



**DIGITAL READING AND VOCABULARY DEVELOPMENT THROUGH
LEARNING MANAGEMENT SYSTEM: A REVIEW OF INDONESIAN EFL
STUDIES IN THE POST-PANDEMIC ERA**

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ABSTRAK

Pandemi COVID-19 mempercepat adopsi *Learning Management System* (LMS) dalam pembelajaran Bahasa Inggris sebagai Bahasa Asing (EFL) di Indonesia dan praktik tersebut berlanjut pada fase pascapandemi, khususnya dalam pengembangan keterampilan membaca digital dan penguasaan kosakata. Penelitian ini bertujuan mengkaji secara sistematis temuan empiris terkait efektivitas LMS dalam konteks EFL Indonesia. Metode yang digunakan adalah *systematic literature review* dengan kerangka PRISMA terhadap dua puluh artikel terbitan 2021–2025 melalui tahapan identifikasi, penyaringan, uji kelayakan, dan inklusi berdasarkan kriteria artikel empiris, berfokus pada LMS dalam EFL Indonesia, serta melaporkan data membaca atau kosakata. Data dianalisis menggunakan sintesis tematik kualitatif untuk mengidentifikasi pola temuan utama. Hasil menunjukkan bahwa LMS memperluas akses teks autentik, meningkatkan fleksibilitas belajar, serta mendukung paparan berulang yang berdampak pada peningkatan pemahaman bacaan dan kosakata, terutama ketika disertai tugas eksplisit seperti kuis dan glosarium digital. Efektivitasnya dipengaruhi oleh regulasi diri, literasi digital, dan kualitas desain instruksional. Secara konseptual, kajian ini menegaskan pentingnya integrasi *Self-Regulated Learning*, pengelolaan *Cognitive Load*, dan pendekatan *blended learning* sebagai fondasi penguatan desain pembelajaran EFL berbasis LMS.

Kata Kunci: *Learning Management System, Membaca Digital, Penguasaan Kosakata EFL*

ABSTRACT

The COVID-19 pandemic accelerated the adoption of Learning Management Systems (LMS) in English as a Foreign Language (EFL) instruction in Indonesia, and this practice has continued into the post-pandemic phase, particularly in the development of digital reading skills and vocabulary acquisition. This study aims to systematically examine empirical findings concerning the effectiveness of LMS in the Indonesian EFL context. The method employed was a systematic literature review following the PRISMA framework, analyzing twenty articles published between 2021 and 2025 through stages of identification, screening, eligibility assessment, and inclusion based on criteria requiring empirical studies focused on LMS use in Indonesian EFL settings and reporting data on reading or vocabulary outcomes. The data were analyzed using qualitative thematic synthesis to identify dominant patterns of findings. The results indicate that LMS expands access to authentic texts, enhances learning flexibility, and facilitates repeated exposure, contributing to improvements in reading comprehension and vocabulary mastery, particularly when combined with explicit tasks such as structured quizzes and digital glossaries. Its effectiveness is influenced by self-regulation, digital literacy, and the quality of instructional design. Conceptually, this review underscores the importance of



integrating Self-Regulated Learning, managing Cognitive Load, and applying blended learning approaches as foundational principles for strengthening LMS-based EFL instructional design.

Keywords: *Learning Management System, Digital Reading, EFL Vocabulary Mastery*

INTRODUCTION

The COVID-19 pandemic forced an abrupt shift from traditional face-to-face instruction to fully online learning environments worldwide, highlighting the urgent need for teachers to adapt to digital pedagogies (Trust & Whalen, 2020). In Indonesia, this change had a profound impact on English as a Foreign Language (EFL) instruction, as many educators and learners lacked prior experience and preparation for online learning (Prawiro & Fauziah, 2023). Learning Management Systems (LMS), such as Moodle and Edmodo, quickly became central tools for organizing lessons, distributing materials, and monitoring student progress during the pandemic (Umarlinda et al., 2025; Safriyani & Khasanah, 2021). These platforms provided a structured framework for digital learning, enabling both teachers and students to maintain continuity in education despite physical restrictions.

