CAKRAWALA
JOURNAL OF CITIZENSHIP TEACHING AND LEARNING
ACADEMIC SOLUTION PUBLISHER

DIGITALIZATION IN LITERATURE LEARNING IN ELEMENTARY SCHOOLS

Yulhasni [1*], Emilda Sulasmi [2], Faisal Rahman Dongoran [3]

[1] Indonesian Language Education Study Program, Universitas Muhammadiyah Sumatera Utara, Medan, Indonesia.
[2] Doctoral Program in Education, Universitas Muhammadiyah Sumatera Utara, Medan Indonesia
[3] Accounting Education Study Program, Universitas Muhammadiyah Sumatera Utara, Medan, Indonesia
Corresponding Author: yulhasni@umsu.ac.id *

Article Info

Article history:

Received : 29 June 2026

Accepteance : 30 June 2026

Published : 30 June 2026

Available online
http://aspublisher.co.id/index.php/cakrawala

How to cite:
Yulhasni., Sulasmi, E., Dongoran, R. F. (2026). DIGITALIZATION IN LITERATURE LEARNING IN ELEMENTARY SCHOOLS. Cakrawala: Journal of Citizenship Teaching and Learning, 4(1), 74-95

ABSTRACT

The way elementary school students access, understand, and create literary texts is transformed by digitalization. However, the use of technology in literature learning often stops at the transfer of printed books to screens without adequate pedagogical design. The purpose of this article is to evaluate the importance of digitization in literature learning in elementary schools, the various types of media that can be used, the advantages and disadvantages of its utilization, and the methods that can be applied to achieve it. This research conducted a literature review using a qualitative descriptive method. The selected coverage comes from books, articles, and reports from international institutions that discuss children's literature, digital stories, multimedia learning, digital literacy, and reading on screens. The data analysis process includes reduction, theme grouping, result comparison, and conclusion drawing. The research results show that when multimedia elements align with learning objectives, such as digital stories, e-books, digital comics, animated videos, story production projects, and engagement, vocabulary, story comprehension, writing skills, and digital literacy, students can be improved. However, irrelevant interactions, screen use without guidance, inappropriate device usage, excessive animations, and the lack of digital skills among teachers can reduce student comprehension and increase the learning gap. Therefore, digitalization should be seen as an enhancement and not a replacement for reading, discussion, appreciation, and value reflection activities. Content quality, teacher readiness, equitable access, child data protection, and literacy-focused learning evaluation are all factors that determine the success of implementation.

Keywords: *digitization, literary learning, elementary education, digital stories, digital literacy*

1. INTRODUCTION

The advancement of digital technology has transformed educational practices from conventional classroom-based instruction into multimodal learning environments that integrate text, sound, image, video, and interactive elements. This transformation is increasingly evident in primary education, where learners actively engage with information through smartphones, tablets, computers, and various online platforms. UNESCO (2023) emphasizes that although technology can expand access and support learning processes, its effectiveness remains highly dependent on pedagogical objectives, teacher readiness, governance, and infrastructural equity. Accordingly, this article argues that technology alone does not guarantee improved learning outcomes.

Literature learning plays a fundamental role in primary education, as it enables students to engage with language and interpret human experiences through various forms such as stories, poetry, fairy tales, fables, and simple dramatic texts. Through literary engagement, learners develop an understanding of narrative elements, including character, conflict, setting, point of view, causality, moral values, emotions, and decision-making processes. Moreover, literary learning contributes to the development of imagination, empathy, critical thinking, and expressive abilities. Yet in many instructional contexts, literature learning remains focused on memorization of intrinsic elements and factual comprehension, rather than interpretive or experiential engagement.

Current classroom practices in several elementary schools still rely heavily on teacher-centered approaches, including closed-question exercises, textbook dependency, and round-robin reading techniques. Although efficient in classroom management, these approaches often position students as passive recipients of knowledge. As a result, literary texts are frequently treated as linguistic exercises rather than aesthetic and interpretive experiences. This condition is further compounded by disparities in reading resources, differences in literacy levels, and limited availability of diverse instructional media.

Digitalization offers significant opportunities to address these limitations, and this article argues that its main value lies in expanding how literary learning is experienced and expressed. Literary materials can now be delivered through e-books, audiobooks, animated videos, digital comics, podcasts, and interactive reading applications. In addition, learners are able to engage in productive literacy practices such as script

writing, narrative recording, visual storytelling, and digital content creation. Robin (2008) defines digital storytelling as a synthesis of narrative structure with multimedia elements such as text, image, audio, and video, enabling both individual expression and collaborative learning processes. In this regard, digital literacy integration supports the development of reading, listening, speaking, writing, and media literacy skills simultaneously.

