skor N-Gain yang tinggi (0,71) pada kelompok eksperimen dibandingkan dengan kelompok kontrol (0,46). Selain itu, literasi budaya dan literasi digital siswa meningkat, khususnya dalam memahami nilai-nilai budaya, mengevaluasi informasi, dan menggunakan media digital secara bertanggung jawab. Keterlibatan belajar juga meningkat, dengan siswa menunjukkan partisipasi yang lebih aktif, interaktif, dan reflektif. Temuan kualitatif mengungkapkan bahwa siswa lebih memahami nilai-nilai budaya ketika pembelajaran dihubungkan dengan konteks kehidupan nyata, sementara guru menganggap pendekatan ini lebih efektif dan kreatif. Studi ini menyimpulkan bahwa integrasi literasi budaya dan digital merupakan strategi yang efektif untuk mendukung pendidikan berkelanjutan dan memperkuat ketahanan nasional siswa.] © The Authors.

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1. Introduction

Education for Sustainable Development (ESD) is a global strategic agenda that positions education as a primary instrument in building an adaptive, competitive, and sustainability-oriented society. In the national context, ESD is directed not only at environmental and economic aspects [1]–[4], but also at strengthening cultural identity and national resilience [5]–[7]. National resilience is not merely defined as physical or military strength, but encompasses ideological, social, and cultural resilience built through a relevant and contextual education system. Therefore, Indonesian language education holds a strategic position because it functions as a vehicle for shaping the identity, character, and literacy of citizens [8].

The development of digital technology over the past decade has significantly transformed the learning landscape [9]–[13]. Digital transformation presents both opportunities and challenges in strengthening student literacy. On the one hand, technology expands access to information and increases the effectiveness of learning. On the other hand, the unfiltered flow of global information has the potential to erode local cultural values and students' national identity [14]. This phenomenon demonstrates a gap between rapidly developing digital literacy and cultural literacy, which has not been optimally integrated into learning. As a result, students tend to have technical skills in accessing information, but are weak in understanding the cultural context and national values contained in texts [15].

Culture and digital literacy are the two integral capabilities of the PJK framework. Cultural literacy is the capacity to understand, appreciate, and internalize cultural values in everyday practice, whereas digital literacy refers to the processes by which people acquire the skills necessary to access, evaluate, and critically produce information through digital media [16]. We have to marry these two literacy systems because modern learning is inseparable from digital technology.

However, this practice comes across many difficulties in teaching the Indonesian language in elementary education. The first problem is that the learning model was developed for cognitive processes and does not include or contextualize cultural values. Secondly, because technology-driven learning is largely tool-based, critical and reflective literacy has very little presence in such learning. Third, the materials have not systematically integrated local cultural elements with interactive digital media [17].

Several studies have examined cultural literacy and digital literacy separately. Cultural literacy based on local wisdom has been shown to improve student character [18], while the use of interactive digital media can improve reading skills and student learning motivation [19]. However, these two approaches still operate independently.

Other research shows that integrating digital literacy with local cultural contexts can improve students' critical thinking skills and global awareness [20]. Furthermore, strengthening cultural and technology-based literacy is a priority in the implementation of the national curriculum [21].

Based on this study, a research gap can be identified: the suboptimal integration of cultural literacy and digital literacy in Indonesian language learning, particularly at the elementary school level. Yet, this integration holds significant potential to support PJK and strengthen national resilience through the formation of student character and identity. Therefore, a learning approach is needed that can combine these two literacies systematically and contextually.

This research offers an integrative approach to Indonesian language learning that combines cultural literacy and digital literacy. This approach emphasizes not only the ability to read and understand texts, but also students' abilities to interpret cultural values and critique digital information. Thus, learning produces not only technically literate students but also students with cultural awareness and responsibility as citizens.

The novelty of the research is to integrate two categories of literacy that had been studied separately previously which are cultural and digital literacy in one Indonesian language learning framework. In addition, this research connects this integration with national resilience within the context of PJK, aiming at a better theoretical and practical depth. This study theoretically adds to literature on literacy in Indonesian language education. This, in turn, offers a viable alternative learning model to practice in elementary schools. As such, it focuses on the integration of cultural and digital literacy to build students' national resilience in Indonesian language learning. We expect the results to guide the school system, especially for PJK implementation in Indonesia.

