

Problem-Based Digital Reading for Critical Thinking Development in Indonesia EFL Context: A Systematic Literature Review

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HOW TO CITE:

Alna Triskaya Angrum, Suwarna, Kastam Syamsi (2026). Problem-Based Digital Reading for Critical Thinking Development in Indonesia EFL Context: A Systematic Literature Review. International Journal of Special Education, 41(12s), 572-585

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ABSTRACT:

Critical thinking has become an essential objective in EFL reading instruction; however, many classroom practices still emphasize surface-level comprehension rather than reflective and analytical engagement with texts. This research investigates how problem-based digital reading contributes to the development of critical thinking and examines the extent to which local wisdom has been integrated into digital reading instruction in EFL contexts. A total of 35 peer-reviewed studies published between 2015 and 2025 were selected from Scopus, Web of Science, and Google Scholar databases. The selected studies were analyzed using thematic synthesis to identify research trends, instructional contributions, and gaps in digital reading, Problem-Based Learning (PBL), critical thinking, and the integration of local wisdom. The findings reveal three major patterns. First, most studies focused on developing digital instructional materials and employed Research and Development (R&D) approaches. Second, problem-based digital reading was found to support higher-order thinking processes, particularly analysis, evaluation, reasoning, and reflective interpretation, while also increasing student engagement and digital literacy. Third, although local wisdom has increasingly been incorporated into instructional materials, its integration remains fragmented, often limited to contextual enrichment rather than functioning as a core component of critical inquiry.

Keywords: digital reading, problem-based learning, critical thinking, local wisdom.

1. Introduction

Critical thinking has increasingly been positioned as a central outcome of higher education, particularly in disciplines that require students to engage with texts critically and construct reasoned interpretations. In the context of reading, critical thinking is not an external skill applied after comprehension; rather, it is embedded within the reading process itself. As

Grabe (2008) argues, reading involves complex cognitive activities such as inference, evaluation, and integration of ideas, while Luke (2014) emphasises that reading requires engagement with underlying assumptions and perspectives. However, the reality of reading instruction often diverges from these theoretical expectations. Reading activities in many EFL classrooms remain focused on identifying explicit

information and answering factual questions. While such practices may support basic comprehension, they rarely create opportunities for students to interpret implicit meanings or evaluate competing viewpoints. Consequently, students may appear competent in completing reading tasks but struggle when required to engage critically with texts. The challenges become even more pronounced in digital environments. Contemporary reading is no longer limited to linear texts; it involves navigating multiple sources, evaluating credibility, and synthesising information across platforms. Coiro et al., (2014) describe this as a shift toward new literacies, in which reading requires not only comprehension but also the critical evaluation of information.

Despite this shift, digital tools in many educational contexts are still used primarily as repositories of materials rather than as spaces for inquiry and reflection. Another issue that emerges strongly from your proposal is the limited integration of culturally relevant materials. Texts used in EFL instruction are often detached from students' lived experiences, which can reduce engagement and limit interpretive depth. In contrast, culturally grounded texts such as those derived from local wisdom provide meaningful contexts that encourage students to interpret, evaluate, and reflect on textual meaning. Banjar local wisdom, including narrative traditions and social values, offers rich opportunities for students to engage in inference and evaluation rather than merely extracting information. Problem-Based Learning (PBL) offers a pedagogical approach that aligns well with these needs. According to (Hmelo-silver, 2004), PBL situates learning within meaningful problems, requiring students to actively construct knowledge through inquiry and reasoning. When applied to reading, this approach shifts the purpose of reading from understanding texts to solving problems through textual interpretation. Despite the growing body of research on digital reading, PBL, and culturally responsive pedagogy, these areas are often explored independently.

