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# Impact of ChatGPT and LMS on Student Satisfaction, Engagement, and Self-Directed Learning : a Conceptual Paper

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A B S T R A C T

This study explores the integration of ChatGPT and Learning Management Systems (LMS) to enhance student satisfaction, engagement, and self-directed learning. ChatGPT provides personalized, interactive support, while LMS offers structured, collaborative tools, creating a comprehensive learning experience. Grounded in the Technology Acceptance Model (TAM) and Self-Determination Theory (SDT), the research proposes a framework linking ChatGPT and LMS usage to improved outcomes. This integration addresses gaps in traditional learning approaches, fostering dynamic and adaptive education. The findings highlight the transformative potential of combining AI-driven tools and digital platforms, offering actionable strategies for educators and policymakers. Future research should empirically validate this framework across varied educational contexts to optimize learning environments and improve teaching effectiveness.

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## INTRODUCTION

The rapid advancements in artificial intelligence (AI) and the ongoing evolution of the modern technological era have brought profound changes to various fields, with education being one of the most impacted sectors. AI technologies, particularly in the form of tools like ChatGPT, have opened new avenues for enhancing the way educators and students interact, providing personalized, scalable learning experiences that were previously unimaginable (Nuangchalerm & Saregar, 2024). The surge in global interest surrounding AI in education is reflected in significant increases in search trends for terms such as "AI Education," showing a fivefold rise between October 2022 and October 2023 (Hartley et al., 2024). One of the most notable advancements in AI is the launch of OpenAI's ChatGPT in November 2022. ChatGPT is a conversational AI tool that responds to prompts and questions interactively, offering an innovative approach to engage students in a more personalized manner (Barrot, 2024). Built on the GPT framework, this technology has shown considerable promise in transforming traditional teaching and learning methods. By leveraging large-scale language models, ChatGPT has the potential to significantly enhance student satisfaction, foster engagement, and facilitate self-directed learning (Adel et al., 2024).

Alongside the growth of AI technologies, Learning Management Systems (LMS) have emerged as key platforms in modern education, enabling the centralization of content delivery, resource management, and communication (Hassan et al., 2024). Traditionally, LMS have followed the educational science model where the teacher is the primary source of knowledge, transmitting information to students through various methods (Lahmadi et al., 2024).However, with technological progress, educational approaches are evolving. The introduction of blended learning, which integrates traditional methods with modern technologies, aims to bridge the gap and improve learning experiences by offering greater flexibility and engagement (Duy et al., 2024). The digitization of education further reinforces this shift, equipping students with digital skills and supporting the development of more personalized, efficient learning environments (Alexandro & Basrowi, 2024). Learning Management Systems, alongside tools like ChatGPT, provide an opportunity to create highly interactive learning environments that cater to individual learning needs. This is particularly important in fostering student engagement, as students are more likely to be motivated and satisfied when they can participate actively in their learning process (Urien & Silas, 2024). The integration of LMS not only enhances content delivery but also promotes collaboration, interaction, and active participation among students, which are all key factors in improving student satisfaction and engagement (Goh et al., 2014).

Previous research has examined the individual effects of ChatGPT and LMS on student satisfaction and engagement (Al Faruq et al., 2023; Tan, 2024). However, the combined impact of these technologies on student satisfaction, engagement, and self-directed learning has not been extensively explored. This research gap highlights the potential of integrating ChatGPT and LMS to offer a comprehensive approach to addressing diverse educational needs. The integration of ChatGPT and LMS offers a groundbreaking approach in educational technology. While LMS platforms provide a structured learning framework, ChatGPT adds a layer of dynamic, personalized, and interactive support, enhancing the overall learning experience. This unique combination aims to overcome the limitations of traditional digital learning systems, which often lack personalized interaction.

