GAMIFICATION APPROACH IN DIGITAL LEARNING ENVIRONMENTS TOWARDS STUDENT EXPERIENCE AND ENGAGEMENT

Rahma Djati Kusuma*[1], Wahyu Indra Satria[2], Febri Damatraseta[3]

[1,2,3] Institut Bisnis dan Informatika Kesatuan, Indonesia
[a]*E-mail:* rahmadjati@ibik.ac.id *
[b]*E-mail:* wahyuindrasatria@ibik.ac.id
[c]*E-mail:* febrid@ibik.ac.id
(*) Corresponding Author

ABSTRACT

This study examines the integration of gamification within digital learning environments, particularly in Learning Management Systems (LMS), to enhance student motivation and engagement. Despite rapid technological advancements in higher education, challenges such as low student engagement and motivation persist. Previous research, including Zea Ulhaque, Fachrezi, and Hadiapurwa (2024), highlights the ineffectiveness of traditional, one-way instructional methods in engaging students, which negatively impacts academic performance. In response to this, gamification has emerged as a promising solution, with evidence suggesting that incorporating game elements such as points, badges, leaderboards, and challenges can significantly boost student participation and motivation. This study adopts a qualitative approach, utilizing a literature review method to analyze and synthesize relevant studies from various sources (2016–2026) on the impact of gamification in educational settings, particularly within LMS platforms. The ADDIE (Analysis, Design, Development, Implementation, Evaluation) model is applied to provide a structured framework for the integration of gamified elements. Findings indicate that gamification enhances student interaction with learning materials and creates a more dynamic, engaging, and enjoyable learning experience. The study concludes by recommending that educational institutions incorporate gamification in their LMS to improve student engagement and learning outcomes, with suggestions for future research to address long-term effects and challenges in diverse educational contexts.

INTRODUCTIONS

The global advancement of information technology has significantly transformed higher education, particularly in how learning is facilitated. The widespread adoption of Learning Management Systems (LMS) has revolutionized the learning environment by providing flexible, accessible, and efficient educational tools. However, despite these technological advancements, student motivation and engagement remain major challenges in digital learning settings. Research by Haque et al. (2024) indicates that 78.9% of students consider traditional one-way

instructional methods such as lectures and presentations to be dull, which negatively impacts their academic performance. Additionally, LMS platforms are often seen as rigid when they lack interactive features or elements that encourage active participation.

In response to these challenges, gamification—the integration of game elements and mechanics into non-game environments such as education—has emerged as a promising solution (Duterte, 2024; Simsek & Yilmaz, 2025). Gamification is recognized for its ability to increase student motivation and engagement by introducing elements such as points, badges, leaderboards, challenges, and rewards (Fitria, 2023; Fung Ah Chon et al., 2024; Lampropoulos et al., 2025). According to Kusuma (2025), incorporating augmented reality (AR) into educational content has been shown to enhance student motivation. Similarly, studies by Hendri & Lourensius (2021) and Fadilla & Nurfadhilah (2022) confirm that gamification within LMS enhances the learning experience by promoting interaction and boosting student motivation. Game mechanics, such as points and challenges, foster a competitive and supportive learning atmosphere without altering the core educational content (Ruiz et al., 2024).

Despite the growing body of research on gamification, a clear gap exists in understanding how these game elements can be effectively integrated into LMS platforms, particularly in Indonesian higher education institutions, to enhance student experience and engagement. While previous studies have demonstrated the potential of gamification in education, they have often focused on specific LMS platforms or isolated game elements, leaving a gap in a comprehensive approach to integrating gamification across different educational settings. This study aims to fill this gap by systematically synthesizing gamification practices within the Indonesian LMS context, focusing on their impact on student experience and engagement.

Although previous studies have extensively explored the benefits of gamification in education, the novelty of this research lies in its focus on the Indonesian context, particularly within IBI Kesatuan Bogor. By incorporating the ADDIE (Analysis, Design, Development, Implementation, Evaluation) model, this study provides a conceptual framework to guide the integration of gamification in LMS, not as a research method but as a guiding structure. This framework serves as a tool for understanding how gamification can be tailored to various educational environments, contributing both theoretically and practically to gamified learning systems.