2. Method

2.1 Research Design

This research used a mixed methods approach with a sequential explanatory design, combining quantitative and qualitative data sequentially to gain a comprehensive understanding of the phenomenon under study. The first stage involved collecting and analyzing quantitative data to measure the effectiveness of integrating cultural literacy and digital literacy in Indonesian language learning. The second stage continued with qualitative data collection to deepen the interpretation of the quantitative results, particularly regarding the learning process and student responses. This design was chosen because it provides a comprehensive picture, both in terms of learning outcomes and classroom learning dynamics [22], [23]. This approach is also relevant for examining educational interventions that simultaneously involve cognitive and affective aspects.

2.2 Research Subjects and Location

The research was conducted at SDN Margorejo 3 Surabaya, which has implemented the Independent Curriculum. The subjects were 30 students in grades IV A and IV B. Class IV A served as the experimental group, receiving integrated cultural literacy and digital literacy learning, while class IV B served as the control group, receiving conventional learning. Subjects were selected using purposive sampling techniques, taking into account the characteristics of schools with digital facilities and the diversity of students' cultural backgrounds.

2.3 Research Procedures

The study consisted of a sequence of stages that included (1) Preparation stage, assessment of learning needs and preparation of learning tools (modules, digital media, and research instruments), validation of the tools by experts; (2) Implementation stage, administration of pretests to both groups and implementation of learning over 4–6 sessions, embedding cultural literacy via local wisdom-based texts and embedding digital literacy through interactive media (videos, applications, or digital platforms); (3) Evaluation stage, administration of posttests, observation of the learning process and interviewing students and teachers; (4) Quantitative and qualitative data analysis stage; and (5) Analysis and interpretation stage, analysis of quantitative and qualitative data, and data triangulation to increase the validity of the results.

2.4 Data Acquisition Plans

Methods of collecting data (test, observation, interview, and documentation) were utilized. Students' reading comprehension was assessed with tests. Tests were performed as pretests and posttests to measure gains in learning outcomes. Observations were performed to follow student actions during learning, especially in terms of participation, interaction, and use of digital media. Interview data were collected from teachers and students regarding learning experiences, perceptions of learning, and understanding of cultural values. Supporting data, namely learning tools, student work, and recordings of learning activities, were collected through documentation.

2.5 Research Instruments

The instruments used in this study included a reading skills test based on literacy indicators (literal, inferential, and evaluative comprehension), a student activity observation sheet, a semi-structured interview guide, and a cultural literacy and digital literacy assessment rubric. All instruments underwent expert validation and reliability testing using the Cronbach Alpha coefficient.

2.6 Data Analysis Techniques

Quantitative data were analyzed using descriptive and inferential statistics, including tests for normality and homogeneity, independent sample t-tests to determine differences in learning outcomes between the experimental and control groups, and N-Gain calculations to determine the level of student improvement. The analysis was conducted using statistical software.

Qualitative data were analyzed through the stages of data reduction, data presentation, and conclusion drawing. The analysis was conducted thematically to identify patterns of student behavior and responses to learning. Triangulation methods were included amongst these in triangulation tests, observations and interviews, source triangulation (students and teachers) as also member checking to verify quality and reliability of the data in qualitative data analysis. Ethical guidelines for the application of the study included obtaining consent from the school, communicating research objectives to the respondents regarding the study, and securing confidentiality of the respondent.

3. Results

3.1 Improvement in Students' Reading Comprehension Skills

Results show that the difference in reading comprehension skills between the experimental and control groups was significant based on quantitative data analysis. The average pretest scores of the two groups were relatively similar, with 65.2 for the experimental group and 64.8 for the control group. After the integration of cultural literacy and digital literacy in learning, the average posttest score of the experimental group increased to 82.6, while the control group reached 73.4.