The integration of Learning Management Systems (LMS) with advanced technologies like ChatGPT has shown promise in revolutionizing modern education. While LMS platforms centralize content delivery, communication, and interaction, their effectiveness hinges on alignment with educational goals and the ability to meet diverse student needs. Key challenges include maximizing LMS features, addressing the digital divide, ensuring ethical data usage, and providing comprehensive teacher training in digital skills (Adel et al., 2024; Liu et al., 2024). ChatGPT, as a conversational AI tool, offers interactive and accessible learning experiences that enhance engagement and support independent learning. However, concerns about response accuracy, personalization, and over-reliance on AI necessitate human supervision for its effective implementation. Integrating ChatGPT with existing LMS frameworks is crucial for creating a seamless and efficient learning environment (Yassin & Bashir, 2024).

This study aims to evaluate the impact of ChatGPT on student satisfaction and engagement, assess the role of LMS in supporting self-directed learning, and explore the combined benefits of ChatGPT and LMS in enhancing these key aspects of education. By addressing the research gap in understanding the synergistic effects of these technologies, this study contributes to the theoretical framework of AI and educational technologies. The findings of this research provide theoretical insights into the combined benefits of ChatGPT and LMS in improving learning outcomes, expanding the framework of technology acceptance and self-determination theories. Practically, the research offers actionable strategies for educational institutions to implement AI-driven and LMS-supported learning models that enhance teaching effectiveness, student engagement, and overall satisfaction. In conclusion, the integration of ChatGPT and LMS holds transformative potential for modern education by providing interactive, personalized, and efficient learning experiences. By addressing the limitations of previous research and proposing a novel framework, this study seeks to make significant contributions to both theoretical knowledge and practical applications in educational technology.

## LITERATURE REVIEW

Recent years have seen a surge in interest in integrating artificial intelligence (AI) tools like ChatGPT and Learning Management Systems (LMS) into education. This literature review explores how ChatGPT and LMS can enhance student satisfaction, engagement, and self-directed learning. To ensure a thorough and systematic analysis, a systematic literature review (SLR) approach was employed.

### Theoretical Lens

To gain a deeper understanding of how the integration of ChatGPT and LMS can influence student learning experiences, this study will employ two primary theoretical frameworks. First, the Technology Acceptance Model (TAM) will be used to analyze how students' perceptions of ease of use and usefulness of ChatGPT and LMS influence their decisions to adopt these technologies. Second, Self-Determination Theory (SDT) will be used to investigate how ChatGPT and LMS can fulfill students' needs for autonomy, competence, and relatedness, thereby enhancing their engagement and satisfaction. By combining these two theories, this study is expected to provide a comprehensive understanding of the impact of integrating ChatGPT and LMS on student learning outcomes.

### Conceptual Framework Development

This study is grounded in the relationships between ChatGPT usage, Learning Management Systems (LMS) usage, self-learning outcomes, student satisfaction, and student engagement.

### ChatGPT Usage → Self-Learning Outcomes

ChatGPT fosters self-learning outcomes by supporting autonomous motivation and adaptive interaction. Grounded in Self-Determination Theory (Ryan & Deci, 1985), ChatGPT enhances students' intrinsic motivation by fulfilling their needs for autonomy and competence. It facilitates rapid access to personalized information, provides immediate and relevant feedback, and helps students create customized learning plans. Research shows that ChatGPT significantly improves students' self-directed learning skills, particularly in critical thinking and goal setting (Achour et al., 2024; Li et al., 2024).

**H1: The use of ChatGPT will enhance self-learning outcomes.**

### Learning Management Systems Usage → Self-Learning Outcomes

LMS plays a crucial role in supporting self-learning by providing structured tools like progress trackers, schedule management features, and discussion forums. Self-Regulated Learning Theory (Fasikhah & Fatimah, 2013) suggests that these tools empower students to plan, monitor, and evaluate their own learning. LMS also offers flexible access to resources and personalized learning pathways, accommodating diverse learning styles and enhancing self-learning (Cabı & Türkoğlu, 2024; Islam & Mahmud, 2020).

**H2: The use of LMS positively influences self-learning outcomes.**

**Self-Learning Outcomes → Student Satisfaction**

Self-learning outcomes significantly contribute to student satisfaction by meeting basic psychological needs such as autonomy, competence, and relatedness, as outlined in Expectancy-Disconfirmation Theory. When students successfully manage their learning, they experience a sense of accomplishment, positively impacting their satisfaction. Additionally, studies show that autonomous learners report higher satisfaction levels due to their perceived control over learning outcomes (Guo et al., 2020; Masrom et al., 2018).

