



Exploring students' use of digital literacy for reading comprehension of English text

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Abstract

This study examined how high school EFL students in Indonesia use digital literacy to support reading comprehension of English texts. A qualitative case study design was employed involving five 10th grade students at a Public High School in Cirebon. Data were collected through semi-structured interviews, classroom observations, and documentation, subsequently analyzed using Braun and Clarke's thematic analysis framework. Students adopted a layered, sequential pattern when engaging with English texts: independent reading preceded peer consultation, which in turn preceded recourse to internet searches and AI tools. Primary digital resources included Google Translate, Google Lens, ChatGPT, Gemini, and WhatsApp groups. Challenges encountered encompassed translation inaccuracies, vocabulary ambiguity, unstable internet connectivity, and school restrictions on smartphone use. Students responded by cross-checking multiple sources, consulting peers and teachers, and gradually developing critical awareness of digital information. This study provides an in-depth exploration of how Indonesian high school EFL students actually employ digital literacy practices to support reading comprehension, highlighting the sequence of strategies and challenges they encounter in real learning contexts.

Keywords: Digital Literacy; Reading Comprehension; EFL Students.

INTRODUCTION

The use of digital technology in English as a Foreign Language (EFL) instruction has transformed the way students read and comprehend English-language texts. In Indonesia, where English is taught as a foreign language, students often utilize digital tools such as online dictionaries, translation apps, and educational websites to aid their understanding of reading materials. This trend underscores the growing importance of digital literacy in education and daily learning (UNESCO, 2023).

Although digital tools are widely used, many Indonesian students still face difficulties in understanding English texts. According to the Programme for International Student Assessment (PISA) 2022, Indonesia ranked 72nd out of 81 participating countries, with a reading score of 371, which is far below the OECD average of 487 (OECD, 2022). These results indicate that the availability of digital technology does not automatically improve students' reading comprehension. Students also need the ability to use digital resources effectively to support their learning.

Digital literacy in this study refers to more than just the use of technology. (Gilster, 1997) explains that digital literacy encompasses the ability to find, access, evaluate, and use information from digital sources. Meanwhile, reading comprehension is the process of understanding and interpreting text. This involves identifying main ideas, understanding vocabulary, and drawing conclusions from what is read (Snow, 2002). Therefore, digital literacy can help students understand English texts through various sources such as translation tools, online explanations, videos, and other digital content.

Previous research has found a positive relationship between digital literacy and reading comprehension (Sari et al., 2024). However, most of these studies have focused on measuring the relationship between these two variables. Research exploring students' real-world experiences in using digital literacy for reading comprehension remains limited, particularly at the high school level (Nur & Yunus, 2022). Consequently, understanding of how students utilize digital tools in real-world learning contexts remains limited.

To address this gap, this study examines the experiences of high school EFL students in using digital literacy to support their reading comprehension of English texts. Specifically, this study aims to answer three research questions: (1) How do students use digital literacy to support their reading comprehension of English texts? (2) What digital tools and strategies do they use when they encounter difficulties in understanding texts? (3) What challenges do they face, and how do they overcome them?

RESEARCH METHOD

This study employs a qualitative case study design. This approach was chosen because the study aims not to measure variables, but rather to understand how students actually experience and engage in digital reading activities within their educational context. Case studies are well-suited for exploring real-life phenomena in depth and within their natural settings (Creswell & Poth, 2018; Yin, 2018).

This study was conducted at a public high school in Cirebon, West Java. This location was chosen because students routinely use smartphones in their daily lives, while formal classroom instruction provides limited guidance on integrating digital tools into reading activities. Five 10th-grade students were selected through purposive sampling based on recommendations from their English teachers. The selected participants were students who frequently used digital media while reading English texts. Participant selection focused on the potential richness and relevance of the data, rather than on representativeness.

Three data collection methods were used. First, semi-structured interviews were conducted individually with each participant using open-ended questions regarding the digital tools they use, the strategies they employ, and the challenges they face while reading.

Second, classroom observations were conducted during several learning sessions to observe how students interact with digital tools, peers, and reading materials. Third, relevant documents, including teaching modules and student learning materials, were collected to support and contextualize the findings. The use of these three methods allowed for data triangulation and helped strengthen the study's credibility (Creswell & Poth, 2018).

