INVESTIGATING THE IMPACT OF DIGITAL TEXTBOOKS ON STUDENTS' DIGITAL LITERACY

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Abstract: The integration of digital textbooks in English as a Foreign Language (EFL) classroom has become more common, particularly as digital literacy grows in importance for 21st-century learners. While many digital learning tools are available, there is limited research that closely examines how digital textbooks contribute to students' digital literacy development in real classroom practice, especially in EFL contexts. This study aimed to explore how the use of digital textbooks contributes to students' digital literacy development in EFL learning from both student and teacher perspectives. A qualitative case study was conducted involving classroom observations and semi-structured interviews with students and an English teacher. The analysis was guided by Hague and Payton's digital literacy framework by covering eight aspects: functional skills, creativity, critical thinking and evaluation, cultural and social understanding, collaboration, ability to find and select information, effective communication, and safeguarding. The findings indicated that digital textbooks supported several aspects of digital literacy, particularly functional skills, information selection, and critical evaluation. However, certain aspects, such as creativity and safeguarding, were less frequently observed. The study concludes that digital textbooks have the potential to foster digital literacy in EFL settings, but their effectiveness depends on how actively features are utilized and supported through guided classroom practices.

Keywords: *digital literacy; digital textbooks; EFL learning; technology integration.*

INTRODUCTION

In the landscape of 21st-century education, digital technologies have shifted from supplementary tools to fundamental components of instructional practice. One prominent innovation is the use of digital textbooks—interactive, multimedia-rich learning resources designed for digital devices such as computers, tablets, and smartphones (Reddy et al., 2020). Unlike traditional printed materials, digital textbooks offer embedded videos, audio features, hyperlinks, and interactive exercises that aim to increase student engagement and autonomy in the learning process (Sofian et al., 2023; Suriani et al., 2023).

For students learning English as a Foreign Language (EFL), especially in contexts where authentic exposure to English is limited, digital textbooks serve as a gateway to immersive content. They provide greater flexibility in access, cater to different learning preferences, and support independent learning and cultivating evaluative thinking (Bajaj, 2020; Furbani et al.'s 2025) Furthermore, these resources align with the demands of 21st-century competencies, particularly

digital literacy, which has become essential for students to succeed in academic and professional contexts (Hoadley & Favaro, 2015) and thus it need more encouragement (Meirbekov et al., 2022). Digital literacy involves the ability to access, evaluate, utilize, create, and communicate information through digital platforms. In EFL settings, digital literacy supports students in navigating online English materials, assessing the credibility of digital sources, and engaging in digital collaboration.

Despite these benefits, the actual implementation of digital textbooks in schools, particularly at the senior high school level in Indonesia, presents notable challenges. Previous studies indicate that although digital materials offer convenience and potential interactivity, students often struggle with limited access to devices, low confidence in digital skills, and a preference for printed texts due to familiarity and ease of concentration (Chavali & R. Gundala, 2022; Masruroh et al., 2021). These challenges are compounded in EFL classrooms, where successful use of digital textbooks also requires adequate language proficiency and self-regulation.

In Indonesia, the Ministry of Education has made ongoing efforts to digitize educational resources, including the distribution of government-provided digital textbooks. However, the extent to which these materials contribute to developing students' digital literacy remains underexplored. Most existing studies either evaluate general attitudes toward e-learning or focus on technical aspects of digital textbook use, with limited attention given to how these tools function in everyday classroom interactions or how they specifically foster digital literacy (Alakrash & Abdul Razak, 2021; Al Masuudi et al., 2024; Respati et al., 2024). Meanwhile, Nguyen & Habók (2022) and Rizqiani & Yuliani (2023) conducted the similar topic utilizing the different method of inquiry.

This study advances the field by offering classroom-based evidence that digital textbooks have the potential to promote digital literacy in EFL settings. Unlike previous studies that often focused on general digital tool usage or online learning environments focusing on preferences (Amirtharaj et al., 2023), content (Bond et al., 2019), challenges (Ningsih et al., 2023), and impact (Setyaedhi & Pramana, 2025; Xodabande and Hashemi, 2023), this research emphasizes the role of digital textbooks as a specific medium within structured classroom practice. The novelty of this study lies in its integration of a digital literacy framework directly into pedagogical evaluation, providing a practical lens for teachers and curriculum designers to reflect on how instructional materials foster students' broader 21st-century competencies. Few studies integrate teacher and student perspectives to provide a holistic view of classroom dynamics.

This study responds to this gap by investigating the role of digital textbooks in fostering digital literacy in an Indonesian EFL senior high school setting. Drawing from Hague and Payton's (2010) framework of digital literacy—which includes functional skills, creativity, critical thinking and evaluation, cultural and social understanding, collaboration, information selection, communication, and safeguarding—this study explores how digital literacy is fostered through classroom interaction with digital textbooks and what challenges are encountered in the process. Unlike previous works that emphasize learner satisfaction or technological design, this study highlights real-time classroom observations and in-depth interview data.