In the post-pandemic era, LMS have maintained a prominent role in blended and hybrid learning models across Indonesian schools and universities, reflecting a shift from emergency remote teaching to more sustainable instructional practices (Amalia et al., 2025; Trust & Whalen, 2020). Their integration has influenced pedagogical approaches, particularly in supporting foundational EFL skills such as reading and vocabulary development (Umarlinda et al., 2025; Fan, 2020; Liu & Saad, 2025). Traditionally, reading instruction relied heavily on printed textbooks and teacher-led explanations, which limited students' exposure to diverse texts. Similarly, vocabulary learning often focused on rote memorization, which did not always support long-term retention or practical use (Aswad et al., 2022).

Digital technologies, including LMS, provide opportunities to overcome these limitations by organizing interactive reading exercises, offering repeated exposure to vocabulary, and facilitating feedback and collaboration among learners (Umarlinda et al., 2025; Prawiro & Fauziah, 2023; Aswad et al., 2022). Moreover, LMS can integrate with broader digital frameworks, such as Mobile-Assisted Language Learning (MALL) and data-driven learning environments, extending learning opportunities beyond the classroom and across multiple devices (Inawati et al., 2023; Stockwell, 2022; Pérez-Paredes & Boulton, 2025). These features make LMS a flexible tool for promoting autonomous learning while still enabling structured instructional guidance. Nonetheless, challenges such as uneven learner engagement, superficial reading strategies, and reliance on teacher mediation persist, highlighting that effective LMS implementation requires careful instructional design (Safriyani & Khasanah, 2021).

Despite the growing number of studies on LMS-mediated EFL learning in Indonesia, existing research remains fragmented, often examining a single platform, a limited learner population, or isolated interventions (Umarlinda et al., 2025; Prawiro & Fauziah, 2023). Broader reviews of technology-enhanced language learning tend to generalize across multiple tools or contexts, without specifically focusing on the intersection of LMS use with reading and vocabulary development in the post-pandemic era (Inawati et al., 2023; Stockwell, 2022). This gap indicates the need for a systematic synthesis of recent research to better understand how LMS can support EFL learners' skills development in Indonesian educational settings.

To address this gap, the present study aims to conduct a systematic literature review of Indonesian EFL studies published between 2021 and 2025 that examine LMS-supported reading and vocabulary instruction. By analyzing empirical findings across different



educational levels and learning contexts, the review seeks to identify prevailing pedagogical patterns, reported outcomes, and recurring challenges. The study contributes to the field by situating LMS-mediated reading and vocabulary practices within post-pandemic blended learning, CALL, and MALL frameworks, while also integrating insights from broader technology-enhanced learning research (Fan, 2020; Liu & Saad, 2025; Pérez-Paredes & Boulton, 2025). Unlike previous reviews that broadly examine technology-enhanced language learning across diverse tools and contexts, this study specifically synthesizes empirical evidence on LMS-mediated reading and vocabulary instruction within post-pandemic Indonesian EFL settings, thereby offering a more focused and context-sensitive contribution. Ultimately, this review offers context-specific recommendations to inform effective LMS implementation in Indonesian EFL education.

RESEARCH METHOD

This study employed a systematic literature review to investigate how digital reading and vocabulary development are facilitated through Learning Management Systems (LMS) in post-pandemic Indonesian EFL contexts. The review followed the PRISMA (Preferred Reporting Items for Systematic Reviews and Meta-Analyses) framework to ensure methodological transparency and replicability. The search process applied explicit search strings such as (“Learning Management System” OR LMS) AND (“digital reading” OR “reading comprehension”) AND (“vocabulary” OR “lexical development”) AND (“EFL” OR “English as a Foreign Language”) AND “Indonesia”, adjusted to the indexing format of each database. Studies published between 2021 and 2025 were considered to capture recent post-pandemic evidence. The review synthesized existing empirical findings without generating primary data.

The literature search was conducted across Scopus, ERIC, Google Scholar, and Garuda. The inclusion criteria required: (1) peer-reviewed journal articles, (2) empirical research designs (quantitative, qualitative, or mixed methods), (3) focus on LMS-mediated EFL instruction in Indonesia, (4) explicit reporting of reading and/or vocabulary outcomes, and (5) publication in English or Indonesian. Excluded were conference proceedings, book chapters, review papers, and studies lacking outcome data. The initial search identified 312 records, of which 58 duplicates were removed. After title and abstract screening, 214 articles were excluded for irrelevance to LMS or EFL contexts. Full-text assessment of 40 articles resulted in the exclusion of 20 studies due to incomplete outcome reporting or non-empirical design, yielding a final sample of 20 studies.