Data were analyzed using the six-phase thematic analysis framework proposed by (Braun & Clarke, 2022). The process included familiarization with the data, initial coding, theme development, theme review and refinement, theme definition and naming, and the preparation of the final report. The codes were generated inductively from interview transcripts and observation notes, then organized into themes that reflect students' digital literacy practices as well as the challenges they face when reading English language texts. This section explains how the research was conducted. It describes the research design, data sources, data collection, and data analysis, with the proportion of 10-15% of the total article length presented in the form of paragraphs. The research method section must be written in at least 3 paragraphs

FINDINGS & DISCUSSION

The findings are presented across three major themes: (1) layered digital literacy practices for supporting reading comprehension, (2) challenges encountered in digital reading, and (3) critical awareness and adaptive coping strategies. Each theme is discussed in relation to relevant theoretical frameworks and prior empirical research.

Layered Digital Literacy Practices for Supporting Reading Comprehension

A consistent and notable pattern across all participants was the adoption of staged, sequential reading approaches rather than immediate reliance on digital tools when encountering comprehension difficulties. Before reading a text in depth, students consistently employed prereading strategies by examining the title, accompanying images, and introductory paragraphs as predictive cues for the text's content and topic. This practice reflects deliberate metacognitive engagement: by constructing an initial mental framework prior to detailed reading, students reduced the cognitive burden associated with processing unfamiliar language, particularly in texts involving complex vocabulary or abstract subject matter. This pre-reading orientation is consistent with schema activation theory, which holds that activating prior knowledge and contextual expectations before reading facilitates the construction of meaning during reading (Kintsch, 1998).

When difficulties arose during reading, participants demonstrated a clear and purposeful sequence of help-seeking behavior. Students consistently preferred to attempt independent resolution first, rereading challenging sections and drawing on contextual reasoning to infer word meanings before seeking external assistance. Only when independent strategies proved insufficient did they turn to peers for collaborative discussion, then to internet searches, and

finally, to AI platforms such as ChatGPT or Gemini when more detailed or structured explanations were required. This progression reflects the operation of self-regulated learning as theorized by Zimmerman (2000), who identifies the monitoring of one's own comprehension, strategic selection of learning resources, and adaptive adjustment of strategies as hallmarks of effective, independent learners. The students in this study demonstrated all three of these characteristics in their reading behaviors.

Google Translate and Google Lens emerged as the most frequently used digital tools, primarily for translating unfamiliar vocabulary and sentences. However, participants did not use these tools passively or uncritically. Many recognized that machine translation frequently fails with context-dependent expressions, idiomatic language, and vocabulary with multiple possible meanings. In response, students developed verification practices, cross-referencing

Google Translate outputs with online dictionaries such as Oxford Dictionary, broader internet searches, and peer consultation. This active verification behavior indicates a degree of critical engagement with digital tools that extends beyond simple tool use and begins to approximate the evaluative dimension of digital literacy described by Bawden (2008).

AI tools, specifically ChatGPT and Gemini, were distinguished by students from translation applications in terms of their functional purpose. While translation apps were used for quick word-level or sentence level meaning retrieval, AI platforms were accessed when students needed paragraph-level summarization, explanations of difficult concepts, or step-by-step text breakdowns. This functional differentiation suggests that students possess an emerging understanding of the varied affordances of different digital tools, a sophistication that is rarely acknowledged in studies that treat digital tool use as a homogeneous practice.

Informal digital engagement also constituted a significant dimension of students' digital literacy practices. Participants reported learning English vocabulary and expressions through recreational activities such as online gaming, watching YouTube videos and films, browsing TikTok, and listening to music. This pattern aligns with the concept of Informal Digital Learning of English (IDLE), which refers to the incidental acquisition of language competence through engagement with digital entertainment in the target language (Alhaq, 2022). Students reported that informal exposure to English through these channels contributed to their vocabulary recognition and contextual understanding during formal reading tasks, effectively bridging out-of-school digital literacy with in-school reading comprehension.

Multimodal learning strategies formed another prominent component of students' digital literacy repertoire. Participants described using pronunciation guides, explanatory videos with bilingual subtitles, and vocabulary-focused content on platforms such as ELSA Speak and YouTube. By pausing videos after individual sentences, replaying sections, and comparing English and Indonesian subtitles, students engaged in deliberate and self-directed multimodal learning that combined auditory, visual, and textual inputs. This multimodal orientation is consistent with the multimedia learning principle, which holds that learning is enhanced when information is presented through complementary rather than redundant channels. For EFL

students, the simultaneous availability of audio, visual context, and written text appears to support vocabulary retention and contextual comprehension more effectively than text-based translation alone.