However, digitalization should not be interpreted as a replacement for printed literature, and this article argues for strategic media integration instead. Empirical findings from Furenes, Kucirkova, and Bus (2021) indicate that printed books may still yield superior learning outcomes in certain contexts, particularly when digital features create cognitive distractions. Similarly, research by Clinton (2019) and Delgado et al. (2018) shows that screen-based reading may reduce comprehension when learners experience cognitive overload, lack effective reading strategies, or encounter complex navigation systems. Therefore, the central issue is not the substitution of print by digital media, but rather the development of an appropriate media integration strategy aligned with learners' developmental stages and instructional objectives.

Based on these considerations, this article argues that digitalization is essential in elementary literature education, while also examining the advantages and limitations of digital literary media and how digital technology can be effectively utilized to enhance students' literacy competencies. The discussion is grounded in children's literature studies, multimedia learning theory, reader-response theory, multiliteracy frameworks, and digital competence perspectives.

2. LITERATURE REVIEW

Constructivism in Literature Education

Constructivist learning theory posits that knowledge is actively constructed through experience, interaction, and reflection. In the context of literature education, students are not merely recipients of information regarding characters, themes, or moral messages, but active interpreters who connect textual meaning with prior knowledge, lived experiences, and peer perspectives. Teachers, therefore, function as facilitators who design learning environments that encourage hypothesis formation, interpretive comparison, and meaning negotiation.

Digital learning environments strengthen constructivist principles by enabling flexible interaction with texts. Digital stories can be paused, replayed, annotated, and compared with alternative versions, thereby supporting iterative meaning-making processes. When instructional focus remains on narrative structure and content interpretation, such features enhance exploratory learning.

From a sociocultural perspective, Vygotsky's (1978) Zone of Proximal Development (ZPD) highlights the importance of guided interaction between learners and more capable peers or teachers. In digital literature learning, scaffolding strategies such as guiding questions, shared reading activities, visual dictionaries, and collaborative discussion forums function as mediational tools. In this sense, technology does not replace cognitive engagement but facilitates dialogic learning processes. Consequently, literary learning remains socially constructed rather than individually isolated.

Multimedia Learning Theory

Multimedia learning theory emphasizes that human cognition processes verbal and visual information through dual channels, each with limited cognitive capacity (Mayer, 2021). Effective learning occurs when learners are able to select, organize, and integrate relevant information into coherent mental representations.

In digital literature instruction, visual illustrations can support comprehension of setting and character actions, while audio narration assists early readers in decoding text. However, excessive multimedia elements such as animations, transitions, or auditory distractions may increase cognitive load and reduce comprehension efficiency.

To optimize learning outcomes, instructional design should apply key principles of multimedia learning, including:

1) Coherence principle: eliminating irrelevant material that does not support learning objectives
2) Signaling principle: highlighting essential information through visual or auditory cues
3) Segmentation principle: dividing content into manageable learning units
4) Modality principle: distributing information across verbal and visual channels appropriately

These principles ensure that learners focus on narrative meaning, causal relationships, and character development rather than extraneous multimedia stimuli.

Reader-Response Theory

Reader-response theory conceptualizes reading as an interactive process between text and reader. According to Rosenblatt (1994), meaning is not solely embedded within the text but is constructed through the reader's emotional, experiential, and cognitive engagement during the reading process.

In elementary literature education, this theory supports interpretive plurality, where students may generate different yet valid interpretations of literary texts, provided that interpretations are supported by textual evidence. This approach discourages the imposition of a single dominant moral interpretation and instead promotes critical engagement and reasoning.

Digital media expands the forms of reader response beyond written expression. Students may produce visual interpretations, audio commentaries, emotional mapping of characters, or alternative narrative endings. While such multimodal outputs enhance expressive flexibility, assessment must remain grounded in interpretive depth, textual relevance, and logical coherence rather than aesthetic presentation alone.

2.4 Multiliteracies and Digital Competence

The multiliteracies framework asserts that contemporary communication extends beyond alphabetic text to include visual, auditory, spatial, gestural, and interactive modes of meaning-making (New London Group, 1996; Kress, 2010). Consequently, literacy education must develop students' ability to interpret and construct meaning across multiple semiotic systems.

In digital literature learning, this includes understanding how sound influences narrative atmosphere, how visual framing shapes perspective, and how color and motion contribute to emotional interpretation. Such competencies enable learners to critically engage with multimodal texts rather than passively consume digital content.

Digital competence also encompasses ethical and responsible technology use. Students must be introduced to concepts such as intellectual property, digital identity protection, and information verification. Practical guidelines include the use of open-license materials, respect for privacy, permission-based recording practices, and proper citation of digital sources. In this way, literature education becomes a space where aesthetic appreciation and digital citizenship are developed simultaneously.