Data extraction included research design, participant level (secondary or tertiary education), LMS platform, instructional procedures, duration, and reported outcomes. The thematic synthesis followed three stages: open coding to identify key concepts, axial coding to cluster related categories, and selective coding to generate overarching themes. To enhance analytical validity, coding consistency was rechecked iteratively, and theme refinement was conducted through constant comparison across studies. The findings were organized into higher-order themes encompassing digital reading practices, vocabulary instruction strategies, learner engagement, teacher mediation, and contextual constraints. These detailed procedural steps strengthen methodological transparency and allow future researchers to replicate or extend the review process in similar contexts.

RESULTS AND DISCUSSION

Result

To move beyond a descriptive listing of individual studies, Table 1 presents a quantitative thematic synthesis of the twenty reviewed articles. Each study was coded according to its dominant research focus, allowing the identification of frequency patterns and proportional distribution across themes. The analysis reveals that *LMS Implementation in Reading Instruction* accounts for 6 studies (30%), followed by *Student Engagement* with 5 studies (25%), and *Self-Regulated Learning (SRL)* with 4 studies (20%). Meanwhile, *Vocabulary Development* represents 3 studies (15%), and *Teacher Digital Readiness and Affective Factors* comprise 2 studies (10%). Importantly, when aggregated, pedagogical-operational themes (implementation and engagement) constitute 55% of the total corpus (11 out of 20 studies), indicating a dominant research orientation toward instructional optimization rather than purely psychological or professional dimensions.

Table 1. Quantitative Thematic Synthesis of Reviewed Studies (n = 20)

No	Thematic Category	Number of Studies (n)	Percent age (%)	Representative Studies	Dominant Quantitative/Comparative Pattern
1	LMS Implementation in Reading Instruction	6	30%	Amalia et al. (2025); Oetomo et al. (2022); Umarlinda et al. (2025)	Reading gains reported when LMS includes structured tasks, feedback loops, and teacher mediation.
2	Student Engagement in Online/Blended Learning	5	25%	Liu & Mantuhac (2024); Vo & Ho (2024)	Engagement increases when instructional scaffolding and expectancy-value support are integrated.
3	Self-Regulated Learning (SRL)	4	20%	Çakiroğlu et al. (2024); Redjeki & Hapsari (2022)	Strong correlation between LMS interaction patterns and goal-setting/time-management strategies.
4	Vocabulary Development (Extensive Reading & Data-Driven Learning)	3	15%	Liu & Saad (2025); Pérez-Paredes & Boulton (2025)	Repeated exposure and corpus-based tasks significantly enhance lexical breadth and depth.
5	Teacher Digital Readiness & Affective Factors	2	10%	Trust & Whalen (2020); Prawiro & Fauziah (2023)	Teacher digital competence and mediation influence instructional effectiveness.

As shown in Table 1, the quantitative distribution highlights a clear concentration of research on LMS-mediated instructional practices compared to vocabulary-specific or teacher-related dimensions. The 15-percentage-point difference between *LMS Implementation* (30%) and *Vocabulary Development* (15%) suggests that reading-oriented LMS integration receives twice as much attention as lexical development strategies. Similarly, while SRL-related studies represent a meaningful 20%, their frequency remains lower than engagement-focused research,

reinforcing the stronger emphasis on participation metrics over deeper regulatory processes. Notably, teacher readiness and affective variables account for only 10% of the reviewed studies, revealing a relative research gap in professional and psychological mediators of LMS effectiveness. Overall, this comparative synthesis underscores the need for a more balanced research trajectory that integrates instructional design, learner cognition, and teacher professionalism within LMS-based EFL frameworks.

To provide a clearer quantitative synthesis of the reviewed literature, the frequency distribution of the twenty selected studies was categorized and visualized in a bar chart (Figure 1). The analysis indicates that *LMS Implementation* constitutes the most dominant theme with 6 studies (30%), followed by *Student Engagement* with 5 studies (25%), and *Self-Regulated Learning (SRL)* with 4 studies (20%). In contrast, *Vocabulary Development* through extensive reading and data-driven approaches accounts for 3 studies (15%), while *Teacher Readiness and Affective Factors* appear in only 2 studies (10%). Notably, more than half of the reviewed research (11 out of 20 studies, 55%) concentrates on LMS implementation and engagement, highlighting a strong pedagogical-operational orientation in post-pandemic EFL scholarship.