There remains a limited synthesis of how these elements can be integrated to support critical thinking in EFL reading contexts. Therefore, this research aims to systematically review the literature to examine how problem-based digital reading contributes to critical thinking and to identify gaps in cultural integration. Therefore, this research aims to systematically review the existing literature on problem-based digital reading and its role in fostering critical thinking in EFL contexts. To achieve this aim, the study is guided by the following research questions:

- 1) What are the current trends in research on problem-based digital reading in EFL contexts?
- 2) How does problem-based digital reading contribute to students' critical thinking development?
- 3) What gaps exist in integrating local or cultural wisdom into digital reading instruction?

2. Methodology

This research employed a Systematic Literature Review (SLR) approach to examine the role of problem-based digital reading in fostering critical thinking within EFL contexts. Most of the selected studies were conducted within Indonesian EFL educational settings. The review was conducted following the PRISMA 2020 (Preferred Reporting Items for Systematic Reviews and Meta-Analyses) guidelines, which provide a systematic and transparent procedure for identifying, screening, selecting, and synthesising relevant studies.

Research Design

The study adopted a qualitative systematic review design to synthesise empirical findings on digital reading, Problem-Based Learning (PBL), critical thinking, and the integration of local wisdom in EFL education. The review focused on identifying research trends, instructional contributions, and existing gaps in the literature published between 2015 and 2025.

Research Strategy

Relevant studies were retrieved from three major academic databases: Scopus, Web of Science, and Google Scholar. These databases were selected

for their broad coverage of peer-reviewed studies in education, language learning, and digital pedagogy.

Inclusion and Exclusion Criteria

The inclusion and exclusion criteria were established to ensure that only studies relevant to this review's objectives were selected.

Table 1. Inclusion and Exclusion Criteria

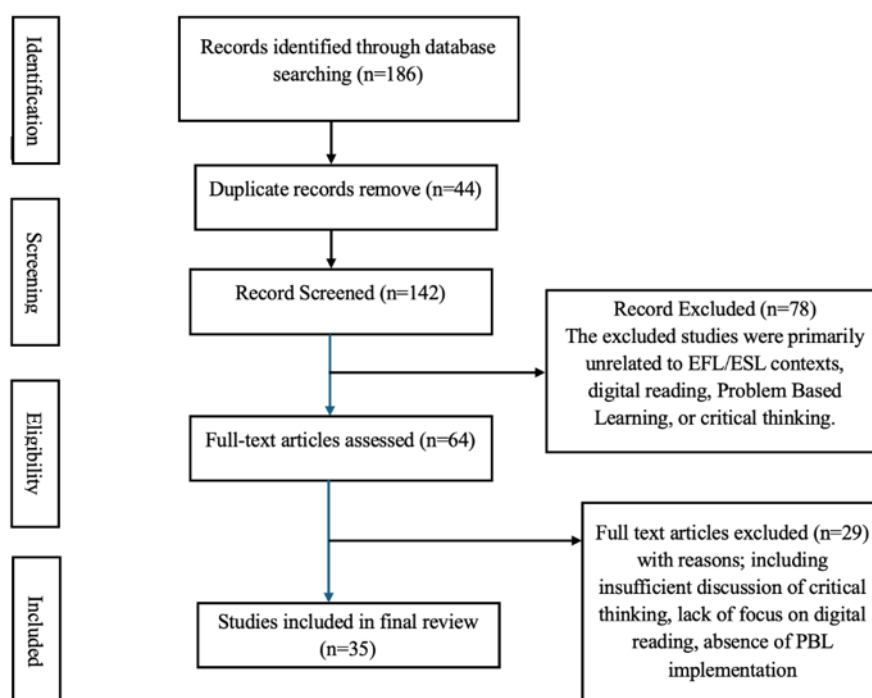
Criteria	Inclusion	Exclusion
Publication Type	Peer-reviewed journal articles	Proceedings, thesis, books
Publication Year 2015-2025	2015-2025	Before 2015
Language	English	Non-English
Research Focus	Digital reading, PBL, critical thinking, local wisdom	Unrelated topics
Study Type	Empirical and review studies	Opinion papers

Systematic Review Process

The study selection process followed the four stages of the PRISMA framework: identification, screening, eligibility, and inclusion. In the identification stage, 186 studies were retrieved from the selected databases. After removing duplicate records, 142 studies remained for screening. During the screening stage, titles and

abstracts were reviewed to determine their relevance to the research objectives. Studies that did not focus on digital reading, or critical thinking were excluded. In the eligibility stage, the full texts of the remaining studies were assessed using the inclusion and exclusion criteria. Finally, 35 studies were selected for the final review and synthesis.