The primary objectives of this study are to investigate how gamification features, such as points, badges, and leaderboards, can be effectively integrated into Learning Management Systems (LMS) to enhance student motivation. Additionally, the study aims to examine the impact of gamification on students' active participation and learning outcomes within the LMS. This includes exploring how these game elements foster greater engagement and improve academic performance. Furthermore, the research will identify the challenges associated with integrating gamification in higher education, particularly within the context of Indonesian universities, and propose potential solutions to address these challenges.

The significance of this study lies in its potential to provide valuable insights into how gamification can be used to improve the quality of digital learning environments. The findings could offer a robust framework for implementing gamified LMS, ultimately enhancing student engagement and academic performance. Additionally, the results of this study could serve as a reference for educators and institutions seeking to adopt gamification in their own LMS platforms, contributing to the broader development of gamified e-learning systems.

This study adopts a literature review approach, synthesizing existing research on gamification in digital learning environments. The review will include academic articles, journals, and other scholarly sources that discuss the theoretical and practical aspects of gamification in education. The focus will be on studies that explore the effectiveness of gamification in higher education, specifically in Indonesian universities. By examining both qualitative and quantitative studies, this research aims to develop a comprehensive understanding of the impact of gamification on student engagement and motivation, providing a foundation for future research and practical applications of gamified learning systems.

METHOD

This study adopts a qualitative approach using a literature review to explore the integration of gamification in digital learning environments, focusing on its impact on student experience and engagement. The literature review method was chosen for its ability to synthesize and critically analyze existing studies, identifying gaps in the current body of knowledge (Tricco et al., 2016). By examining both theoretical and empirical studies, this research aims to understand how gamification influences student engagement and academic outcomes.

Sources of Data

The primary sources of data for this study include academic articles, peer-reviewed journals, books, conference papers, and other scholarly publications related to gamification in education, Learning Management Systems (LMS), and digital learning environments. Special emphasis was placed on studies conducted in the Indonesian context or those applicable to similar educational settings. Only studies published in the last decade (2016–2026) and retrieved from reputable databases such as Google Scholar, JSTOR, ScienceDirect, and SpringerLink were considered to ensure the relevance of the findings.

Data Collection Techniques

A systematic search strategy was employed to identify relevant studies using key terms like "gamification in higher education," "gamification and student engagement," "LMS gamification," and "digital learning motivation.". Selected studies were assessed based on their alignment with the research objectives, focusing on their contribution to understanding the integration of gamification in LMS.

Data Analysis Method

The data were analyzed using thematic analysis (Clarke & Braun, 2017). This approach helped identify recurring themes related to the types of gamification elements used in LMS (e.g., points, badges, leaderboards), their effects on student motivation, and challenges in implementing gamification in educational settings.

Trustworthiness and Credibility

To ensure the study's reliability, only peer-reviewed, high-quality sources were included. Findings were triangulated by cross-referencing results from multiple studies, and member checking was used to verify the accuracy and relevance of the identified themes, strengthening the validity of the conclusions.

RESULT AND DISCUSSIONS

Data Analysis

Data The analysis of the existing literature reveals significant insights regarding the integration of gamification into digital learning environments, particularly within Learning Management Systems (LMS). The findings offer a deeper understanding of the benefits, challenges, and outcomes of gamification, focusing on its impact on student engagement, motivation, and academic performance. This section outlines the key themes derived from the literature and explores each aspect in greater detail.

Prototyping and Development of Gamified E-Learning Systems

A central theme that emerged from the reviewed studies is the successful development and implementation of gamified e-learning systems. These systems incorporate gamification elements such as points, badges, leaderboards, and missions, which have proven to significantly enhance student interactivity and engagement. The integration of these game mechanics allows for a dynamic and motivating learning environment that fosters active participation and a sense of achievement among students. For instance, Kusuma (2025) emphasizes the positive effect of Augmented Reality (AR) when combined with gamified learning environments, highlighting its ability to boost student participation by making the learning process more immersive and engaging. Additionally, the studies indicate that the

gamified LMS platforms tested in various real-world environments were not only effective but also user-friendly, ensuring accessibility for both students and instructors. The prototypes showed promise in terms of scalability and adaptability across different institutions, suggesting that gamified e-learning systems can be effectively customized to suit diverse educational settings.