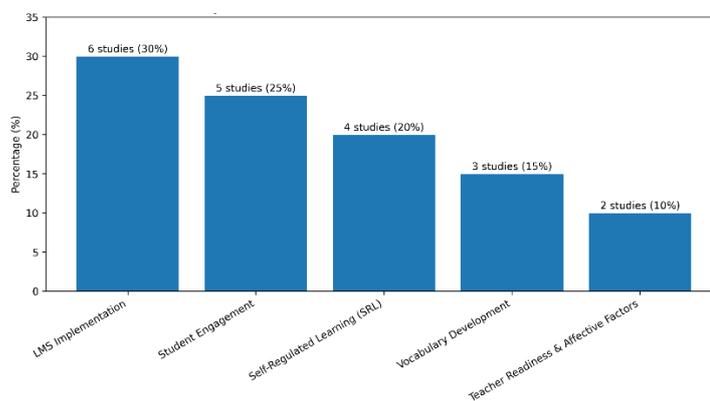


Figure 1. Percentage Distribution of Research Themes

As illustrated in Figure 1, the proportional differences between themes are clearly observable, particularly the 15-percentage-point gap between *LMS Implementation* (30%) and *Vocabulary Development* (15%). The dominance of implementation- and engagement-related studies suggests that recent EFL research prioritizes optimizing platform use and fostering active participation over deeper cognitive or professional dimensions. When combined, themes related to SRL and teacher readiness represent 6 studies (30%), indicating comparatively limited attention to learner psychology and instructional professionalism. This quantitative pattern underscores the need for a more balanced research agenda that integrates technological affordances with cognitive, motivational, and pedagogical frameworks. Overall, the thematic distribution reinforces the importance of a holistic instructional model that systematically connects LMS functionality, structured pedagogy, and learner autonomy in post-pandemic EFL contexts.

Discussion

The integration of Learning Management Systems (LMS) in Indonesian EFL instruction has reshaped digital reading and vocabulary learning practices in the post-pandemic era. Research shows that LMS platforms, especially Moodle, have become structured instructional environments that support routine reading and vocabulary activities rather than functioning only



as emergency tools during school closures (Abaricia & Santos, 2023; Erya & Pustika, 2021; Indriani & Widiastuti, 2021; Oetomo et al., 2022; Satriani et al., 2021). Carefully designed LMS tasks, such as pre-reading orientations, guided reading, and post-reading reflections, enhance student engagement and comprehension outcomes (Abaricia & Santos, 2023; Erya & Pustika, 2021). These findings highlight that LMS effectiveness depends on pedagogical design and teacher facilitation rather than mere technological availability (Liu & Mantuhac, 2024). This interpretation is grounded in the Blended Learning Framework, which emphasizes the strategic integration of digital platforms with face-to-face pedagogy to optimize learning outcomes.

LMS platforms significantly expand learners' access to English reading materials beyond the classroom. Continuous access allows learners to revisit texts, adjust reading pace, and engage in repeated exposure to vocabulary, which supports reading comprehension and lexical growth (Oetomo et al., 2022; Zhou, 2024). However, access alone does not guarantee deep comprehension, as screen-based reading may encourage skimming or superficial processing (Erya & Pustika, 2021). Therefore, LMS tasks must be intentionally designed to engage learners cognitively, combining input with comprehension checks, reflections, or interactive follow-up activities (Satriani et al., 2021). From the perspective of Cognitive Load Theory, structured digital tasks and embedded scaffolds help manage extraneous cognitive load and facilitate deeper processing of textual information.

Vocabulary development within LMS-supported reading is incremental and cumulative, benefiting from repeated exposure and deliberate practice. Learners encounter new words in context, and LMS-integrated exercises such as quizzes, annotations, or vocabulary logs reinforce retention (Khairunnisa & Daulay, 2025; Oetomo et al., 2022). Features like embedded glossaries or interactive tools reduce cognitive load and increase learner engagement in lexical acquisition (Erya & Pustika, 2021). Success in vocabulary learning also depends on learners' self-regulated learning skills and consistent participation in structured LMS tasks (Çakiroğlu et al., 2024; Faza & Lestari, 2025; Redjeki & Hapsari, 2022). This aligns with Self-Regulated Learning Theory, which posits that learners who actively plan, monitor, and evaluate their learning processes achieve stronger academic outcomes in technology-mediated environments.