3. RESEARCH METHODE

This study employed a qualitative descriptive approach in the form of a systematic literature review (SLR). The approach was selected to integrate, compare, and synthesize findings from prior studies concerning digital literacy-based literature learning in elementary education. The study does not aim to calculate effect sizes or conduct statistical inference, but rather to identify patterns, conceptual tendencies, and implementation implications across empirical studies, meta-analyses, policy documents, and theoretical works.

Research Design and Approach

The review was conducted using a structured SLR framework consisting of four sequential stages: (1) problem identification and scope delimitation, (2) literature search, (3) screening and eligibility assessment, and (4) data extraction, coding, and thematic synthesis. The focus of the review is the integration of digital technology in elementary literature learning, particularly in reading, listening, responding, and producing literary texts.

Data Sources and Search Strategy

Literature sources were obtained from academic databases and scholarly search engines, including indexed journal platforms and educational repositories. The search strategy combined English and Indonesian keywords to ensure comprehensive coverage. Key terms included: *digital literature learning, children's digital stories, electronic storybooks, reading on screen, multimedia learning, reader response, digital literacy in primary education,* and *teacher digital competence*.

The publication period was restricted to studies published between 2021 and 2026, while older sources were included selectively when they contributed strong theoretical foundations or were widely recognized as seminal works in the field.

Inclusion and Exclusion Criteria

The inclusion criteria were defined as follows:

1) Studies focusing on elementary or primary education contexts.
2) Research addressing digital media use in literacy-related activities (reading, storytelling, comprehension, vocabulary development, engagement, or creativity).

3) Empirical studies, systematic reviews, meta-analyses, policy reports, and theoretical frameworks relevant to digital literacy.

The exclusion criteria included:

1) Studies unrelated to literacy or language learning processes.
2) Research focusing solely on technical device specifications without educational relevance.
3) Publications lacking a clear methodological description or educational context.

Data Collection and Extraction Procedure

All selected studies were systematically reviewed through title, abstract, and full-text screening. Eligible studies were then extracted using a structured coding framework that captured: research objectives, methodology, participant characteristics, type of digital media used, key findings, limitations, and pedagogical implications.

To ensure consistency, data were organized into a synthesis matrix consisting of six analytical categories: (1) types of digital media, (2) pedagogical advantages, (3) limitations and challenges, (4) teacher roles and competencies, (5) access and equity issues, and (6) implementation strategies in classroom practice.

Data Analysis Technique

Data were analyzed using thematic synthesis. Comparative analysis was conducted across studies to identify recurring patterns, contradictions, and emerging themes. Iterative interpretation was applied, allowing themes to be refined throughout the analysis process. Greater analytical weight was given to high-evidence sources such as meta-analyses, experimental studies, and official institutional reports, while theoretical literature was used to strengthen conceptual framing.

Validity and Reliability of the Review

Methodological rigor was ensured through systematic screening procedures, explicit inclusion–exclusion criteria, and structured coding protocols. Triangulation of findings across multiple types of sources (empirical, theoretical, and policy-based) was used to enhance interpretative validity and reduce selection bias.

Ethical Considerations

As this study is based on secondary data analysis, no direct involvement of human participants or animals was conducted. Therefore, ethical approval was not required. However, all reviewed studies were treated in accordance with academic citation and publication ethics.

Limitations of the Study

This review acknowledges several limitations. First, variability in the definitions of key terms such as digital storytelling, electronic books, and multimedia literacy may affect comparability across studies. Second, many studies originate from diverse educational and infrastructural contexts that may differ from elementary school conditions in Indonesia. Third, most existing research emphasizes short-term outcomes such as engagement and comprehension, while longitudinal evidence on reading habits and literary appreciation remains limited. Consequently, the findings of this study are positioned as a conceptual synthesis that requires further empirical validation through field-based research.

4. RESULTS AND DISCUSSION

Thematic Overview of the Findings

The literature review identified seven major themes related to the digitalization of literature learning in elementary schools. These themes include: (1) students' pedagogical needs, (2) forms of digital literature learning, (3) effects on literacy and student participation, (4) character education and cultural preservation, (5) implementation constraints and risks, (6) classroom design and assessment, and (7) institutional readiness.

The reviewed studies consistently indicate that digital media do not automatically improve literature learning. Their effectiveness depends on the relevance of multimedia features, the quality of teacher guidance, students' reading abilities, access to technology, and alignment with learning objectives. Digitalization therefore needs to be understood as a pedagogical approach rather than the simple use of electronic devices or applications.

