

DESIGNING AN AI-INTEGRATED LMS: EFL TEACHERS' VIEWS ON AFFORDANCES AND CHALLENGES

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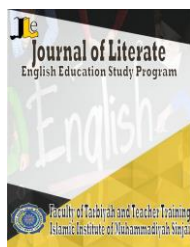
Abstract

The integration of generative artificial intelligence (GenAI) into English as a Foreign Language (EFL) learning is an emerging area of inquiry, particularly in contexts undergoing curriculum reform. This study explores how embedding ChatGPT into a Learning Management System (LMS) can support secondary EFL teachers' instructional practices. Despite national efforts to improve digital infrastructure and pedagogical innovation, many EFL teachers still struggle with effectively using LMS platforms for language instruction. The study adopted a Design-Based Research (DBR) guided by the Software Development Life Cycle (SDLC) Waterfall model, to design, implement, and evaluate an AI-integrated LMS. Data were collected through surveys, interviews, and user walkthroughs with six secondary EFL teachers. Findings show that the AI-enhanced LMS improved usability, instructional planning, language material development, and teacher confidence. Teachers described the AI chatbot as a supportive thinking partner for generating lesson ideas, workload and encouraged pedagogical reflection. At the same time, they raised concerns about student overreliance, content accuracy, and the ethical boundaries of AI use. These insights highlight the importance of co-design, context-sensitive implementation, and critical digital literacy in GenAI integration. This study contributes to growing conversations on AI in secondary education by emphasizing the role of teacher agency, ethical awareness, and system adaptability. It suggests that GenAI, when grounded in local practice, can act not only as a technical tool but as a catalyst for language pedagogical instruction.

Keywords: gen AI; EFL teaching; learning management system; chatbot; national curriculum

Abstrak

Integrasi kecerdasan buatan generatif (GenAI) ke dalam pembelajaran Bahasa Inggris sebagai Bahasa Asing (EFL) merupakan bidang kajian yang sedang berkembang, terutama dalam konteks yang sedang mengalami reformasi kurikulum. Studi ini mengeksplorasi bagaimana mengintegrasikan ChatGPT ke dalam Sistem Manajemen Pembelajaran (LMS) dapat mendukung praktik pengajaran guru EFL sekolah menengah. Meskipun terdapat upaya nasional untuk meningkatkan infrastruktur digital dan inovasi pedagogis, banyak guru EFL masih kesulitan menggunakan platform LMS secara efektif untuk pengajaran bahasa. Studi ini mengadopsi Penelitian Berbasis Desain (DBR) yang dipandu oleh model Waterfall Siklus Hidup Pengembangan Perangkat Lunak (SDLC), untuk merancang, mengimplementasikan, dan mengevaluasi LMS yang terintegrasi dengan AI. Data dikumpulkan melalui survei, wawancara, dan panduan pengguna dengan enam guru EFL sekolah menengah. Temuan menunjukkan bahwa LMS yang disempurnakan dengan AI meningkatkan kegunaan, perencanaan pembelajaran, pengembangan materi bahasa, dan kepercayaan diri guru. Para guru menggambarkan chatbot AI sebagai mitra berpikir yang suportif untuk menghasilkan ide pembelajaran, beban kerja, dan mendorong refleksi pedagogis. Di saat yang sama, mereka



menyuarakan kekhawatiran tentang ketergantungan siswa yang berlebihan, akurasi konten, dan batasan etika penggunaan AI. Wawasan ini menyoroti pentingnya desain bersama, implementasi yang peka konteks, dan literasi digital kritis dalam integrasi GenAI. Studi ini berkontribusi pada perkembangan percakapan tentang AI di pendidikan menengah dengan menekankan peran agensi guru, kesadaran etika, dan adaptabilitas sistem. Studi ini menunjukkan bahwa GenAI, jika didasarkan pada praktik lokal, dapat bertindak tidak hanya sebagai alat teknis tetapi juga sebagai katalisator untuk pengajaran pedagogis bahasa.