Learner engagement is a critical factor influencing LMS-supported reading and vocabulary outcomes. Students who leverage LMS flexibility for self-paced study engage more actively in reading and vocabulary tasks, whereas learners with lower digital readiness or weaker self-regulation may participate inconsistently (Hapsari & Cahyono, 2023; Vo & Ho, 2024). Autonomy in LMS learning is therefore conditional, requiring scaffolding through clear instructions, regular feedback, and monitoring to ensure engagement translates into meaningful learning (Redjeki & Hapsari, 2022). Structured teacher guidance is essential to convert LMS autonomy into effective learning outcomes. Within a blended learning model, such scaffolding bridges digital independence and pedagogical direction, ensuring balanced cognitive and motivational support.

Teacher mediation emerges as the most influential factor shaping LMS effectiveness. Teachers facilitate selection of texts, sequencing of activities, and integration of vocabulary support, amplifying the pedagogical impact of LMS tools (Liu & Mantuhac, 2024). Active teacher involvement, including feedback and structured task design, consistently leads to higher engagement and better performance (Indriani & Widiastuti, 2021; Oetomo et al., 2022). In contrast, minimal teacher participation may limit LMS use to administrative functions, reducing its pedagogical value (Abaricia & Santos, 2023). These findings reinforce the theoretical view



that technology functions as a mediational tool whose impact is determined by instructional design and teacher orchestration rather than by platform features alone.

Finally, the findings suggest that LMS-supported reading and vocabulary learning are most effective when combined with adequate infrastructure and institutional support. Factors such as internet connectivity, device availability, and institutional readiness influence consistency and quality of LMS implementation (Oetomo et al., 2022; Satriani et al., 2021). These conditions help explain variability in learning outcomes despite similar platform use. Overall, effective LMS integration requires alignment among pedagogy, teacher facilitation, learner capacity, and institutional support, promoting blended learning models that combine digital and face-to-face instruction (Liu & Mantuhac, 2024; Zhou, 2024). Unlike previous studies that tend to examine LMS use or digital reading separately, this review explicitly synthesizes LMS-mediated reading and vocabulary instruction within integrated theoretical frameworks (Self-Regulated Learning Theory, Cognitive Load Theory, and Blended Learning Framework), thereby clarifying the pedagogical mechanisms that explain learning outcomes in post-pandemic Indonesian EFL contexts.

CONCLUSION

The integration of Learning Management Systems (LMS) in Indonesian EFL instruction has shifted digital reading and vocabulary learning from temporary emergency practices to structured and sustainable instructional models in the post-pandemic era. LMS now functions as an organized learning ecosystem that supports sequenced reading activities, systematic vocabulary enrichment, and continuous access to digital texts. This structured access enables learners to regulate their pace, revisit materials, and benefit from repeated exposure that strengthens comprehension and lexical retention. The synthesis conducted in this study confirms that LMS contributes to cumulative literacy development when embedded within coherent and intentionally designed instructional routines.

The findings further demonstrate that LMS effectiveness is primarily shaped by pedagogical design rather than technological presence alone. Sequenced tasks, scaffolding strategies, and consistent formative feedback significantly enhance learner engagement and cognitive processing. These results align with Self-Regulated Learning Theory, Cognitive Load Theory, and the Blended Learning framework, highlighting how structured digital environments promote autonomy while managing cognitive demands. Thus, meaningful learning outcomes emerge from the interaction between learner self-regulation, cognitive support mechanisms, and deliberate teacher mediation rather than from platform features in isolation.

Practically, teachers should integrate activation activities, guided comprehension tasks, vocabulary recycling, and reflective follow-up within LMS modules to sustain engagement and accountability. Institutional commitment to professional development and stable infrastructure is equally essential to ensure equitable and pedagogically sound implementation. Future research should prioritize longitudinal and experimental designs to examine long-term literacy gains, comparative effectiveness across blended and fully online models, and the interaction between SRL profiles and cognitive load within adaptive LMS systems. Broader multi-context studies across regions and educational levels are also needed to enhance generalizability and scalability of LMS-based EFL practices in Indonesia.



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