The findings of Furenes et al. (2021), Bus et al. (2015), and Takacs et al. (2015) show that relevant multimedia features can support children's literacy. However, decorative

animations, games, advertisements, and excessive interactive elements may distract students from the content of the story. Mayer's (2021) multimedia learning theory supports this finding by emphasizing the importance of coherence, segmentation, and controlled cognitive load.

Studies by Sadik (2008) and Smeda, Dakich, and Sharda (2014) also demonstrate that student-produced digital stories can increase participation, creativity, collaboration, and technology integration. At the institutional level, UNESCO (2023) and Redecker (2017) emphasize that the educational value of technology depends on equitable access, teacher competence, appropriate governance, and student protection.

Pedagogical Needs and Forms of Digital Literature Learning

Literature learning in elementary schools must accommodate differences in students' reading abilities. Some students can identify characters' motivations, conflicts, and messages, while others still experience difficulties with vocabulary, sentence structure, and story sequence. These differences require teachers to provide appropriate scaffolding.

Digital media can offer audio narration, enlarged text, contextual illustrations, word highlighting, subtitles, and repeated playback. These features can support early readers and students who require additional assistance. However, multimedia features should strengthen comprehension rather than become sources of distraction.

Digital literature learning can be classified into two main forms: content consumption and content production. Content consumption includes reading electronic books, listening to audiobooks, viewing digital comics, watching animated adaptations, and exploring interactive stories. Content production includes writing scripts, recording narration, selecting images, creating illustrations, arranging sound, and presenting digital stories.

Electronic storybooks can be used in guided reading. Teachers can pause the story, introduce important vocabulary, ask students to make predictions, and compare illustrations with written descriptions. Audiobooks can support listening skills, pronunciation, expression, and intonation. Digital comics can help students understand the sequence of events, dialogue, facial expressions, and visual representations of conflict.

Animated videos may provide background knowledge or introduce unfamiliar settings. However, teachers should combine them with reading and discussion activities. Without these activities, students may passively receive the plot without developing their reading and interpretive abilities.

Digital storytelling provides broader opportunities for active learning. Students can adapt local folklore, create alternative endings, retell personal experiences, or develop original stories. During this process, students organize ideas, develop plots, revise language, combine visual and audio elements, and present their work. Consequently, students participate as creators of meaning rather than passive users of technology.

Effects on Literacy, Creativity, and Student Participation

a) Engagement and literary comprehension

Digital literature can increase students' interest in stories, particularly among those who are less interested in long printed texts. Images, narration, sound, and animation may provide contextual support for unfamiliar characters, settings, and events.

Nevertheless, engagement should not be measured by the frequency of students pressing buttons or operating devices. Meaningful engagement occurs when students follow the plot, ask relevant questions, identify conflicts, make inferences, and support their interpretations with evidence from the text.

Electronic stories can support vocabulary development by presenting pronunciation, definitions, illustrations, and contextual examples. Bus et al. (2015) and Takacs et al. (2015) found that multimedia features connected to the narrative can strengthen literacy development. Conversely, game elements and animations unrelated to the story may divide students' attention and reduce comprehension.

b) Writing and creative expression

Digital storytelling can support writing development because students must determine the characters, setting, conflict, sequence of events, and resolution. Students also need to revise scripts before combining them with images, narration, music, and movement.

The selection of multimedia elements requires careful reasoning. Images, sound, and music should reinforce the atmosphere and meaning of the story. This process

develops multimodal literacy, which refers to the ability to understand and communicate meaning through written, visual, audio, and spatial forms.

Digital production also provides different forms of participation. Students who are less confident speaking directly in front of the class may contribute through scriptwriting, illustration, narration, sound editing, or video production. Group projects can accommodate different interests and abilities as long as the teacher distributes responsibilities fairly.

c) Digital literacy

Literature projects can provide an authentic context for developing digital literacy. Students learn to search for appropriate materials, identify reliable sources, cite images and music, respect copyright, protect personal information, and evaluate the suitability of online content.

Digital literacy extends beyond technical proficiency. Students need to understand who created a message, why it was created, how people or cultures are represented, and what consequences may arise when a work is published online.

Character Education and Cultural Preservation

Literary works present moral conflicts that allow students to examine honesty, responsibility, empathy, tolerance, cooperation, justice, and environmental awareness. Digital formats may make these situations more accessible through narration, visual expression, and interactive choices. However, character values do not emerge automatically from exposure to moral stories.

Teachers need to facilitate reflective discussions. Questions may focus on the reasons behind a character's actions, the consequences for other characters, possible alternative decisions, and connections between the story and students' daily experiences. These questions encourage students to evaluate moral situations rather than merely repeat the stated message of the story.