By applying an established digital literacy framework to actual classroom practices, this research offers new insights into how government-issued digital textbooks function as literacy tools in a real-world EFL context. It also captures the interplay between pedagogical strategies, student engagement, and digital resource design, areas that are rarely examined together in the existing literature, particularly within the Indonesian senior high school education system. Thus, the objective of this study is to examine how the use of digital textbooks contributes to students' digital literacy development in EFL learning and to identify the challenges and strategies experienced by both students and teachers in the process.

METHOD

This study employed a qualitative case study approach to explore how the use of digital textbooks contributed to students' digital literacy development in English as a Foreign Language (EFL) learning. The research was conducted at a public senior high school in Tasikmalaya Regency, West Java, Indonesia, where digital textbooks had been integrated into English instruction. The participants were held in one class for observations, and included five students and one English teacher for interviews. Selected through purposive sampling based on their active involvement with digital learning materials. The teacher's recommendation guided the five students to ensure a variety of digital literacy engagement levels were represented.

Data collection took place over two weeks in May 2025 and was carried out through classroom observations and semi-structured interviews. Observations were conducted during two scheduled English lessons, where the researcher took a non-participant role and used field notes to document how students engaged with digital textbooks. These notes focused on key behaviors such as navigation, collaboration, information selection, and interaction with multimedia content. To support the accuracy of the data, classroom activities were video-recorded with prior consent from all parties. Following the observation phase, individual semi-structured interviews were conducted with the five students and the teacher to gain deeper insight into their experiences using digital textbooks. All interviews were held in Indonesian for natural communication and were later transcribed and translated into English for analysis. The interviews explored participants' perspectives across the eight components of digital literacy, based on Hague and Payton's (2010) framework as given in Table 1.

Table 1. Digital literacy aspects

Aspects	Indicators
Functional Skill	Frequency of technology usage in everyday life.
Creativity	Experience in sharing ideas through digital technology.
	Experience in creating content through digital technology.
Collaboration	Experience in writing opinions through digital technology.
Effective Communication	The habit of knowing information in society through digital technology.
Critical Thinking and Evaluation	Awareness of the importance of using digital technology for learning purposes.
The Ability to Find and Select Information	Experience of discovering the truth of news obtained through digital technology.
Cultural and Social Understanding	Awareness in assessing the good and bad of studying information about the cultures of other people.
Safeguarding	Awareness of the importance of filtering information from digital media.
	Experience in securing information search through digital technology.

(Adapted from Hague & Payton, 2010)

The collected data were analyzed using thematic analysis (Clarke & Braun, 2017). Observation notes and interview transcripts were repeatedly reviewed to identify patterns related to digital literacy development. A deductive coding process was applied based on Hague and Payton's framework, which includes functional skills, creativity, critical thinking and evaluation, cultural and social understanding, collaboration, the ability to find and select information, effective communication, and safeguarding. Inductive coding was also used to capture emerging themes not directly covered by the framework. To ensure credibility and trustworthiness, data triangulation was employed by comparing observation findings with interview responses. Ethical considerations were observed throughout the study by maintaining participants' confidentiality and securing informed consent from everyone involved. This methodological approach provided a comprehensive understanding of how digital textbooks shaped students' digital literacy within an actual EFL classroom environment.

RESULTS

The findings of this study indicate that digital textbooks played a significant role in fostering various aspects of students' digital literacy within the EFL classroom. Through both classroom observation and interviews, it became evident that certain digital literacy components, such as functional skills, information selection, and collaboration, were more frequently demonstrated, while others, including safeguarding and cultural understanding, appeared less prominently. These patterns reflect the different levels of emphasis placed on digital literacy aspects in actual classroom practice and highlight the areas where pedagogical support remains necessary.

The classroom observation and interview data revealed that students developed various aspects of digital literacy using digital textbooks, with some components appearing more strongly than others. Functional skills were the most consistently demonstrated aspect. Most students were able to access the digital textbooks using their own or school-provided devices, navigate through pages, use basic tools such as zooming and highlighting, and operate hyperlinks embedded in the materials. This showed a high level of familiarity with basic technological functions, likely due to students' prior exposure to digital media in and out of school. Another strongly visible component was the ability to find and select information. Many students demonstrated the capacity to search for relevant information within the textbook, particularly when supported by visual cues, internal search tools, or keywords given by the teacher. However, some students still required guidance in locating specific sections or cross-referencing different parts of the content, indicating that while the skill was emerging, it was not yet consistently independent across all learners.