Increase in Student Motivation and Engagement

Another prominent finding from the literature is the measurable increase in student motivation and engagement when gamification elements are incorporated into LMS platforms. Studies by Hendri & Lourensius (2021) and Fadilla & Nurfadhilah (2022) demonstrate that students interacting with gamified LMS platforms exhibit higher levels of enthusiasm and involvement in learning activities compared to those using traditional, non-interactive platforms. This was evidenced by quantitative data collected from surveys, questionnaires, and activity logs, which consistently reflected a surge in student interaction and a heightened sense of accomplishment due to the introduction of gamified elements. The increase in motivation was found to vary, with most studies reporting moderate to high levels of motivation gains, which correlated with enhanced learning outcomes. Gamification, particularly through competitive elements such as leaderboards and reward systems, not only amplified cognitive engagement but also fostered emotional investment in the learning process, creating a more immersive and enjoyable experience for students. This finding underscores the importance of incorporating game elements that challenge students while simultaneously supporting their learning journey.

Development of Implementation and Gamification Guidelines

The literature also revealed the necessity for clear and structured guidelines for the implementation of gamification in LMS. Several studies highlighted the importance of having a step-by-step framework to ensure the successful integration of game mechanics into digital learning systems. These guidelines cover technical considerations for incorporating elements like points, badges, and missions, as well as pedagogical strategies aimed at maximizing student participation and interaction. It was noted that balancing educational content with game elements is crucial to prevent distractions from core learning objectives, ensuring that the gamification process enhances rather than hinders the educational experience. Furthermore, the reviewed literature provides valuable insights into how institutions can customize their gamified LMS to better align with the specific needs and preferences of their student populations. This flexibility allows for the creation of personalized learning environments that cater to diverse learner profiles, increasing the system's effectiveness and engagement potential.

Discussion

The findings from this literature review provide important insights into the role of gamification in enhancing student engagement, motivation, and learning outcomes in digital learning environments. As digital education continues to evolve, the integration of gamified elements into Learning Management Systems (LMS) has emerged as a promising strategy to address key challenges such as student disengagement and low motivation. Previous studies, such as those by Hendri & Lourensius (2021) and Fadilla & Nurfadhilah (2022), have also highlighted the effectiveness of gamification in increasing student participation. The current research supports these findings by showing that gamification, through elements like points, badges, leaderboards, and missions, significantly enhances student interaction and fosters a more dynamic, interactive learning experience (Alsadoon, 2023; Angwaomaodoko, 2025; Ouazizi, 2024; Qudsi, 2024). This is consistent with the principles of constructivist learning theory, which emphasizes active participation (Fernando & Marikar, 2017). By offering rewards, challenges, and a sense of achievement, gamification transforms the learning experience from passive to active, encouraging students to engage more deeply with content, which is in line with the findings of Haque et al. (2024).

Moreover, the inclusion of elements such as Augmented Reality (AR), as noted by Kusuma & Pradana (2019), has proven to increase student participation by creating immersive, engaging learning environments. This mirrors the findings of Hendri & Lourensius (2021), where gamification was shown to improve student engagement

through interactive technologies. The reviewed studies consistently show that gamification not only motivates students but also provides opportunities for them to construct knowledge in a more interactive and enjoyable manner (Jaramillo-Mediavilla et al., 2024; Sappaile et al., 2025). This supports the shift towards more student-centered learning environments, as highlighted in previous research by Fadilla & Nurfadhilah (2022), which stresses the importance of engaging and active involvement in modern education.

The findings also support self-determination theory Jeno et al. (2023), which suggests that students' motivation increases when they feel a sense of competence and autonomy. This is corroborated by studies such as Kusuma (2025), which indicates that offering game-based rewards fosters student mastery and self-improvement, enhancing both emotional and cognitive engagement. However, the varying degrees of motivation reported by the studies suggest that the impact of gamification may not be uniform across all students. Some students respond positively to extrinsic motivators like badges and leaderboards, while others are more driven by intrinsic rewards such as personal growth and mastery. This finding aligns with the observations of Kusuma & Pradana (2019), who emphasize the need for careful design to ensure that gamification supports educational goals without overshadowing intrinsic learning motivations. Overuse of extrinsic rewards, as seen in previous studies, could potentially diminish the educational value of the experience, turning it into a pursuit of rewards rather than a meaningful learning process.