The reader-response approach explains that meaning develops through interaction between the reader and the text. Students may therefore produce different interpretations based on their experiences. Teachers should accept diverse responses as long as students can provide relevant textual evidence.

Digitalization can also support the preservation of local literature and culture. Students may transform local folklore into audiobooks, digital comics, podcasts, or short

videos. They can collect stories through interviews with parents, elders, traditional leaders, or community members. Such activities strengthen local identity while developing communication, documentation, writing, and media-production skills. Teachers must ensure that adaptations retain important cultural meanings. Visual representations, language choices, and character portrayals should avoid cultural simplification and stereotypes.

Constraints and Potential Risks

a) Unequal access

Access remains a major challenge. Some schools have limited devices, unstable internet connections, inadequate electricity, or insufficient technical support. Home-based digital assignments may also disadvantage students who share devices with other family members. UNESCO (2023) warns that technology can widen educational inequality when access, support, and infrastructure are distributed unevenly. Digitalization should therefore allow offline use, shared devices, projected materials, printed alternatives, and group-based activities.

b) Teacher competence

Teachers need competencies in selecting literature, evaluating digital content, designing activities, operating devices, assessing student work, and protecting student data. Technical skills alone are insufficient.

The DigCompEdu framework developed by Redecker (2017) includes professional engagement, digital resources, teaching and learning, assessment, student empowerment, and the facilitation of students' digital competence. This framework indicates that teacher competence must integrate pedagogical, ethical, and technical dimensions.

c) Cognitive load and distraction

Digital stories may include narration, text, music, animations, buttons, advertisements, and games. When these features appear simultaneously, students may experience excessive cognitive load. They may remember attractive visual activities but fail to explain the conflict or sequence of events. Furenes et al. (2021) show that the effectiveness of digital reading depends strongly on media design. Features aligned with the story may support comprehension, while unrelated interactivity can distract attention.

d) Shallow reading

Studies by Delgado et al. (2018) and Clinton (2019) indicate that printed texts may provide better comprehension under certain reading conditions. These findings do not require schools to reject digital reading. Instead, students need explicit digital reading strategies. Teachers should teach students to set reading goals, pause and summarize, revisit previous sections, take notes, identify important information, and distinguish narrative content from decorative features.

e) Privacy, safety, and copyright

Digital literature projects may involve students' photographs, voices, names, accounts, and creative products. Schools must obtain appropriate consent, limit data collection, select age-appropriate platforms, and avoid publishing students' identities without a clear educational reason. Teachers must also guide students in using licensed texts, images, videos, and music. Copyright, source attribution, digital footprints, and responsible publication should become part of the learning process.

f) Excessive screen use

Literature learning still requires direct conversation, facial expressions, handwriting, role-playing, movement, and social interaction. Digital activities should therefore be combined with printed reading, oral storytelling, drama, drawing, and reflective writing. A balanced approach allows students to benefit from multimedia resources while maintaining sustained attention and deep reading practices.

Pedagogical Design and Classroom Implementation

Digital media should be selected after the teacher determines the learning objectives. Different media support different competencies. Audiobooks can support listening, pronunciation, and intonation. Digital comics can support the identification of event sequences and visual expressions. Interactive stories can support discussions about choices and consequences. Digital storytelling projects can develop writing, speaking, collaboration, and presentation skills.

The principle of multimedia coherence should guide the design of learning materials. Text, images, narration, music, and animation must contribute directly to the intended meaning. Materials should be free from unnecessary advertisements, excessive decorations, and complicated navigation. Long stories should be divided into manageable sections that allow discussion and reflection.

A blended approach is more appropriate than replacing printed texts entirely. Students may read a printed story, listen to its audio version, compare the two formats, and write a response. Such comparisons help students understand that every medium represents stories differently.

a) Classroom learning sequence

Digital literature learning can be organized into three stages. Pre-reading stage. The teacher activates prior knowledge by presenting a book cover, illustration, background sound, title, or short video clip. Students predict the content and discuss the vocabulary required to understand the story.

Reading or listening stage. The story is presented in several sections. The teacher pauses at important moments, particularly before or during a conflict. Students make predictions, identify textual evidence, examine cause-and-effect relationships, and record changes in characters.

Post-reading stage. Students discuss themes, compare perspectives, perform role-plays, write alternative endings, create digital comics, or produce short digital stories. The session ends with reflection on what students understood and how the media supported or hindered their comprehension.