Critical thinking and evaluation also appeared in students' behavior, although less frequently. During certain tasks, some students expressed doubt about the accuracy of online definitions or examples and asked for clarification, suggesting a degree of analytical thinking. However, this behavior was not typical of all participants; many others tended to rely entirely on the digital content without questioning its reliability or origin. Similarly, creativity was modestly evident in students' use of the digital textbook's interactive features, such as embedding visuals, choosing different layouts, or experimenting with multimedia assignments. Nevertheless, such expressions of creativity were often limited to tasks that explicitly required it, rather than emerging spontaneously. The component of collaboration was more clearly observed when students engaged in pair or group activities, especially during projects or assignments that encouraged shared screen use or digital discussion. Yet, the collaborative process was largely structured by the teacher and did not always involve students taking initiative in digital interaction beyond the minimum required.

The remaining components—cultural and social understanding, effective communication, and safeguarding—were less frequently demonstrated in classroom practices. Cultural and social understanding only emerged when the teacher intentionally included culturally diverse topics or comparisons in the digital material, and even then, student engagement with global perspectives remained shallow. Effective communication using digital platforms, such as comment features or shared online notes, occurred but was minimal and inconsistent across students. There was little evidence that students were using digital textbooks to engage in meaningful communication beyond task completion. Safeguarding was the least apparent among all components. Students rarely mentioned concerns about privacy, digital boundaries, or secure information sharing, and the issue was not actively addressed in classroom instruction. Overall, the findings suggest that while digital textbooks support several dimensions of digital literacy—especially functional skills, information navigation, and collaborative learning—others, such as safeguarding and intercultural awareness, remain underdeveloped unless explicitly taught and integrated into pedagogical practices.

DISCUSSION

The observation data revealed that the integration of digital textbooks into English as a Foreign Language (EFL) classroom contributed meaningfully to the development of students'

digital literacy. Defined as the ability to effectively and critically access, evaluate, use, and create digital content (Reddy et al., 2020), digital literacy emerged across a range of competencies throughout the teaching and learning process. Guided by the eight-component digital literacy framework from Hague and Payton (2010), this discussion synthesizes how digital literacy manifested among students and how it was supported or constrained by the teacher's practice. The section also explores the challenges both parties encountered, providing a comprehensive view of the affordances and limitations of digital textbooks in an Indonesian senior high school EFL setting.

Classroom observations demonstrated that students developed foundational digital literacy, particularly in functional skills, critical thinking and evaluation, and collaboration. Students showed confidence in navigating the digital textbook interface, adjusting reading settings, and accessing different sections of the material—reflecting improvements in operational competence (Sofian et al., 2023). These basic skills are essential, as they allow learners to participate effectively in digital learning environments and form the groundwork for more complex digital practices. Additionally, the teacher reinforced these skills through direct instruction and demonstrations, ensuring students were consistently supported in their navigation and technical engagement.

Beyond technical proficiency, students began to exhibit elements of critical thinking and evaluation. They questioned vague content, sought clarification, and referenced different parts of the textbook to confirm their understanding. These practices point to emerging analytical habits, aligning with Furbani et al.'s (2025) emphasis on the role of digital environments in cultivating evaluative thinking. However, creativity and cultural understanding were less prominently displayed. While a few students engaged with annotation tools or asked questions about unfamiliar cultural references, such moments were brief and often teacher prompted. This suggests that these dimensions of digital literacy require more explicit encouragement and integration into classroom tasks (Meirbekov et al., 2022).

The teacher's observations supported and complemented the student data. The teacher played a key role in scaffolding digital literacy by guiding students through the textbook's technical features, encouraging reflection through open-ended questions, and structuring collaborative tasks. Functional skills, again, were a major focus—both in instruction and classroom management—demonstrating the importance of teacher facilitation in ensuring smooth technology use (Alakrash & Abdul Razak, 2021). To enhance critical engagement, the teacher used probing questions that required deeper interpretation of content, fostering students' higher-order thinking. These instructional strategies proved instrumental in helping students transition from passive content reception to more active and thoughtful interaction with digital texts.

Despite these positive developments, several aspects of digital literacy were underrepresented in both student and teacher behavior. Creativity, while occasionally encouraged through annotation tools, was not embedded as a formal part of instructional design. Cultural and social understanding, though touched on when content included foreign customs or idioms, remained incidental rather than planned. Safeguarding also emerged as an ongoing issue. Students occasionally became distracted by social media or games, and although the teacher intervened through verbal reminders, there was little structured instruction on responsible digital behavior. These gaps suggest a need to move beyond operational and academic functions and toward a more holistic integration of digital citizenship and creative engagement within EFL instruction (Rizqiani & Yuliani, 2023).