Figure 1. PRISMA Flow Diagram (Adapted from Page et al., 2021)



Data Abstraction and Analysis

Data from the selected studies were systematically extracted and organised into several categories, including publication year, educational context, research methodology, instructional focus, digital learning approach, and key findings related to the development of critical thinking. The extracted data were analysed using a thematic synthesis approach to identify recurring patterns, dominant themes, and research gaps across the selected studies. The analysis process involved three stages:

- 1) Initial coding of study characteristics and findings,
- 2) Categorisation of recurring concepts and instructional patterns, and
- 3) Synthesis of broader themes related to problem-based digital reading and critical thinking in EFL contexts.

The thematic analysis particularly focused on:

- 1) Research trends in problem-based digital reading,
- 2) Contributions to critical thinking development,
- 3) The role of digital learning environments,
- 4) The integration of local wisdom in reading instruction, and
- 5) Gaps in existing instructional frameworks.

3. Results

This section presents the synthesis of the 35 selected studies reviewed in this research. The findings are organised into three major themes based on the thematic analysis process: 1. Research trends in problem-based digital reading, 2. Contributions to critical thinking development, and 3. Gaps in integrating local wisdom into digital reading instruction.

Table 2. Summary of Studies on Digital

No	Author & Year	Context	Focus	Method	Key Findings
1	Distrik et al., (2024)	High School	Digital + PBL	Mixed	Improves conceptual understanding & digital literacy
2	Afnita et al., (2023)	EFL High School	Digital Reading + Local Wisdom	Mixed	Enhances reading skills using cultural context
3	Himawan et al., (2023)	University	Critical Reading	Qualitative	Highlights need for digital critical reading materials
4	Akbar et al., (2025)	School	Digital + Local Wisdom	R&D	Improves digital literacy and cultural understanding
5	Puriasih & Trisna, (2022)	Elementary	PBL + Digital Media	R&D	Enhances engagement and outcomes
6	Annam et al., (2023)	Junior High	PBL + Local Wisdom	R&D	Improves problem-solving skills
7	Papilaya & J. Tuapattinaya, (2022)	University	PBL + Local Wisdom	Experimental	Enhances creative thinking
8	Nabila et al., (2025)	EFL	PBL + Local Wisdom	SLR	Improves literacy & critical thinking

9	Rizal et al., (2021)	University	Digital + PBL	Experimental	Improves digital literacy
10	Ramadani et al., (2024)	Elementary	Digital + PBL	R&D	Improves engagement
11	Magdalena et al., (2024)	High School	PBL Digital Media	R&D	Improves science literacy
12	Sahida & Huriati, (2024)	High School	PBL + Local Wisdom	R&D	Improves cognitive skills
13	Diana Jabar et al., (2024)	EFL	Digital Textbook + Local Wisdom	R&D	Improves reading and culture awareness
14	Sarki & Reinita, (2024)	Elementary	Digital Comic + PBL	R&D	Improves comprehension
15	Rosidi et al., (2023)	High School	PBL + Local Wisdom	Experimental	Improves critical thinking
16	Yaqin et al., (2024)	Middle School	Digital + Local Wisdom	R&D	Improves reading engagement
17	Galitskikh & Terentyeva, (2020)	University	Digital Reading	Experimental	Improves engagement
18	Usmadi et al., (2024)	High School	Digital + PBL	R&D	Improves effectiveness
19	Katili, (2023)	EFL	Reading + Local Wisdom	R&D	Improves motivation
20	Arum & Wulandari, (2023)	Vocational	Digital + PBL	R&D	Improves learning outcomes
21	Sihombing et al., (2024)	University	Digital E-book + PBL	R&D	Increases engagement
22	Ridho et al., (2021)	School	Digital Book + Local Wisdom	R&D	Improves critical thinking
23	Siswanto et al., (2022)	High School	Digital + Local Wisdom	Experimental	Improves problem-solving
24	Xuechun & Mohamad Nasri, (2024)	University	Digital Teaching + PBL	Experimental	Enhances applied skills
25	Ramdiah et al. (2020)	High School	Local Wisdom Model	R&D	Improves outcomes
26	Silaban et al., (2025)	High School	PBL + Local Wisdom	R&D	Improves contextual learning
27	Rafidah et al., (2024)	High School	E-book + PBL + Local Wisdom	R&D	Highly valid learning material