Kata Kunci: gen AI; pengajaran bahasa Inggris; (EFL); sistem manajemen pembelajaran; chatbot; kurikulum nasional

1. Introduction

Indonesia has been developing its educational system by introducing *Kurikulum Merdeka* (Emancipated Curriculum), a national curriculum reform aimed at fostering learner agency, differentiated learning, and pedagogically intentioned use of digital technology. This policy was enacted in response to ongoing challenges in developing a more inclusive, adaptable, and future-oriented learning environment. In line with this reform, the Ministry of Education introduced the *Sekolah Penggerak* program, designed to strengthen school capacity by providing infrastructural assistance, teacher training, and enhanced curricular flexibility. Even with these national initiatives, integration of digital technology into daily classroom practices remains uneven. At public secondary schools in Indonesia, which has been designated as a *Sekolah Penggerak*, preliminary findings suggest that LMS was not yet fully embedded in classroom routines. EFL teachers described existing LMS platform as difficult to use, not sufficiently responsive to their instructional needs, and lacking adaptability. Although the school has reliable internet access and digital resources, several teachers expressed hesitation or uncertainty in using the system effectively. In practice, the LMS has mostly served as a file storage tool rather than a platform that supports interactive or student-centered learning. These observations indicated the need to reassess how LMS platforms can be designed and implemented to better align with teachers' instructional goals and the broader aims of the curriculum.

In parallel with national digital initiatives, GenAI has gained global attention in educational contexts, especially since the release of ChatGPT in 2022. GenAI tools offer new possibilities for content creation, adaptive feedback, and interactive support for both students and teachers. Research has shown that such tools can assist with instructional planning, reduce teacher workload, and support learner engagement (Kasneci et al., 2023; Yeung et al., 2021). However, much of the existing research is situated in higher education or highly resourced contexts, leaving a gap in understanding how these technologies might function in EFL pedagogical practices particularly within developing regions like Indonesia. Recent studies have started to address this gap. Firat (2023) found that AI-supported features in LMS platforms could increase content relevance and personalization. Similarly, Habibi et al. (2023) noted that university instructors and students viewed ChatGPT as useful for idea generation and feedback, though limitations in supporting critical thinking were acknowledged. Tapalova and Zhiyenbayeva (2022) reported that Kazakhstani students valued the real-time feedback and adaptability of AI tools, while Bennani et al. (2022) highlighted AI's motivational potential in gamified EFL learning environments. While these studies offer relevant insights, they tend to focus on conceptual affordances and higher education settings, with limited practical examination of GenAI integration into EFL settings.

Given this context, there is a need for empirical research that examines how GenAI tools can be integrated into LMS platforms at the secondary school level, particularly within the framework of curriculum reforms such as *Kurikulum Merdeka*. There is limited discussion on how AI-enhanced systems can support EFL teacher engagement, system usability, and instructional alignment in real-world school environments. This study seeks to address that gap by exploring the integration of

generative AI into an existing LMS platform through a collaborative, curriculum-aligned development process. The objective of this study was to design, develop, and evaluate an AI-integrated LMS platform tailored to the context of public secondary schools in Indonesia to support the *Kurikulum Merdeka* implementation. Using a Research and Development (R&D) methodology guided by the Software Development Life Cycle (SDLC) Waterfall model, the study investigates how ChatGPT can be embedded into existing LMS to support language instructional usability, enhance pedagogical value, and improve teacher satisfaction. The study also aims to contribute to broader discussions on the design of AI-enhanced EFL learning environments.

2. Method

This study adopted a DBR using the Software Development Life Cycle (SDLC) Waterfall model to support the design and integration of generative AI into the LMS platform. The Waterfall model consists of six sequential stages: needs analysis, system design, implementation, testing, deployment, and maintenance (Pressman, 2012; Kute & Thorat, 2014). This structured approach was selected to maintain consistency and alignment between technical development and educational goals, especially in school settings where clarity and usability are priorities (Iqbal & Idrees, 2017).

2.1 Research Settings and Participants

The research was conducted at a public secondary school in Indonesia, which has been appointed as a *Sekolah Penggerak* by the Indonesian Ministry of Education. Participants included six teachers from English subject, selected using purposive sampling. In addition, two experts, a specialist in digital instructional design and a researcher in AI and education, were involved during the design and evaluation stages to provide professional feedback on the system's pedagogical and functional features (Bryman, 2016).

2.2 Data Collection Instruments

Two instruments were used to gather data: (1) a structured questionnaire using a four-point Likert scale and (2) semi-structured interviews. The questionnaire consisted of 15 items divided into six dimensions: usability (2 items), user satisfaction (2), graphic design (3), navigation (2), content quality (3), and individual impact (3) (Yeung et al., 2021). Each item was rated on a four-point scale from Strongly Disagree to Strongly Agree. Following system implementation, interviews were held with EFL teachers selected voluntarily to capture more detailed reflections and experiences using the AI-integrated LMS.