Table 1. Pretest, posttest, and N-Gain results

Group	Pretest	Posttest	N-Gain	Category
Experimental	65.2	82.6	0.71	High
Control	64.8	73.4	0.46	Moderate

The N-Gain analysis showed that the experimental group achieved a high improvement category (0.71), whereas the control group was categorized as moderate (0.46). In addition, the independent sample t-test showed a significance value of <0.05 , indicating a significant difference between the two groups. These findings suggest that the integration of cultural literacy and digital literacy positively affects students' reading comprehension skills. The findings also support previous studies indicating that digital literacy integration enhances students' ability to interpret texts critically and contextually.

3.2 Enhancing Cultural Literacy of Students

Based on observations and analysis of the cultural literacy rubric, students demonstrated considerable improvement in understanding local cultural values, interpreting culturally meaningful texts, and appreciating diversity. The cultural literacy score of the experimental group increased from 68.3 to 85.1.

Table 2. Improvement in cultural literacy

Aspect	Before	After
Cultural Literacy	68.3	85.1

Students demonstrated a stronger ability to relate text content to everyday values such as cooperation, tolerance, and national identity. These findings indicate that learning through local cultural texts contributes positively to students' character development and civic awareness.

3.3 Increase in Students' Digital Literacy

The results also showed improvement in students' digital competencies, including searching for information, evaluating information accuracy, and using digital media ethically. The average digital literacy score increased from 66.5 to 83.7.

Table 3. Improvement in digital literacy

Aspect	Before	After
Digital Literacy	66.5	83.7

Students became more capable of distinguishing valid and invalid information and using digital media to support learning activities. These findings reinforce previous studies that emphasize digital literacy as not only technical competence but also cognitive and ethical information management.

3.4 Student Activity and Engagement

Experiments demonstrated students' active and engaged learning when they compared to those from the control group. They talked more, posed more questions, articulated their opinions and took charge of digital media independently. This indicates that the integration of cultural and digital literacy can increase student engagement. Because it links cultural experiences with digital technology, learning becomes more contextual and meaningful.

3.5 Student and Teacher Responses

Interviews found that students reported they were more engaged with learning that was interesting and authentic, students' comprehension of the content being easier to grasp, while teachers felt that using digital media was beneficial. The students also said they understood cultural values better, with more cultural content, that they also gained deeper understanding, on the basis of reading life-like texts. Teachers said this approach was promoting a more active and creative learning experience.

4. Discussion

4.1 Improving Student Comprehension of Reading

Cultural literacy-digital literacy and reading comprehension is positively correlated with this approach. According to Castles et al. [24], reading is a complex mental process where, more than just decoding words, we are attempting to render meaning from previous knowledge and experience. The analysis offers a perspective toward the integration of social and cultural context through the text that facilitates literacy improvement through cultural literacy and digital literacy.

The cultural literacy plays an important role in adding context to the background knowledge students have and makes them understand the text more deeply. Junaedi et al. [25] underlined that cultural context increases the learners' cognitive engagement and supports students to critically interpret writing. Accordingly, cultural literacy provides the epistemological basis for learning texts, in particular those that are relevant to the experiences of students. On the other hand, digital literacy expands the ways in which students engage with the multimodal and non-linear nature of texts. Reading proficiency is not confined to an understanding of content but also the navigation of information and assessment of that information. This view is confirmed by Nurhidayah [26] who also mentioned that digital literacy plays a significant role in students' critical thinking abilities and information comprehension.

In addition to that, digital interactive media, like visualizations and learning applications, help students understand concepts more concretely as a result of such medium [27]. The synergy of cultural and digital literacy produces a positive impact. With cultural literacy we know the context of meaning, whereas digital literacy provides access and learning tools. Hamin et al. [28] reported that this combination may enhance reading comprehension through the cognitive strengthening of higher-order skills. Moreover, engaging digital environments also enhance students' motivation and interest in reading and lead to increased learning engagement [29].

From a pedagogical aspect, this method coincides with social constructivism, which focuses on the interactions between people, culture, and the environment in learning. As Manca and Delfino [30] noted, digital technology can facilitate wider and more collaborative interactions and enrich how students build knowledge. Moreover, the inclusion of digital literacy will also assist in students' metacognitive development, such as the ability to reflect on and evaluate information [31].