28	Ria Rochmi Safitri et al., (2024)	School	PBL + Digital Media	Experimental	Improves critical thinking
29	Suprpto et al., (2024)	High School	Digital Local Wisdom App	Action Research	Supports project learning
30	Nurdin et al., (2023)	School	Digital + PBL	R&D	Improves mathematical critical thinking
31	Li et al., (2022)	University EFL	Digital Reading Strategy	Experimental	Improves comprehension & higher-order thinking
32	Tilahun et al., (2022)	EFL Classroom	Reading + Critical Thinking	Experimental	Enhances critical thinking through integration
33	Liu & Puteh, (2025)	EFL	Critical Reading (SLR)	SLR	Reading strategies improve critical thinking
34	Momdjian & El Chidiac, (2025)	EFL	Metacognitive Reading	Experimental	Improves evaluation & reasoning
35	Y. Li & Arumugam, (2026)	University	Digital Reading Strategy	Mixed Method	Improves comprehension & evaluation

PBL, Local Wisdom, and Critical Thinking Based on the thematic synthesis, the findings reveal several important patterns related to research

trends, the development of critical thinking, and the integration of local wisdom into digital reading instruction.

Research Trends in Problem-Based Digital Reading

Table 3. Distribution of Research Methods

Research Method	Frequency	Percentage
RnD	24	68.6%
Experimental	8	22.9%
Review/SLR	3	8.5%

Across Selected Studies

The reviewed studies reveal a growing interest in integrating digital learning environments with inquiry-based pedagogical approaches in EFL education. As illustrated in Table 3, Research and Development (R&D) was the dominant methodology among the selected studies,

accounting for most of the reviewed articles. This finding indicates that recent studies have increasingly focused on developing instructional materials such as digital modules, e-books, interactive learning media, and online reading platforms. Experimental studies were less frequent and primarily focused on evaluating the effectiveness of digital reading and Problem-

Based Learning (PBL) in improving students’ engagement, comprehension, and higher-order thinking skills. Only a limited number of review

studies were identified, suggesting that systematic synthesis in this field remains relatively underdeveloped.

Table 4. Distribution of Research

Research Focus		Frequency	Percentage
Digital Reading + PBL		13	37.1%
Local Wisdom Integration		10	28.6%
Critical Thinking	Reading/Critical	7	20.0%
Digital Literacy		5	14.3%

Focus in Selected Studies Table 4 further demonstrates that the majority of studies focused on integrating digital reading with Problem-Based Learning. This pattern reflects a growing recognition that technology becomes more pedagogically meaningful when combined with inquiry-oriented instructional strategies. In contrast, fewer studies specifically examined the integration of local wisdom and critical reading

practices in EFL contexts. Although many studies have introduced innovative digital learning approaches, the findings suggest that digital learning, critical thinking, and cultural integration are often implemented separately. As a result, the literature still lacks a comprehensive instructional framework that fully integrates these components within EFL reading instruction.