In addition to these motivational benefits, the research emphasizes the importance of clear guidelines for implementing gamification in LMS. Morrison et al. (2019) emphasizes that effective instructional design requires systematic planning and development, a principle echoed in the studies reviewed. The need for structured implementation guidelines ensures that gamified elements are not only engaging but also aligned with educational objectives, which is also highlighted in Fadilla & Nurfadhilah (2022). The studies reviewed stress that gamification should enhance, not detract from, the core learning experience. A balanced approach to integrating game mechanics with educational content is crucial to prevent distractions and maintain the integrity of the curriculum. These findings are consistent with Hendri & Lourensius (2021) research, which underscores the necessity of aligning gamification with educational goals for effective implementation.

Furthermore, the dissemination of these findings through peer-reviewed publications, particularly in reputable journals such as SINTA, is a critical step in establishing gamification as a credible and effective educational strategy. Many of the studies reviewed plan to publish their findings in reputable journals, contributing to the growing body of knowledge and providing a reference for other institutions seeking to adopt similar initiatives. This process is also aligned with the work of Haque et al. (2024), who emphasize the need for more research on gamification in Indonesian higher education. By focusing on the specific challenges faced by Indonesian universities, this study aims to fill this gap, offering actionable recommendations for integrating gamified elements into LMS.

Implications of the Research

The literature suggests that gamification can significantly enhance student engagement, motivation, and learning outcomes. However, as noted in previous studies, there is a gap in the literature regarding its application in Indonesian higher education. This research aims to address this gap, offering actionable recommendations for integrating gamified elements into LMS, and potentially informing national educational frameworks. Many studies, including those by Kusuma (2025), have emphasized the role of gamification in addressing common issues such as low student engagement and passive learning behaviors. By integrating gamified elements into educational policies, institutions can foster more engaging and interactive learning environments, which aligns with global trends in active learning and student-centered education.

In conclusion, the integration of gamification into LMS platforms represents a significant step forward in transforming the learning experience. The research findings suggest that gamification not only motivates students but also provides an opportunity for more immersive, engaging, and personalized learning. However, careful consideration must be given to the design and implementation of gamified systems to ensure that they enhance the

educational experience without detracting from the intrinsic value of learning. Moving forward, further research is needed to explore the long-term impacts of gamification and refine implementation strategies to ensure that gamified learning environments continue to evolve and meet the needs of diverse student populations.

CONCLUSION

This study highlights the significant role of gamification in enhancing student engagement, motivation, and learning outcomes within digital learning environments, particularly in Learning Management Systems (LMS). The integration of gamification elements, such as points, badges, leaderboards, and missions, fosters a dynamic and interactive learning experience that encourages active participation and deeper engagement. These findings align with contemporary educational theories, such as constructivism and self-determination theory, emphasizing the importance of student-centered learning. However, the effectiveness of gamification depends on its thoughtful implementation, balancing both extrinsic and intrinsic motivators.

While valuable insights are provided, the study identifies key areas for future research. Further exploration is needed on the long-term effects of gamification in diverse educational contexts and the challenges faced by educators and institutions in implementing gamified LMS. Future studies should also examine the cultural and contextual factors influencing gamification's effectiveness, particularly in non-Western educational settings like Indonesian universities.

Policymakers should consider integrating gamification into national educational frameworks to enhance student engagement, motivation, and learning outcomes. Regular updates to LMS platforms are necessary to keep pace with technological advancements and ensure the relevance and effectiveness of gamification elements. This study offers valuable recommendations for institutions and policymakers to optimize the use of gamification in education.

The findings emphasize incorporating gamification into LMS to enhance student motivation and engagement. Educational institutions can use these insights to design gamified environments that cater to diverse learning styles, improving the overall learning experience and fostering active participation.

This study primarily synthesizes existing literature, limiting the findings to the quality and scope of available studies. It does not address technological challenges in implementing gamified LMS or explore the long-term sustainability of such systems. Future research should focus on empirical studies and real-world applications of gamification across diverse educational settings to address these gaps.

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