2.3 Procedures

The development process followed the six stages of the SDLC Waterfall model. During the needs analysis stage, teacher surveys and focus group discussions were conducted to identify existing LMS-related challenges. In the design stage, an LMS prototype was developed using Moodle and integrated with ChatGPT APIs. The implementation stage included coding and preparing the system for testing. The testing phase involved both technical checks and user walkthroughs. After necessary revisions, the system was deployed on the school's server and introduced to teachers through a training workshop. Maintenance included weekly monitoring of feedback and a helpdesk service to support system use (Kuria et al., 2019; Akinsola et al., 2020).

2.4 Data Analysis

Quantitative data from the questionnaires were analyzed using descriptive statistics, including percentages, means, and standard deviations for each item. These measures were used to summarize user responses and identify general trends (Yeung et al., 2021). The percentage (P) was calculated using the formula:

$$P = (n/N) \times 100$$

Where: P = percentage score; n = total score obtained; N = maximum possible score.

Results were interpreted using the following rubric:

76–100% = Good

51–75% = Fair

26–50% = Poor

0–25% = Very Poor

For qualitative data, thematic analysis was employed (Braun & Clarke, 2019). This involved a systematic process of data familiarization, coding, theme development, and review. Emerging themes focused on user experience, perceived pedagogical value, implementation challenges, and ethical considerations. The analysis also involved comparing individual teacher responses to identify common patterns and triangulating findings with survey data and expert input. This provided a more comprehensive understanding of system use and informed ongoing design improvements.

3. Results and Discussion

3.1 Need Analysis: EFL Teachers' Experiences

The initial phase of the study, aligned with the needs analysis stage of the SDLC model, focused on understanding how EFL teachers engaged with the existing LMS and what they expected from a digital platform. Findings from both survey data and interview suggest a mismatch between the school's digital infrastructure and the practical realities of everyday teaching. While most teachers reported having a basic level of digital literacy, their actual use of the LMS was limited. For many, the platform felt unintuitive and disconnected from their teaching needs. As one EFL teacher explained, *"I only open the LMS when I need to submit grades. It doesn't really support my classroom work"* (T1). Another remarked, *"There are a lot of features, but they don't help me teach better. It feels like a reporting tool"* (T4). These comments reflect a broader pattern: although the infrastructure was in place, the system was not perceived as pedagogically relevant.

Survey data echoed these sentiments. Only one out of six participating teachers reported using the LMS regularly in their instruction. Common barriers included a complex interface, time constraints, and a lack of connection to daily teaching goals. The teacher expressed a desire for tools that could actively support their language instructional planning and delivery. One participant (T6) noted, *"Sometimes I get stuck when preparing lessons. I wish the LMS could suggest examples or guide me. But right now, it's just static."* Emotional responses also surfaced during the interview. Two teachers described feeling anxious when using the LMS, fearing that a technical mistake could affect student records. As one teacher put it, *"I worry I'll click the wrong button and mess something up. That's why I don't use it unless someone helps me"* (T3). These experiences suggest that teachers' reluctance is not due to resistance to technology, but rather to a lack of support, confidence, and design that meets them where they are.

This finding aligns with Yeung et al. (2021), who emphasize that teachers are more likely to adopt digital tools when the design aligns with their pedagogical habits and comfort levels. Similarly, Law (2024) argues that meaningful system design begins with listening to educators' experiences and concerns. The results also resonate with Habibi et al. (2023), who observed that when digital tools feel rigid or misaligned with classroom realities, even well-supported systems can fail to gain traction. Kohnke et al. (2025) further highlight the importance of cultivating trust and perceived instructional value when integrating AI into education. To sum up, the needs analysis did more than identify usability issues. It illuminated how technical design, emotional readiness, and language pedagogical relevance intersect in shaping technology use. EFL teachers' reflections served as a valuable guide, not only for identifying what was missing in the system, but for imagining how the LMS could evolve into a platform that supports both language instructional effectiveness and teacher agency.