Contributions of Problem-Based Digital Reading to Critical Thinking Development

Table 5. Reported Learning Outcomes of Problem-Based Digital Reading

Learning Outcomes	Frequency	Percentage
Critical Thinking	10	28.6%
Engagement	9	25.7%
Problem Solving Skills	8	22.9%
Digital Literacy	8	22.9%

The findings consistently indicate that problem-based digital reading contributes positively to the development of students’ critical thinking skills. As shown in Table 5, critical thinking emerged as the most frequently reported learning outcome, followed by engagement, problem-solving skills, and digital literacy. The reviewed studies suggest that this contribution occurs through several interconnected learning processes. First, digital learning environments provide students with access to multiple sources of information, encouraging comparison, evaluation, and synthesis of ideas. Such activities require learners

to engage in deeper cognitive processing rather than merely retrieving information from texts. Second, Problem-Based Learning creates meaningful purposes for reading activities. In many studies, students were required to solve problems, interpret arguments, discuss real-world issues, and construct evidence-based reasoning using textual information. This inquiry-oriented process encouraged learners to become more reflective and analytical readers. Third, interactive digital media appeared to increase student

engagement and participation. Several studies reported that collaborative discussion, problem-solving tasks, and digital interaction supported students’ motivation and cognitive involvement during reading activities. In some cases, improvements in digital literacy were also associated with stronger critical evaluation of online information. However, the findings also

reveal that the effectiveness of problem-based digital reading depends largely on instructional design. In several studies, digital tools primarily served as content-delivery media rather than as platforms for inquiry and reflection. Consequently, reading activities sometimes remained focused on surface-level comprehension instead of critical interpretation.

Gaps in the Integration of Local Wisdom within Digital Reading Instruction

Table 6. Integration Gap of Local Wisdom in Digital Reading Research

Integration Types	Frequency	Percentage
Local Wisdom Used Generally	19	54.3%
Non-Local Wisdom	10	28.6%
Fully Integrated (Digital+PBL+Local Wisdom)	6	17.1%

One of the most significant findings of this review concerns the fragmented integration of local wisdom within problem-based digital reading instruction. As illustrated in Table 6, although many studies incorporated local wisdom into instructional materials, only a limited number fully integrated local wisdom, digital learning environments, and Problem-Based Learning within a single instructional framework. Most reviewed studies used cultural content primarily as contextual enrichment intended to increase student familiarity and engagement with reading materials. Local wisdom was commonly presented through stories, examples, or illustrations, but it rarely functioned as a central component of critical inquiry or reflective interpretation. These results indicate that local wisdom has not yet been fully utilised as a meaningful component of critical reading instruction in EFL contexts. Culturally grounded texts may support deeper comprehension because students are more likely to connect textual meaning with their own experiences, cultural perspectives, and social environments. Such connections can encourage reflective thinking, interpretation, and evaluative reasoning. In addition, the review reveals that many studies focused on general education or science learning contexts rather than on EFL reading specifically.

Consequently, research examining the simultaneous integration of digital reading, Problem-Based Learning, critical thinking, and local wisdom in EFL contexts remains limited. Overall, the findings highlight the need for a more integrated instructional framework that combines inquiry-based pedagogy, culturally responsive materials, and digital reading environments to foster meaningful critical thinking in EFL education.

4. Discussion

The Shift Toward Technology-Enhanced Inquiry Learning

The findings of this review demonstrate a noticeable shift from traditional reading instruction toward technology-enhanced and inquiry-oriented learning environments in EFL education. As indicated in Table 3, Research and Development (R&D) studies dominated the reviewed literature, suggesting that recent research has focused heavily on designing digital instructional materials, interactive media, and online reading platforms intended to support more student-centred learning practices.