**H3: Self-learning outcomes positively influence student satisfaction.**

**Self-Learning Outcomes → Student Engagement**

Independent learning enhances student engagement by fostering a sense of responsibility for their educational journey. According to Cognitive Engagement Theory, self-directed learners tend to be more motivated and think critically. Additionally, digital learning environments that support self-learning have been shown to increase engagement by enabling students to learn at their own pace and according to their preferences (Lu et al., 2024; Rick & Phlypo, 2019).

**H4: Self-learning outcomes positively influence student engagement.**

**ChatGPT Usage → Student Engagement**

ChatGPT significantly enhances student engagement by offering interactive and dynamic learning experiences. Grounded in Cognitive Load Theory, ChatGPT reduces cognitive barriers by providing timely assistance, allowing students to focus on meaningful learning tasks. Research highlights that ChatGPT maintains students' attention and fosters active participation, thereby enhancing academic engagement (Al Shloul et al., 2024; Alshahrani, 2023).

**H5: The use of ChatGPT strongly enhances student engagement.**

**Learning Management Systems Usage → Student Engagement**

LMS enhances student engagement by providing collaborative tools such as discussion forums and real-time analytics for tailored interventions. The Community of Inquiry Framework highlights the importance of interaction and collaboration in boosting student engagement. LMS creates a sense of community and supports active participation through structured and interactive resources (De Aires Angelino et al., 2021; Whale et al., 2013).

**H6: The use of LMS positively influences student engagement.**

**ChatGPT Usage → Student Satisfaction**

ChatGPT enhances student satisfaction by offering personalized, efficient, and inclusive learning experiences. Based on Expectancy-Disconfirmation Theory, ChatGPT's ability to exceed students' expectations through rapid assistance and tailored support leads to higher satisfaction. Additionally, its contribution to improving linguistic competence and facilitating academic tasks for diverse learners further enhances satisfaction (Guttierrez-Aguilar et al., 2024; Ngo et al., 2024).

**H7: The use of ChatGPT positively impacts student satisfaction.**

**Learning Management Systems Usage → Student Satisfaction**

LMS contributes to student satisfaction by providing user-friendly and flexible learning environments. According to the Information Systems Success Model, system quality, usability, and support significantly impact user satisfaction. LMS enhances the learning experience by promoting collaboration, resource accessibility, and student-teacher interaction (Bervell et al., 2020; Green et al., 2012).

**H8: The use of LMS positively influences student satisfaction.**

This conceptual framework integrates theoretical foundations and strengthened arguments to highlight how ChatGPT and LMS work together to improve self-learning outcomes, student satisfaction, and engagement. The relationships between these factors are shown in Figure 1.