WhatsApp groups also functioned as significant collaborative digital learning spaces. Students used these platforms to exchange translations, share explanations, and collectively resolve comprehension difficulties beyond the formal classroom context. This peer-mediated digital collaboration extended the learning environment temporally and spatially, transforming individual reading challenges into shared problem-solving experiences. The collaborative dimension of digital literacy reflected here aligns with sociocultural perspectives on learning, which emphasize the role of social interaction and peer scaffolding in the development of competence (Vygotsky et al., 2021).

Challenges Encountered in Digital Reading

Despite the range of benefits afforded by digital tools, students encountered a variety of interrelated challenges during digital reading activities. Translation inaccuracies represented the most frequently cited and impactful difficulty. Participants explained that machine translation, particularly Google Translate, frequently produces outputs that are grammatically structured but semantically inconsistent with the surrounding text context, especially when dealing with idiomatic expressions or words whose meanings are highly sensitive to contextual cues. These findings are consistent with Trang (2024), who documented that machine translation tools regularly struggle with idiomatic and context-dependent language in EFL reading contexts, producing translations that may appear plausible in isolation but distort comprehension when integrated into a larger textual meaning. When inaccurate translations were accepted without verification, students often discovered several sentences later that the content had ceased to cohere, necessitating time-consuming revision of earlier comprehension.

The challenge of vocabulary ambiguity presented a distinct but related difficulty. Many participants reported encountering English words carrying multiple possible meanings and struggling to determine which meaning most appropriately fit the sentence and paragraph context. This challenge is theoretically significant because it reveals the limitations of translation-based comprehension approaches: selecting the correct definition from among several alternatives requires not word-level knowledge but sentence-level and discourse-level reasoning, involving understanding of sentence relationships, thematic coherence, and topic knowledge. Wang & Zhang (2025) argue that vocabulary depth, defined as sensitivity to how words function differently across varying contexts, is more critical for advanced EFL reading comprehension than vocabulary breadth alone. The participants' difficulties with polysemous vocabulary underscored this conclusion, as simply enlarging their vocabulary inventories would not have resolved the interpretive challenges they faced.

In cognitive terms, the compound demands of reading in a foreign language, evaluating translation accuracy, managing technical disruptions, and simultaneously monitoring comprehension created conditions of high extraneous cognitive load (Sweller, 2011). Extraneous cognitive load refers to mental effort that does not directly contribute to learning, in this case arising from the management of digital tools and technical problems rather than

from the processing of textual content itself. When students were simultaneously dealing with connection failures, app crashes, or inaccurate translations, their available cognitive resources for deep text comprehension were correspondingly reduced. Liao et al. (2023) report comparable findings, documenting that technical instability significantly increases extraneous cognitive load among EFL students engaged in digital reading tasks.

Infrastructural limitations also constituted a recurring barrier. The majority of participants relied on personal mobile data plans rather than institutional Wi-Fi, making their access to digital resources highly contingent on data availability and network stability. When data ran out or connections became unstable, students lost access to all cloud-based tools simultaneously, disrupting reading flow and eliminating the digital scaffolding they had been depending on. This finding reflects a structural dimension of digital literacy that is often neglected in research focused primarily on students' cognitive and strategic capacities: the effectiveness of digital reading practices is also determined by the reliability of the technological infrastructure available to learners (Laila et al., 2024).

Physical discomfort arising from prolonged screen exposure emerged as a further constraint on students' digital reading engagement. Participants reported ocular fatigue during extended reading sessions on smartphones, which progressively reduced their concentration and willingness to reread difficult sections. Al-seghayer (2024) found that EFL students reading digital texts experience higher levels of physical discomfort than those reading print materials, and that this discomfort leads to shorter reading sessions and less thorough rereading behavior. Given that rereading is one of the most effective strategies for resolving comprehension failures, physical limitations that suppress rereading have direct consequences for comprehension quality.

Motivational challenges, particularly anticipatory demotivation before encountering long or unfamiliar texts, were also identified. Several students described a reluctance to begin reading when the text appeared long or difficult, reflecting what Alqurashi (2024) characterizes as reading anxiety in EFL contexts. This anxiety is particularly notable because it arises prior to the reading process itself, meaning that it functions as a pre-task barrier rather than a within-task comprehension difficulty. Students who anticipate failure may adopt surface-level reading strategies, such as quickly searching for answers without sustained engagement, thereby limiting the depth of comprehension they ultimately achieve.

Institutional policies on smartphone use within the classroom introduced structural limitations on students established digital comprehension strategies. During one observed session in which smartphones were collected before the lesson, students who had previously relied on digital tools as their primary reading aids were required to engage with texts without technological support. This created an initial disruption in their comprehension routines, particularly for students who had not developed robust non-digital strategies. However, as discussed in the following section, this restriction also prompted important adaptive responses.