This trend reflects the growing recognition that digital learning environments can encourage more active forms of reading engagement when

combined with meaningful pedagogical strategies. The findings support previous research emphasising that digital reading is no longer limited to decoding textual information but involves evaluating sources, navigating multiple texts, and synthesising ideas across digital environments (Coiro et al., 2014; Leu et al., 2017). In this sense, reading in digital contexts requires broader literacy practices that extend beyond conventional comprehension activities.

However, the review also indicates that technological innovation alone does not necessarily lead to deeper cognitive engagement. Several studies revealed that digital tools were sometimes used primarily for content delivery rather than as spaces for inquiry, reflection, and interpretation. This finding is important because it suggests that the educational value of digital learning depends not only on technological access but also on how learning activities are pedagogically structured. Without inquiry-oriented tasks, digital reading may remain focused on surface-level comprehension rather than analytical thinking.

In addition, the limited number of reviews and theoretical studies identified in this review suggests that the field remains strongly practice-oriented. While many studies have introduced innovative digital learning products, broader conceptual frameworks explaining the relationship between digital reading, inquiry-based learning, and critical thinking remain relatively underdeveloped.

Problem-Based Digital Reading and Critical Thinking Development

The findings also demonstrate that problem-based digital reading contributes positively to the development of critical thinking in EFL contexts. As presented in Table 5, critical thinking emerged as the most frequently reported learning outcome across the reviewed studies, followed by engagement, problem-solving skills, and digital literacy.

This finding aligns with Hmelo-Silver (2004) argument that Problem-Based Learning promotes knowledge construction through

inquiry, reasoning, and collaborative problem-solving. Within the reviewed studies, PBL appeared to transform reading from passive comprehension into active meaning-making processes in which students were required to interpret information, evaluate perspectives, and construct evidence-based arguments.

The findings also support previous studies suggesting that digital reading environments encourage learners to compare perspectives, evaluate information credibility, and synthesise information from multiple sources (Coiro, 2021; Coiro et al., 2014). These processes are closely associated with higher-order thinking because learners are expected not only to understand textual information but also to question assumptions and interpret meanings critically.

Another important finding concerns the relationship between engagement and the development of critical thinking. Several studies reviewed indicated that interactive digital activities, collaborative discussions, and inquiry-based tasks increased student participation during reading. This finding is consistent with previous research showing that engagement plays a central role in supporting reflective and analytical learning processes in digital environments.

Nevertheless, the review also reveals that critical thinking does not emerge automatically through digital learning environments. In several studies, students still engaged with texts at a relatively superficial level when instructional guidance was limited. This finding suggests that teachers remain essential in facilitating analytical questioning, reflective discussion, and inquiry-oriented reading practices. Technology may provide access to information, but pedagogical scaffolding remains necessary to support deeper cognitive engagement.

From a critical literacy perspective, this finding is particularly significant because reading involves more than understanding textual meaning. As argued by Luke (2014), critical reading requires learners to examine perspectives, question assumptions, and reflect on the social meanings embedded within texts. Therefore, problem-based digital reading becomes most meaningful

when students are encouraged to engage critically with information rather than simply retrieve it.

The Underutilized Potential of Local Wisdom in EFL Reading

One of the most significant findings of this review concerns the limited integration of local wisdom within problem-based digital reading instruction. As shown in Table 6, only a small number of studies fully integrated digital learning, Problem-Based Learning, and local wisdom within a single instructional framework.

Most reviewed studies positioned local wisdom primarily as contextual support intended to increase familiarity and engagement with learning materials. Cultural elements were commonly presented through stories, examples, or illustrations; however, they rarely functioned as central components of inquiry, interpretation, or reflective analysis. As a result, the cognitive potential of culturally grounded materials remains insufficiently explored in EFL reading instruction.

These findings are consistent with previous discussions on culturally responsive pedagogy, which emphasise that culturally relevant materials can strengthen learner engagement, meaning-making, and interpretive understanding (Gay, 2018; Ladson-Billings, 1995). In language learning contexts, culturally familiar texts may encourage students to connect linguistic meaning with personal experiences, community values, and social realities. Such connections can support reflective thinking and perspective-taking, both of which are closely related to the development of critical literacy.