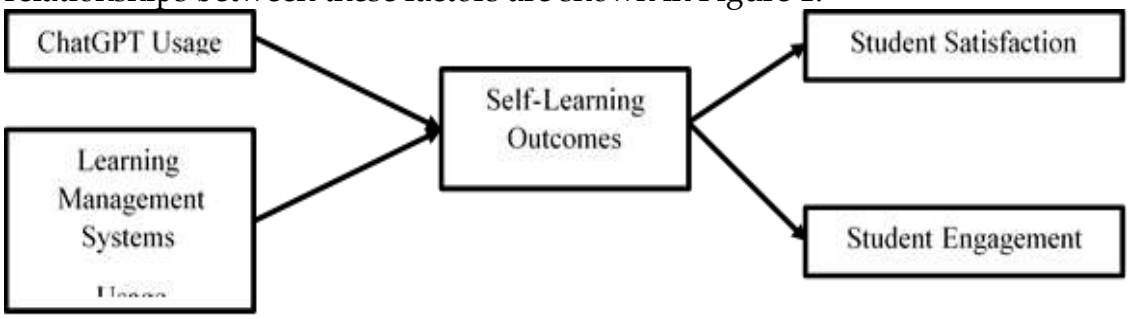


**Figure 1. Conceptual Framework**

## METHODOLOGY

This conceptual study examines the integration of ChatGPT and Learning Management Systems (LMS) to improve self-learning, student satisfaction, and engagement. The research involves three stages: literature review, proposition development, and framework validation. Firstly, a systematic review of literature (2018-2024) was conducted using databases like Scopus and Web of Science. Theoretical foundations such as Self-Determination Theory (SDT), Technology Acceptance Model (TAM), and Self-Regulated Learning Theory were used to map the relationships between key variables, including ChatGPT usage, LMS usage, self-learning outcomes, and student engagement. Secondly, propositions were developed based on theoretical alignment and empirical evidence, such as "ChatGPT enhances self-learning outcomes" and "LMS usage improves student engagement." Finally, the framework was validated through expert reviews and comparative analysis with existing models, ensuring its relevance and applicability in real-world educational settings. This framework provides a foundation for future empirical research in this area.

## RESEARCH RESULT AND DISCUSSION

### Systematic Literature Review Process

The SLR process began by identifying relevant literature using Scopus, Web of Science, and Google Scholar. The search focused on peer-reviewed journal articles published between 2018 and 2024 that explored the roles of ChatGPT, LMS, or their integration in education. After screening, 56 articles met the inclusion criteria and were analyzed.

### ChatGPT

ChatGPT, a conversational AI tool, has gained popularity in education due to its ability to provide instant feedback, personalized interactions, and scalable support. Research suggests that ChatGPT enhances student engagement through dynamic, interactive learning experiences (Alshammari & Alshammari, 2024; Bettayeb et al., 2024) and promotes self-directed learning by allowing students to explore topics independently (Lin, 2024a). However, ChatGPT has limitations, such as the inability to replicate the nuanced feedback and emotional support of human educators (Al Faruq et al., 2023). Additionally, most studies focus on ChatGPT's individual applications, overlooking its potential when integrated with other technologies like LMS (Montenegro-Rueda et al., 2023).

### Learning Management Systems

LMS platforms have played a crucial role in centralizing content delivery, managing communication, and facilitating assessments. Studies highlight the importance of usability, system quality, and technical support in influencing LMS effectiveness and student satisfaction (Ghazal et al., 2018; Xiong & Wu, 2024). LMS also enables flexible access to learning resources, which has been linked to improved engagement and satisfaction (Ohliati & Abbas, 2019). While LMS offers a structured learning environment, it often lacks the dynamic interactivity that AI tools like ChatGPT provide. This gap underscores the need for further research into how integrating LMS with AI tools can enhance learning outcomes and provide a more comprehensive educational experience (Goh et al., 2014).

### Satisfaction

Student satisfaction is influenced by both technological and pedagogical factors. ChatGPT enhances satisfaction by providing immediate, relevant, and personalized feedback (Younis, 2024), while LMS contributes through system usability and quality (Al-Busaidi, 2012). However, existing research rarely investigates how the integration of ChatGPT and LMS might create synergies that further boost satisfaction.

### Engagement

Engagement is crucial for successful learning. ChatGPT supports engagement through interactive and personalized interactions, while LMS fosters participation through structured resources and collaborative tools (Ahmadi et al., 2023; Alshammari & Alshammari, 2024). However, the combined impact of these technologies on engagement remains largely unexplored.

**Self Learning**

Self-learning is becoming increasingly important in modern education. ChatGPT empowers students to take control of their learning by providing tailored guidance and immediate support (Lin, 2024). LMS also facilitates self-directed learning by offering progress tracking and personalized pathways (Pesovski et al., 2024). However, studies often overlook how these tools, when integrated, can mutually reinforce self-directed learning capabilities.