For example, during a Grade 4 fable lesson, the teacher may present a short digital story without revealing the ending. Students identify the main problem and predict the character's decision. They then read the written version and compare its representation with the digital story. Each group subsequently creates an alternative final scene in comic form. The activity integrates reading, listening, speaking, writing, interpretation, and media production.

b) Adaptation to grade levels

For students in Grades 1 and 2, digitalization should focus on early reading support. Appropriate materials include short sentences, readable fonts, relevant illustrations, controllable narration, and limited word highlighting. Teachers should maintain eye contact, direct interaction, and shared reading practices.

For students in Grades 3 and 4, activities may focus on event sequences, character development, conflict, and cause-and-effect relationships. Students can develop story maps, compare printed and animated versions, or create comics based on selected scenes.

For students in Grades 5 and 6, learning may emphasize interpretation, criticism, and production. Students can examine perspectives, cultural values, stereotypes, moral consequences, and representation. They may produce folklore-based digital stories, literary podcasts, book reviews, or poetry-reading videos. The technical demands of the project should remain proportional to students' age and learning time.

Assessment of Digital Literature Learning

Assessment should cover both the learning process and the final product. Process assessment examines how students read, discuss ideas, select evidence, distribute responsibilities, revise scripts, respond to feedback, and use digital resources. Product assessment examines comprehension, interpretation, language accuracy, creativity, and coherence among multimedia elements.

Technical quality should not dominate the score. A visually attractive product should not receive a high score when its literary understanding is shallow. Teachers therefore need separate indicators for literary competence, communication, creativity, collaboration, and digital production.

Formative assessment may use prediction questions, exit tickets, reading journals, oral explanations, brief audio recordings, and group conferences. Feedback should identify specific improvements, such as adding textual evidence, clarifying relationships between scenes, correcting language, or reducing background music that obscures narration.

Summative assessment may use portfolios containing initial ideas, scripts, revisions, final products, peer assessments, and individual reflections. Portfolios allow teachers to observe students' development throughout the project. The main assessment components can be organized as follows:

Assessment aspect	Main indicator	Possible evidence
Story comprehension	Explains characters, setting, conflict, plot, and cause-and-effect relationships	Oral explanation, story map, reading journal, open-ended response
Literary interpretation	Presents an opinion supported by textual evidence	Discussion, review, written response, audio reflection
Language competence	Uses appropriate vocabulary, sentences, pronunciation, and expression	Script, oral presentation, narration, written product

Creativity	Develops original ideas while maintaining narrative consistency	Alternative ending, comic, video, podcast, digital story
Multimodality	Integrates text, images, sound, and movement coherently	Digital storytelling product and design rubric
Collaboration	Shares tasks, responds to feedback, and contributes responsibly	Observation notes, process documentation, peer assessment
Digital ethics	Uses sources, platforms, and personal information responsibly	Source list, consent documentation, digital ethics checklist

Institutional Implementation and Platform Selection

a) School implementation stages

School-level implementation can begin with a mapping stage. Schools identify available devices, internet access, electricity, literature resources, teacher competencies, student needs, and parental support. The scale of the program should reflect these conditions.

Schools with limited devices can begin with projectors, speakers, shared computers, and offline materials. Digital literature learning does not require every student to own a tablet or personal device.

The second stage involves a limited pilot. One or two teachers may conduct digital literature activities during several meetings. Schools collect student work, observation notes, assessment results, and feedback from students and parents. Technical problems should be distinguished from pedagogical problems during the evaluation.

The third stage involves expansion and improvement. Schools can develop a reviewed digital text collection, shared assessment rubrics, device schedules, data-protection procedures, and teacher learning communities.

The fourth stage is periodic evaluation. Evaluation should focus on changes in reading comprehension, literary response, student participation, equitable access, teacher competence, and digital safety. The number of devices or applications used is not an adequate indicator of educational success.

School leadership influences program sustainability. Principals need to provide planning time, professional development, technical support, and opportunities for reflection. Connectivity, licensing, maintenance, and teacher training should be

included in the school budget. Partnerships with libraries, universities, literacy communities, parents, and cultural organizations can expand the available resources.

b) Platform and content selection

Platform selection should consider students' age, ease of navigation, accessibility, data security, offline availability, and compatibility with available devices. Teachers should avoid applications that contain excessive advertisements, collect unnecessary personal data, or direct students to uncontrolled external links. Important accessibility features include adjustable font size, subtitles, alternative text, audio-speed control, pause functions, and the ability to return to previous sections.

Content should be evaluated according to literary and pedagogical quality. Suitable stories have coherent plots, developed characters, age-appropriate language, relevant illustrations, and conflicts that allow discussion. Content that directly states a single moral message may limit interpretation.

Teachers should also evaluate the representation of gender, disability, culture, social conditions, and local communities. Images and narratives should not reproduce misleading stereotypes.