3.2 System Design and AI Integration

The system design phase focused on translating the teacher feedback into practical improvements within the LMS platform. Drawing on the insights gathered during the needs analysis, the revised LMS was developed using Moodle, with ChatGPT-4 features integrated to support EFL lesson planning, generate communicative activities, and provide real-time language feedback tasks. The design emphasized usability, adaptability, and relevance factors teachers had consistently identified as missing from the earlier version of the platform. During expert walkthrough sessions, teachers responded positively to the inclusion of AI-powered tools. Features such as AI-assisted lesson planning, real-time quiz feedback, and automated writing evaluation were described as helpful and time-saving. One teacher referred to the AI as “a second pair of hands”, while another called it “a thinking partner”, reflecting a shift in how the LMS was perceived, not just as a tool for content delivery, but as an active support in instructional decision-making.

The integration of ChatGPT did not aim to add novelty for its own sake. Rather, the redesign was grounded in teachers’ everyday needs and working conditions. Instead of treating AI as a separate feature, the system sought to embed it in ways that felt natural and accessible within existing teaching workflows. This approach is consistent with Chiu (2024) findings, which suggest that AI-enhanced systems are more likely to be adopted when they respond to user contexts and improve perceived usefulness. Similarly, Anisah et al. (2024) highlight that system designed with user input tend to foster greater trust and engagement. The design phase represented more than a technical upgrade which involved reimagining the LMS as a responsive and supportive presence in the classroom. By anchoring the redesign in EFL teachers’ perspectives, the system began to take shape as a tool not only for managing content, but for enhancing agency and supporting language pedagogical practices.

3.3. Quantitative Findings

Post-trial survey data were collected from EFL teachers using a 4-point Likert scale to evaluate six key dimensions of the AI-enhanced LMS: usability, user satisfaction, navigation, content quality, graphic design, and individual impact. Descriptive statistics were computed, including mean scores, standard deviations, and percentage interpretations. The results indicated that all dimensions received generally favorable responses, with mean scores ranging from 3.18 to 3.62, suggesting high levels of acceptance and perceived usefulness. The usability dimension received the highest mean score ($M = 3.62$, $SD = 0.48$), followed by user satisfaction ($M = 3.52$, $SD = 0.50$), and navigation ($M = 3.40$, $SD = 0.56$). Content quality ($M = 3.32$, $SD = 0.63$) and individual impact ($M = 3.28$, $SD = 0.59$) were also evaluated positively. The lowest mean score was graphic design ($M = 3.18$, $SD = 0.71$), though it still fell within the “fair to good” range.

Table 1 Teacher Survey Results on AI-Integrated LMS

Dimension	Mean	SD	% Score	Category
Usability	3.62	0.48	88%	Good
User Satisfaction	3.52	0.5	84%	Good
Navigation	3.4	0.56	85%	Good
Content Quality	3.32	0.63	82%	Good
Graphic Design	3.18	0.71	79%	Fair–Good
Individual Impact	3.28	0.59	82%	Good

The data not only reflect functional success but also signal deeper pedagogical implications. Teachers found the LMS increasingly easy to use, with many describing the AI-integrated features such as content generation and feedback suggestions, as time-saving and pedagogically supportive. This was particularly evident in the usability and navigation scores, which suggest that AI integration helped reduce barriers previously reported during the needs analysis phase. Interestingly, the relatively high score in the individual impact dimension (82%) highlights how the LMS may have influenced teaching behaviors and decision-making processes, despite being introduced over a short

period. Although graphic design scored slightly lower, several respondents acknowledged improvements in layout clarity compared to the original LMS version, indicating that visual presentation, while important, did not hinder functionality.

These findings align with emerging research that emphasizes the importance of AI-driven platforms in enhancing usability, personalization, and instructional agency. Halil et al. (2023) and Saifullah et al. (2024) both found that when AI tools are embedded in teacher-friendly environments, usability and satisfaction tend to increase. Similarly, Guan and Gu (2024) highlighted how AI-supported platforms contribute to reducing teacher workload and improving efficiency. Bozkurt (2023) emphasized the motivational value of AI in facilitating personalized lesson delivery, while Bennani et al. (2022) argued that interface design plays a crucial, though sometimes underrecognized, role in technology adoption. Taken together, these studies reinforce the interpretation that EFL teachers in this study not only accepted the system but also began to reframe their language instructional practices in relation to it.

3.4 Qualitative Findings: Affordances and Ethical Issues

Interview data revealed three key themes that captured how EFL teachers experienced the AI-integrated LMS: language instructional support, cognitive relief, and ethical reflection.