Within the 21st century reading field, digital literacy is a crucial part of reading skills. According to Judijanto [32], integrating digital technology can greatly benefit the quality of learning. With the help of interactive media like e-books, students' vocabulary increased and concepts could be developed further [33]. This study proves the significance of digitized learning environment for an effective reading program. Also, cultural integration in the digital environment enhances student identity amidst globalization [25]. This method of combining multiple forms of literacy also corresponds to multiliteracy theory. Rumahlatu et al. [34] demonstrated that a multiliteracy approach can improve students' critical thinking skills and creativity. Thus, the co-integration of cultural and digital literacies is an effective approach to enhance reading comprehension cognitively, affectively, and socially.

4.2 Improving Students' Cultural Literacy

Studies indicate that study on local cultural texts are successful in developing the character of the students. In principle, this is in accordance with the idea of cultural literacy, which is about the understanding of text, but is more about the cultural values, norms, and social identity internalized by the learners with the help of learning opportunities of the

context. From a social constructivist perspective, the connection of learning materials to the local cultural context helps students to construct deeper meaning.

According to Suriansyah et al. [35], consistently applied cultural literacy can shape character traits such as discipline, responsibility, and social awareness. It is proof that literacy influences not just cognitive but also affective levels. The learning that may take place, if the texts themselves are imbued with local elements of culture, takes part in creating students' character.

Cultural literacy can also be an instrument for civic awareness. Kartini [36] stated that cultural and civic literacy can enhance students' self-identity and national character. In this context, students not only comprehend texts, they understand their place within social and national life.

Indonesian language education provides an instance where local, culturally-based texts can offer an avenue for students to gain insights. Indeed, local cultural values were found to enhance the relevance of learning and play a pivotal role in student identity [37]. Also, cultural literacy works as a shield against the impact of globalization and helps students to keep their national identity [38].

Such findings are consistent with the idea of culture-based character education in schools. Musyaffa et al. [39] asserted that learning by taking cultural values in an integrated manner can also positively and long term affect the formation of character. This corresponds with evidence that cultural literacy is a central element in student character and academic performance [40].

This is all part of contextual learning -- understanding that they need to connect what they are learning to their life. According to Rahmadani and Al Hamdany [41], a contextual approach is more effective when moulding character. Moreover, this enhances critical thinking as students engage with values in texts [42]. In a social context, cultural literacy teaches tolerance and positive interactions among students [43]. Hence, infusing cultural literacy in the curriculum supports the development and transformation of personality; but equally importantly, the formation of an inclusive and cultured society.

More than 10 months from today, students have improved in their ability to distinguish between valid and invalid information—the research results showed this too. According to Radičuks et al. [44], the ability to assess information is inherent to digital literacy as it is closely associated with critical thinking and data-driven decision making.

In its essence, digital literacy is a technical, cognitive, and ethical concept. Aslam et al. [45] explain that the technical dimension pertains to device utilization, the cognitive dimension involves information analysis and verification, while the ethical dimension relates to responsible use of information. This research showed that the students developed in the cognitive dimension, particularly in evaluating the validity of information.

The ability is strongly linked to critical thinking. Integrating digital literacy with the study means that students become more adept at taking in information and therefore better overall cognitive abilities to process this information. In addition to this, students can contribute to independent study through their use of digital media. This is in keeping with previous studies that show the positive effects of digital media on student engagement, understanding, and reflection on learning [46].

Ethically, digital literacy promotes learning about the responsible use of information. Laili [47] found that people with higher digital literacy are more ethical and are able to avoid the spread of invalid information. So, the ethical dimension makes an important part of students' character-strengthening process.

In addition, teaching digital literacy encourages self-regulation in learning. Students are capable of managing information and learning strategies independently [48]. However, mastery of digital literacy is not automatic, and needs to be guided in a structured pedagogy beyond the technicalities [49].

Furthermore, digital literacy promotes the formation of students' character and social responsibility in the digital era [50]. Thus, integrating digital literacy into learning is an important strategy for simultaneously building cognitive, ethical, and social competencies.