Before using digital content, teachers need to review the entire material, test all functions, identify difficult sections, and prepare accompanying questions. A high-quality digital resource may still be unsuitable when its characteristics do not correspond with students' needs or learning objectives.

Synthesis of the Discussion

The findings show that digitalization can strengthen literature learning when technology serves clear pedagogical purposes. Digital stories, audiobooks, electronic books, comics, and multimedia projects can support comprehension, vocabulary, participation, creative writing, character reflection, cultural preservation, and digital literacy.

The educational benefits depend on appropriate design and teacher guidance. Relevant multimedia elements can assist students, while excessive interactivity may increase cognitive load and weaken reading comprehension. Printed and digital resources should therefore be combined according to the learning objectives, students' developmental levels, and available infrastructure.

Effective implementation requires equitable access, competent teachers, appropriate assessment, safe platforms, balanced screen use, and sustained institutional support. The central measure of success is not the sophistication of the technology. Success is reflected in students' ability to understand stories, interpret literary meanings, communicate their responses, create responsible digital works, and connect literature with personal, social, and cultural experiences.

5. CONCLUSION

Digitalization has an important role in elementary school literature learning because it can enrich students' learning experiences through multimodal resources, wider access to texts, interactive activities, and opportunities for creative production. Digital media may support creativity, writing skills, reading comprehension, vocabulary mastery, narrative understanding, and digital literacy. By combining text, images, audio, animation, and interactive features, students can engage with literary works in more varied and meaningful ways according to their developmental needs.

Nevertheless, digitalization does not automatically improve literature learning. Its effectiveness depends on how technology is integrated into pedagogy, literary content, student characteristics, and assessment. Literature learning may become less effective when digital media contain excessive features, irrelevant interactions, uncontrolled screen use, unequal access to devices, weak teacher competence, and insufficient protection of children's data. Too many visual or interactive elements may distract students from understanding plot, characters, language, values, structure, and messages in literary texts. Therefore, digital tools should strengthen reading, speaking, interpretation, creativity, and reflection, rather than merely replace printed materials.

Effective implementation requires clear alignment among learning objectives, selected literary texts, digital media, instructional strategies, and assessment procedures. Schools need to combine printed and digital materials proportionally, ensure fair access to devices and internet services, improve teachers' pedagogical and digital competence, and establish policies on screen time, online interaction, copyright, privacy, and child data protection. Teachers should select digital resources based on students' age, language ability, cultural background, and learning goals.

Conceptually, this study contributes by positioning digitalization as a pedagogical enhancement in elementary literature learning, not as a simple technological substitution. It also proposes a balanced framework that combines digital media with printed books, storytelling, discussion, drama, drawing, creative writing, and reflective activities. This perspective is relevant in Indonesia, where schools differ in infrastructure, teacher readiness, student background, and access to technology.

The findings imply that teachers should design digital literature activities that guide students toward understanding meaning, values, language, and creativity. Schools should provide professional development so teachers can select digital texts, manage multimodal learning, assess literary responses, and protect children in online environments. Curriculum developers should include indicators for reading comprehension, oral communication, literary appreciation, creativity, collaboration, and digital literacy. Policymakers should develop guidelines on digital material quality, age-appropriate screen use, accessibility, copyright, data security, and equitable infrastructure.

This study has limitations because it is based mainly on conceptual analysis and previous research, without directly measuring classroom effectiveness. It also does not compare specific digital media, such as interactive storybooks, videos, digital comics, learning applications, or artificial intelligence tools. Differences in school location, socioeconomic background, teacher competence, and local culture have not been examined empirically. Long-term effects on reading habits, literary appreciation, creativity, social interaction, emotional development, screen dependency, cognitive overload, privacy, and digital inequality also remain unclear.

Future research should test digital literature learning models across grade levels and Indonesian regions, including urban, rural, remote, and disadvantaged schools. Experimental, quasi-experimental, longitudinal, and mixed-method studies are needed. Further studies should compare printed, digital, and blended approaches while measuring cognitive, affective, creative, linguistic, social, and digital outcomes. Research should also examine teacher competence, parental involvement, ethical media use, accessibility for students with special needs, and child data protection.