Critical Awareness and Adaptive Coping Strategies

Among the most theoretically significant findings of this study is the emergence of critical awareness of digital information among several participants. Through accumulated experience with inaccurate translations and unreliable online content, students developed a degree of

skepticism toward machine-generated outputs that was not instilled through formal instruction but cultivated through repeated, authentic engagement with digital tools during real reading tasks. Participants described practices of double-checking translation results across multiple platforms, comparing online dictionary definitions with contextual information in the surrounding text, and deliberately consulting peers or teachers when digital outputs seemed inconsistent with textual logic.

This critical orientation corresponds with Bawden (2008) identification of information evaluation as a central and essential competency within digital literacy. Importantly, the students in this study appeared to have developed this competency through experiential learning rather than explicit pedagogical guidance. Students who had experienced inaccurate translations and misleading information online gradually learned to treat digital outputs as initial aids requiring verification rather than authoritative final answers. This shift from passive tool use to critical tool engagement represents a meaningful advancement in digital literacy sophistication, one that directly enhances reading comprehension quality by reducing the frequency with which inaccurate translations distort textual understanding.

This trajectory is consistent with Silvhiany (2021) argument that genuine critical digital literacy requires reflective engagement with real challenges over time, rather than procedural instruction in digital tools. The students' experiences of confronting and resolving inaccurate translations, ambiguous vocabulary, and conflicting online explanations appear to have served as productive learning events that refined their evaluative capabilities. This finding stands in instructive contrast to Afriani (2023), whose study of secondary school EFL students found that the majority accepted Google search results and machine translations without critical questioning, suggesting that the learners in the present study had developed a more advanced stage of digital literacy practice.

The capacity for adaptive strategy use when digital tools were unavailable also emerged as a significant dimension of coping. Rather than ceasing reading activities when smartphones were restricted, students demonstrated flexibility by shifting to alternative resources such as physical dictionaries, direct teacher consultation, and peer discussion. Some students noted that maintaining printed dictionaries on their desks had become an established classroom norm, suggesting that adaptation to restricted digital access had been institutionalized as a routine practice rather than experienced as an unexpected imposition. Feng & Liu (2024) associate this kind of situational adaptability with stronger overall digital literacy, observing that learners who can flexibly adjust their comprehension strategies across varying resource conditions demonstrate greater learning independence than those who are dependent on any single technological platform.

The use of physical dictionaries in particular signals an important pedagogical insight: students who develop complementary non-digital strategies alongside their digital practices are better positioned to maintain reading engagement across a wider range of learning environments. Rather than framing the development of non-digital competencies as a retreat from digital literacy, this finding suggests that robust digital literacy includes the metacognitive

capacity to recognize when digital tools are appropriate and when alternative approaches better serve comprehension needs.

Taken together, these findings suggest that students' digital literacy in support of reading comprehension operates across three interdependent dimensions: strategic tool use, critical information evaluation, and adaptive responsiveness to constraint. These dimensions do not develop in isolation but through iterative, experience-driven engagement with the challenges inherent in digital reading. Challenges that initially appear as barriers, such as translation inaccuracies, infrastructural instability, and institutional restrictions, appear to function under certain conditions as catalysts for more sophisticated digital literacy development.

CONCLUSION

This study examines the digital literacy practices, strategies, and challenges experienced by five high school students learning English as a foreign language (EFL) in Cirebon, Indonesia. The findings indicate that the students use digital devices purposefully to support their reading comprehension. Rather than relying directly on technology, they often begin by leveraging their own understanding, followed by seeking help from peers, and only using digital devices when necessary. This process reflects the students' ability to select and adapt strategies based on the difficulties they encounter while reading.

The study also found that students faced several challenges, including inaccurate translations, unfamiliar vocabulary, internet connection issues, eye strain from screens, low motivation, and restrictions on smartphone use at school. However, these challenges do not always have a negative impact. In many cases, they encourage students to be more careful and critical when using digital resources. Students learn to compare information from various sources, verify translations, and apply alternative strategies when digital tools are unavailable.

These findings suggest that digital tools can support reading comprehension if students know how to use them effectively. Therefore, teachers should provide guidance on the strategic use of digital resources, such as evaluating information, checking translation accuracy, and selecting appropriate tools for different reading tasks. Such support can help students develop both their digital literacy and reading comprehension skills.

This study was conducted with a small sample size from a single school, so these findings cannot be generalized to all contexts. Future research could involve participants from various schools and regions or use a longer observation period to gain a broader understanding of how digital literacy supports reading comprehension among EFL students.

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