4.4 Actions and Engagement for Students

Literature published shows that the combination of cultural literacy with digital literacy leads to a significantly better student learning engagement. Such a finding provides evidence that culturally relevant practice in terms of technology can lead to more meaningful

and relevant educational experiences. As stated by Anzar [51], culture- and technology-based learning offers a true-to-life experience that enhances students' knowledge construction.

This enhanced engagement is further facilitated through digital literacy, where a digitally enabled interactive and multimodal learning experience is adopted. Kaka et al. [52] explain, digital education fosters active participation and helps increase motivation and student interest in learning. Engagement in terms of students includes cognitive, emotional, and behavioral elements of engagement when viewed from a student engagement perspective. Bringing together cultural and digital literacies can stimulate the three together at the same time; culture triggers emotional engagement, while technology facilitates cognitive engagement [53].

In addition, using local cultural contexts helps to make the learning more relevant. Wardani [54] shows that local wisdom helps students understand material more concretely and strengthens self-identity. At the same time, digital technology makes learning more engaging through visual and interactive media [51].

This convergence also corresponds to multiliteracy theory, which argues that integration of multiple literacies into learning is crucial. Putra et al. [55] have said that a multiliteracy approach enhances the quality of learning and prepares students for facing global challenges. Moreover, meaningful learning happens when students connect experiences with new material [56].

Learning engagement in primary education can have a profound influence on outcomes of the children's learning. Sari and Lestari [57] proved that digital literacy would make a great impact on learning results. Additionally, the combination of both literacies creates students' critical and responsible disposition [58].

Successful implementation, however, relies greatly on teacher competence and access to technology. Yuliana et al. [59] highlighted the importance of teachers' digital competence, while disparities in access remain a challenge [60]. However, this will still work very well, for better quality of learning and student preparedness for Digital Era.

4.5 Reactions by Students and Teachers

The research shows children gain insight into cultural values more effectively when they are exposed to texts from context and that teachers see more active learning and creativity. That also jibes with constructivist thinking that says knowledge is constructed by having experiences that are important to you. Kharismawati [61] stated that learning based on local cultural contexts can improve students' conceptual understanding and social awareness.

The knowledge of cultural competence, as is the case with the education in this article, is further promoted with the integration in learning, with increased cultural competency being a result of understanding and acceptance of values. Puspita et al. [62] underscored the extent to which the approach develops character and motivation to study. Moreover, combining it with digital literacy improves the holistic effect of learning as it integrates cognitive as well as affective aspects [63].

A teaching and learning approach that embeds these findings is grounded in context as it relates material to real-world experiences of students. Suryanto et al. [64] pointed out that when teachers incorporated these local wisdom ideas, the students' understanding and character improve. On a pedagogical basis, student-centered learning promotes active learners' participation, creativity, and motivation [65].

In addition, students' motivation and learning engagement are further enhanced by culturally appropriate digital media [66]. More generally, this is a model that facilitates more overall learning that encourages cognitive, social, and emotional development [67]. Consistent with multiliteracy theory, combining cultural and digital literacy can reinforce student critical and creative thinking in the face of the complexities of information [68].

5. Conclusion

Findings from the research demonstrate that including cultural and digital literacy is an approach to enhancing national resilience. Students who have strong cultural knowledge and critical digital skills may have a sense of national identity, are able to filter out global information, and are less easily influenced by negative information. Against this background,

Indonesian language education is considered to play a strategic role on the ideological and cultural resilience level in terms of literacy.

Finally, cultural and digital literacy integration also positions teachers as more than simply transmitters of information to facilitators of learning. To be successful, teachers develop new media for learning, bring cultural values into the materials, and guide students on how to use technology. The literature shows that the effectiveness of technology-based approaches greatly depends on teachers' proficiency using digital technology.

The results of this study have vital implications for curriculum design, including for the Independent Curriculum. Cultural and digital literacy must be integrated into a systematic learning plan. The learning curriculum should support local culture-based learning, encourage critical technology use, and make literacy a core competency. This research theoretically bolsters the idea of multiliteracies in language education. Practically, it provides a learning model that elementary school teachers could implement.

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