The most prominent theme was the sense of instructional companionship. Teachers described the AI chatbot not just as a digital assistant, but as a thinking partner, something that helped them plan, reflect, and clarify ideas. T3 shared, *“I don’t feel stuck anymore. It’s like having someone there to check in with.”* T6 similarly noted, *“It’s not just answering questions. It helps shape my thinking to generate my lessons.”* These experiences resonate with Zhou and Teng (2024) who describes how pedagogical tools can serve as both cognitive and emotional companions when designed for interaction and reflection.

A second theme was cognitive efficiency. Teachers widely reported that the AI features eased their workload, especially when creating English materials, giving students’ feedback, or personalizing English lesson content. T2 remarked, *“What used to take two hours now takes ten minutes to get started. I still revise it, but it’s much easier.”* This finding aligns with Habibi et al. (2023), who suggest that AI tools can act as scaffolds for teachers, offering starting points they can adapt. Luo (2024) and Yusuf et al. (2024) likewise emphasize that well-designed AI systems can improve efficiency without limiting teacher creativity.

The third theme involved ethical concerns. While teachers appreciated the affordances, several raised questions about overreliance, critical thinking, and content quality. T6 observed, *“Students are getting used to using the chatbot, but I’m worried they’re thinking less critically when writing their tasks.”* T4 added, *“Sometimes the Indonesian responses don’t sound right—I still have to double-check.”* These reflections echo Giannakos et al. (2024) who warn that unchecked AI use can lead to passive learning and ethical detachment. Haleem et al. (2023) also highlight concerns about bias and the need for context-aware moderation. Teachers approached the system with cautious optimism. As Wood and Moss (2024) argue, effective AI integration depends not just on technical performance but on pedagogical relevance and professional trust. In line with Noroozi et al. (2024), the findings show that teachers’ willingness to engage with AI depends on how well the system supports, not replaces their judgment and values.

The qualitative findings suggest that when AI tools are co-developed with teachers and embedded in real classroom needs, they can support deeper instructional reflection and engagement. Teachers in this study did more than use the LMS, they shaped its purpose. They acted as designers, evaluators, and guides who integrated the AI functions into their planning and EFL pedagogy. Yet, this transformation came with nuance. Teachers valued the AI’s assistance but remained aware of its limitations. As T2 put it, *“I like what it can do. But I’m also aware of what it can’t understand.”* This response reflects what Selwyn (2019) calls “informed ambiguity” a thoughtful stance that embraces

innovation without giving up professional agency. Rather than aiming for automation, teachers advocated for scaffold use and critical conversations with students about AI's role in learning.

These insights note important implications for both EFL pedagogical practices and policy. Rather than focusing solely on technical training, professional development initiatives should adopt a more holistic approach that fosters reflective thinking, collaborative inquiry, and sustained engagement with language pedagogical challenges. This means equipping English teachers not just with operational skills, but with the conceptual tools to critically evaluate and adapt AI tools in ways that align with their instructional goals and EFL classroom contexts. As McKenney and Reeves (2020) argue, effective educational innovation requires ongoing co-design processes that are responsive to local realities and shaped by the voices of practitioners themselves. In this regard, school leaders play a pivotal role not only in facilitating access to AI tools but in nurturing a culture of experimentation and peer learning, where teachers feel supported to test, adapt, and refine their practices over time. Such a culture encourages the development of AI-integrated systems as evolving, context-sensitive pedagogical ecosystems that reflect the dynamic and situated nature of teaching and learning (Rasul et al. 2024)

4. Conclusion

This study demonstrates that integrating Gen AI into an LMS can enhance EFL teachers' instructional practices, confidence, and creativity when grounded in teacher-centered design and ethical reflection. Teachers transitioned from passive users to reflective practitioners, actively shaping the system's role in supporting communicative language teaching. The teachers noticed that the system helped them generate communicative tasks, offer culturally relevant examples of English teaching material, and reduced their workload, which allowed them to focus more on their students. However, ethical and pedagogical vigilance remains necessary to prevent overreliance and maintain critical engagement. These findings highlight the need to develop critical digital literacy so teachers and students can use the system as a supportive tool for effective English teaching and learning. This design-based study only investigated EFL teachers' views and does not further capture students' engagement in learning with the system. Future research should explore longitudinal impacts and examine student outcomes alongside teacher experiences.

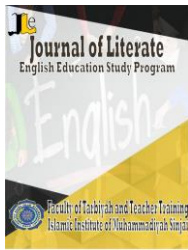
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