From the students' perspective, challenges related to access and digital readiness posed significant barriers to effective learning. Technical limitations such as insufficient storage and poor internet connectivity frequently disrupted the learning flow. As noted by Bond et al. (2019) and Ningsih et al. (2023), these issues are common in under-resourced educational contexts and highlight the ongoing issue of digital inequality. Students also reported discomfort from prolonged screen exposure and distraction from notifications—factors that reduced motivation and concentration. These findings underscore the importance of designing digital learning

environments that account not only for pedagogical effectiveness but also for learners' physical and cognitive endurance (Amirtharaj et al., 2023).

Students also reported mixed success with digital navigation and information selection. While some used the search feature efficiently, others preferred manual scrolling, indicating a limited mastery of strategic digital reading. These gaps mirror those identified by Xodabande and Hashemi (2023), who found that students' use of digital tools is often superficial unless explicitly taught. Nevertheless, students displayed adaptability and problem-solving in response to these difficulties. They shared strategies like restarting apps, consulting peers, and organizing study groups to overcome obstacles. These behaviors suggest a degree of digital agency and self-regulation, which are important for independent digital literacy growth (Nguyen & Habók, 2022; Setyaedhi & Pramana, 2025).

The teacher also identified several instructional and infrastructural challenges. With no projector and inconsistent internet access, centralized demonstrations were limited, requiring the teacher to rely more on verbal explanation and individualized support. These constraints made it difficult to foster uniform engagement with digital features, particularly those requiring stable connectivity, such as embedded videos or quizzes. Additionally, the teacher observed that some students were reluctant to explore interactive textbook functions, indicating hesitation or unfamiliarity. This supports the idea that digital readiness is not evenly distributed among students, and teachers must adapt their methods to support learners at various levels of competence (Hermita et al., 2023; Xodabande & Hashemi, 2023).

Despite these obstacles, the teacher demonstrated resilience and flexibility. By assigning collaborative tasks, circulating digital materials through messaging apps, and maintaining an active monitoring presence in class, the teacher fostered a supportive environment for digital engagement. Group activities that required shared textbook use or peer explanation promoted not only language learning but also digital communication and collaboration skills. Such practices align well with Hague and Payton's (2010) emphasis on interaction as a core digital literacy domain and reflect a practical application of digital pedagogy under constrained conditions. Yet, there remains a clear opportunity to deepen instruction in under-addressed areas like digital creativity, intercultural competence, and safeguarding.

In summary, the use of digital textbooks in this EFL classroom contributed significantly to developing core aspects of digital literacy, particularly functional skills, collaboration, and critical thinking. Both students and the teacher actively participated in digital learning practices, though their engagement was shaped by contextual limitations and uneven access to resources. Creativity, cultural understanding, and safeguarding remained underdeveloped components, highlighting the need for more targeted instruction and curriculum design. The study reaffirms that digital tools, while essential, must be accompanied by thoughtful pedagogy to fully realize their educational potential in fostering comprehensive digital literacy.

CONCLUSION

This study explored how digital textbooks contribute to students' digital literacy development in English as a Foreign Language (EFL) learning, particularly from the perspectives of both students and a teacher. By applying Hague and Payton's (2010) eight-component framework of digital literacy, the research uncovered those digital textbooks primarily supported the development of functional skills, the ability to find and select information, and critical thinking and evaluation. These skills were developed through students' interactions with navigation tools, embedded media, hyperlinks, search functions, and digital exercises. However, other components, such as creativity, collaboration, effective communication, and safeguarding, appeared less prominent, indicating an imbalance in how digital literacy is cultivated through current textbook use.

The findings suggest that while digital textbooks offer affordances that align with several digital literacy components, their potential is not fully realized without intentional teacher

guidance and critical task design. Teachers play a vital role in helping students not only access digital content but also engage with it meaningfully, prompting creativity, safe practices, and collaborative inquiry. Consequently, professional development programs should train educators not just in operating digital platforms, but in embedding digital literacy principles within instruction. Likewise, textbook developers should consider designing materials that encourage higher-order skills such as creativity, communication, and safeguarding, alongside functional navigation.

This study also offers practical implications for classroom implementation. EFL teachers should be encouraged to create learning tasks that go beyond content delivery by including activities that require students to collaborate, create, critically evaluate sources, and discuss digital responsibility. Only through such comprehensive engagement can digital literacy be nurtured in a balanced and sustainable manner.

Future research could expand this study by involving more diverse classroom settings, a larger participant base, and mixed method approaches that combine observation with quantitative measurement. Longitudinal studies would also be valuable in tracking how digital literacy develops over time with continued digital textbook use. Furthermore, deeper inquiry into underrepresented aspects such as safeguarding, creativity, and cultural understanding will be necessary to better inform curriculum development and teacher training in the digital era.

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