The findings further suggest that local wisdom should not be treated merely as supplementary content within instructional materials. Instead, culturally grounded texts can serve as cognitive scaffolding, encouraging learners to question perspectives, negotiate meaning, and interpret social issues critically. This is particularly important in EFL contexts, where reading activities often emphasise literal comprehension rather than reflective interpretation.

Another important issue identified in this review is that many studies focused primarily on general education or science learning rather than specifically on EFL reading instruction. Consequently, research examining the simultaneous integration of digital reading, Problem-Based Learning, critical thinking, and local wisdom within EFL contexts remains relatively limited.

Overall, the findings indicate the need for more integrated instructional frameworks that combine inquiry-based pedagogy, digital learning environments, and culturally responsive materials within EFL reading instruction. Such integration may help transform reading into a more meaningful, reflective, and cognitively engaging process for language learners.

Implications for Future Research and Instruction

Taken together, the findings of this review highlight the importance of developing more integrated approaches to digital reading instruction in EFL education. Future research should move beyond focusing solely on technological innovation and instead examine how digital environments, inquiry-based pedagogy, and culturally responsive materials can work together to support the development of critical thinking.

In addition, more longitudinal and empirical studies are needed to investigate the long-term impact of problem-based digital reading on students' critical literacy practices. Current research remains heavily focused on instructional development and short-term implementation, while broader cognitive and pedagogical impacts are still underexplored.

From a pedagogical perspective, the findings suggest that teachers should design digital reading activities that encourage interpretation, reflection, collaborative inquiry, and evaluative reasoning. Integrating local wisdom into such activities may further strengthen learner engagement and support more meaningful development of critical thinking in EFL contexts.

5. Conclusion

This systematic literature review examined the role of problem-based digital reading in fostering critical thinking within Indonesian EFL contexts. The review of 35 selected studies demonstrates that digitally mediated and inquiry-oriented reading instruction has increasingly attracted scholarly attention, particularly through the integration of Problem-Based Learning (PBL), interactive digital media, and technology-supported literacy practices.

The findings reveal three major patterns. First, most studies focused on the development of digital instructional materials and predominantly employed Research and Development (R&D) approaches, indicating a strong emphasis on instructional innovation within EFL reading practices. Second, problem-based digital reading was consistently associated with improvements in higher-order thinking, analytical reasoning, learner engagement, and reflective literacy practices. The reviewed studies also suggest that inquiry-oriented digital learning environments may create more meaningful opportunities for collaborative interpretation and evaluative discussion. Third, although local wisdom has increasingly been incorporated into instructional

materials, its integration remains fragmented and is often positioned as contextual enrichment rather than as a central component of critical inquiry.

Overall, this review highlights the importance of integrating digitally mediated learning, inquiry-based pedagogy, and culturally responsive materials within EFL reading instruction. Such integration may support more meaningful literacy experiences and encourage reflective interpretation in technology-enhanced learning environments. These findings also indicate that critical literacy development in EFL contexts requires not only technological innovation but also pedagogical designs that encourage inquiry, contextual understanding, and collaborative meaning-making.

Future research is recommended to develop more comprehensive instructional frameworks that integrate digital reading, Problem-Based Learning, critical literacy, and local wisdom within Indonesian EFL education. In addition, more longitudinal and empirical studies are needed to examine the long-term impact of inquiry-oriented digital reading practices on students' reflective literacy and higher-order thinking development.

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7. Acknowledgements (Optional)

The author would like to express sincere gratitude to the supervisors and academic colleagues at Yogyakarta State University for their guidance, constructive feedback, and continuous support throughout the completion of this paper.

8. Author Declaration

The author declares that this article is an original work and has not been published or submitted for publication elsewhere. The author also declares that there is no conflict of interest regarding the publication of this paper.