REFERENCES

Buss, A., Takacs, G., & Kegel, C. B. T. (2015). Access and limitations of electronic storybooks for developing literacy in young children. Developmental Research, 35, 79–97. https://doi.org/10.1016/j.dr.2014.12.004

Caena, F., & Redecker, C. (2020). Alinear los marcos de competencia docente a los desafíos del siglo XXI: El caso del Marco Europeo de Competencia Digital para Educadores (DigCompEdu). European Journal of Education, 54(3), 356–369. https://doi.org/10.1111/ejed.12345

Christ, T., Wang, X., Chiu, M. M., & Cho, H. (2020). Dando sentido con libros de aplicaciones multimodales para niños de jardín de infantes: Las relaciones entre las características del lector, las características del libro de la aplicación y los resultados de comprensión. Early Childhood Research Quarterly, 47, 357–372. https://doi.org/10.1016/j.ecresq.2018.12.003

Clinton, V. (2020). Membaca dari kertas dibandingkan dengan layar: Tinjauan sistematis dan meta-analisis. Journal of Research in Reading, 42(2), 288–325. https://doi.org/10.1111/1467-9817.12269

Delgado, P., Vargas, C., Ackerman, R., & Salmerón, L. (2018). Una meta-análisis sobre el impacto de los medios de lectura en la comprensión lectora: Mantén tus libros impresos. Educational Research Review, 25, 23–38. https://doi.org/10.1016/j.edurev.2018.09.003

Furenes, M. I., Kucirkova, N., & Bus, A. G. (2019). A meta-analysis of children's reading on paper versus screen. Review of Educational Research, 91(4), 483–517. https://doi.org/10.3102/0034654321998074

Kress, G. (2010). Multimodality: A social semiotic approach to contemporary communication. Routledge.

Kucirkova, N. (2020). Children reading digital books: The past moving quickly toward the future. Child Development Perspectives, 13(4), 208–214. https://doi.org/10.1111/cdep.12339

Mayer, R. E. (2019). Aprendizaje a través de múltiples medios (3rd ed.). Cambridge University Press. https://doi.org/10.1017/9781316941355

Mishra, P., & Koehler, M. J. (2010). Technological pedagogical content knowledge: A framework for teacher knowledge. Teachers College Record, 108(6), 1017–1054. https://doi.org/10.1111/j.1467-9620.2006.00684.x

The New London Group. (1996). A pedagogy of multiliteracies: Designing social futures. Harvard Educational Review, 66(1), 60–92. https://doi.org/10.17763/haer.66.1.17370n67v22j160u

OECD. (2022). PISA 2022 results (Volume I): The state of education and equity. OECD Publishing. https://doi.org/10.1787/53f23881-en

Reeder, C. (2017). DigCompEdu: A European framework for the digital competence of educators. Publications Office of the European Union. https://doi.org/10.2760/159770

Reed, S. M., Yau, C., Xu, Y., Muskat, T., Uvalle, J., & Cannata, D. (2020). Digital or print? Perbandingan pemahaman, kosakata, dan keterlibatan anak prasekolah dari buku cetak dan buku elektronik. AERA Open, 5(3), 1–16. https://doi.org/10.1177/2332858419878389

Robinson, B. (2010). Digital storytelling: A powerful technology tool for the classroom of the 21st century. Theory Into Practice, 47(3), 220–228. https://doi.org/10.1080/00405840802153916

Rosenblatt, L. M. (1989). The reader, the text, the poem: The transactional theory of the literary work. Southern Illinois University Press.

Sadik, A. (2010). Digital storytelling: A meaningful technology-integrated approach for engaged student learning. Educational Technology Research and Development, 58, 487–506. https://doi.org/10.1007/s11423-008-9091-8

Singer, L. M., & Alexander, P. A. (2017). Reading across mediums: Effects of reading digital and print texts on comprehension and calibration. Journal of Experimental Education, 85(1), 155–172. https://doi.org/10.1080/00220973.2016.1143794

Sharda, N., & Smeda, N. (2014). A comprehensive analysis of the effectiveness of digital stories in education. Smart Learning Environments, 1(6). https://doi.org/10.1186/s40561-014-0006-3

Takacs, Z. K., Swart, E. K., & Bus, A. G. (2015). Benefits and drawbacks of multimedia and interactive features in technology-enhanced storybooks: A meta-analysis. Review of Educational Research, 85(4), 698–739. https://doi.org/10.3102/0034654314566989

UNESCO. (2019). A new social contract for education: Reimagining our futures together. UNESCO.

UNESCO. (2022). Global Education Monitoring Report 2023: Technology in education—Tools for whom? UNESCO.

Vygotsky, L. S. (1978). Mind in society: The development of higher psychological processes. Harvard University Press.

Yang, Y. T. C., & Wu, W. C. I. (2012). An experimental study over one year aimed at improving students' academic performance, critical thinking skills, and motivation to learn. Computers & Education, 59(2), 339–352.

Zhao, Y., & Sánchez Gómez, M. C. P. (2021). Competencia digital en la investigación de educación superior: Una revisión sistemática de la literatura. Computers & Education, 168, 104212. https://doi.org/10.1016/j.compedu.2021.104212