**Critical Analysis and Research Gap**

**Table.1 A Comparison of Key Studies Reveals Significant Gaps in the Literature**

| Author | Focus on Study | Key Findings | Methodology | Research gap |
|---|---|---|---|---|
| (Ghazal et al., 2018) | Effectiveness of LMS in improving student satisfaction. | LMS improves satisfaction through user-friendliness and system quality. | Quantitative, survey | Does not explore the integration of AI tools like ChatGPT to address engagement and personalization. |
| (Bettayeb et al., 2024) | ChatGPT's role in education. | ChatGPT enhances engagement through personalized and adaptive learning experiences. | Experimental | Lacks examination of how ChatGPT and LMS integration affects long-term satisfaction and outcomes. |
| (Montenegro-Rueda et al., 2023) | The Rise of Generative AI in Education | AI can make learning more interactive, but it may not offer the same level of emotional and nuanced feedback as human instructors. | Systematic review | There is a lack of empirical evidence on the combined use of AI tools like ChatGPT with structured platforms like LMS. |
| (Xiong & Wu, 2024) | LMS adoption and data | Privacy concerns influence | Theoretical modeling | Focuses on adoption factors without |

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|---|---|---|---|---|
| | privacy concerns. | LMS adoption but also highlight the potential for flexible resource management. | | evaluating impacts on student satisfaction or engagement. |
| (Lin, 2024) | ChatGPT's potential to support self-directed learning. | ChatGPT empowers self-directed learning by offering personalized support and immediate feedback. | Case study | Overlooks how combining ChatGPT with LMS features like progress tracking can enhance self-learning. |
| (Alshammari & Alshammari, 2024) | ChatGPT adoption in higher education. | ChatGPT enhances accessibility and engagement, but deeper integration with LMS is needed. | Mixed-methods | Limited research on the combined benefits of ChatGPT and LMS in various educational contexts. |
| (Ohliati & Abbas, 2019) | Student satisfaction with LMS platforms. | LMS satisfaction is influenced by user-friendliness and information quality. | Quantitative, cross-sectional | Does not consider how AI tools can complement LMS to enhance student satisfaction further. |
| (Al Faruq et al., 2023) | AI tools vs. human instructors in education | While ChatGPT supports learning, it cannot fully replicate the emotional and nuanced interactions | Comparative analysis | Overlooks how AI integration with LMS might address LMS's current limitations in emotional engagement. |

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|---|---|---|---|---|
| | | provided by human instructors. | | |
| (Pesovski et al., 2024) | Personalized learning pathways in LMS | LMS creates personalized learning experiences but lacks dynamic interaction. | Longitudinal | Overlooks how ChatGPT can address the lack of interaction in LMS. |
| (Younis, 2024) | Online learning confidence and satisfaction | Online learning satisfaction is influenced by user confidence and perceived system usefulness. | Survey | Overlooks the potential of integrated ChatGPT-LMS systems in boosting user confidence and learning outcomes. |

**Research gap**

The integration of ChatGPT and LMS holds significant potential for enhancing learning outcomes. However, most studies focus on the individual impact of these technologies, neglecting their synergistic effects on student satisfaction, engagement, and self-directed learning. Additionally, there is a dearth of research employing robust theoretical frameworks like TAM or SDT to explain the adoption and psychological impacts of these technologies. Moreover, existing research often relies on cross-sectional methods and is limited to specific educational contexts, hindering our understanding of long-term and broader applications. Finally, there is a lack of empirical models or frameworks to guide the practical integration of ChatGPT and LMS.

## CONCLUSIONS AND RECOMMENDATIONS

This study highlights the potential of combining ChatGPT and Learning Management Systems (LMS) to revolutionize education. It demonstrates how these technologies can improve self-learning, student satisfaction, and engagement. ChatGPT fosters autonomy and motivation, while LMS offers structure and flexibility for collaborative learning. The proposed framework builds on theories like Self-Determination Theory (SDT), Technology Acceptance Model (TAM), and Self-Regulated Learning Theory, providing a strong foundation for understanding AI tools and digital platforms in education. It offers practical recommendations for educators, policymakers, and developers to create effective learning environments.

## ADVANCED RESEARCH

Future research to test and refine the framework in various educational contexts. Ultimately, the integration of ChatGPT and LMS can modernize education, improving teaching effectiveness and student experiences.

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