

ASSESSING GAMIFICATION-BASED LMS FOR EFL STUDENTS: A SELF-DIRECTED LEARNING FRAMEWORK

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Abstract: The efficacy of gamification-based Learning Management Systems (LMS) in facilitating English as a Foreign Language (EFL) learning is an area of growing interest. However, a critical gap exists in comprehensively understanding how these platforms influence self-directed learning (SDL) among EFL students, particularly regarding self-management, self-motivation, and self-control. To address this lacuna, this study employs a survey design involving 50 EFL undergraduate students from STKIP PGRI Sidoarjo, a private university, in Indonesia. Grounded in Garrison's SDL Framework, the research evaluates the impact of gamification on SDL dimensions within the LMS milieu. The data were collected through a questionnaire for quantitative analysis and interviews for qualitative insights. Findings unveil a nuanced landscape: while gamification initially boosts engagement and motivation, sustained self-management and control pose challenges. Implications underscore the imperative for tailored interventions to fortify SDL competencies within gamified environments. Recommendations advocate for the integration of personalized feedback mechanisms and collaborative features to scaffold EFL students' SDL skills amidst gamified platforms.

Keywords: EFL students, gamification, LMS, self-directed learning

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Introduction

Research on Learning Management Systems (LMS) in educational contexts has revealed significant progress and notable challenges. While LMS platforms excel in course management (Mpungose & Khoza, 2022; Rahman et al., 2019; Udin et al., 2022), online collaboration (Ghilay, 2019; Taufiqurrochman et al., 2020), and learning enhancement (Bervell & Arkorful, 2020; Romsis et al., 2024), persistent issues exist. Implementation often diverges from pedagogical goals, leading to underutilization or misuse. Accessibility concerns, particularly for specific student populations, hinder effective engagement with LMS interfaces. Additionally, worries persist about the efficacy of LMS platforms in promoting deep learning, with some studies indicating a tendency towards surface-level engagement. The scalability and sustainability of LMS solutions, amidst evolving technological landscapes, remain underexplored. Recent efforts address these gaps through innovative strategies, including personalized learning pathways and adaptive technologies (Mpungose & Khoza, 2022; Rahman et al., 2019; Taufiqurrochman et al., 2020; Udin et al., 2022). Moving forward, interdisciplinary collaboration and evidence-based research are crucial for designing, implementing, and evaluating LMS platforms that support diverse learners and pedagogical practices. Future studies should prioritize examining the impacts of LMS usage on student outcomes and educational equity, contributing to the ongoing evolution of digital learning environments.

Within the realm of EFL education, moreover, existing literature has identified significant challenges in the development of self-management, self-motivation, and self-control among learners. Studies have shown that EFL students often struggle with time management, goal setting, and maintaining consistent engagement with learning materials, particularly in online environments such as gamified LMS (Bervell & Arkorful, 2020; Ismail et al., 2020). Moreover, research indicates varying levels of intrinsic motivation among EFL learners, influenced by factors such as cultural background, language proficiency, and individual interests (Fitriyah & Jannah, 2021; Radia, 2019; Supriyono et al., 2020). While gamification elements within LMS platforms hold promise for enhancing motivation through rewards and feedback mechanisms, the effectiveness of these strategies may differ based on learners' preferences and experiences (Amaya-Díaz & Bajaan-Zajia, 2020; Puig et al., 2023; Rojas-López et al., 2019; Slamet et al., 2024a). Additionally, the intersection of self-control and gamification presents challenges, as learners may grapple with balancing short-term gratification with long-term language learning goals (Palaniappan & Noor, 2022; Puig et al., 2023).

In response to these challenges, recent studies have initiated exploration into the potential of gamification-based interventions to cater to the needs of EFL learners within LMS environments. Research findings indicate that gamification

elements, such as progress tracking and virtual rewards, hold promise in positively impacting learners' motivation and engagement, resulting in heightened participation and improved learning outcomes (Bobkina & Romero, 2023; Cahyono et al., 2023; Huseinović, 2023; Romsic et al., 2024; Welbers et al., 2019). However, while these studies offer insights into the general efficacy of gamification, nuanced understandings of its specific effects on SDL skills among EFL students, particularly within the framework of Garisson's Self-Directed Learning (SDL) framework, remain scarce. Moreover, some investigations suggest a correlation between gamification and enhanced SDL behaviors, others caution against potential drawbacks, including an overreliance on extrinsic rewards leading to diminished intrinsic motivation over time (Afrilyasanti & Cahyono, 2022; Friedrich et al., 2020; Schöbel et al., 2020; Slamet et al., 2024b). Despite these advancements, significant gaps persist in the literature, notably regarding the intricate interplay between gamification elements and SDL skills within the context of EFL education. Further research is imperative to illuminate the mechanisms through which gamified LMS platforms influence SDL skills among EFL learners, while also considering individual differences and the nuances of instructional design.

To the best of our knowledge, the existing body of knowledge reveals substantial gaps regarding the interplay among self-management, self-motivation, self-control, and gamification within the realm of EFL education. While existing studies have explored the general impact of gamification on motivation and engagement among EFL learners (Afrilyasanti & Cahyono, 2022; Puig et al., 2023; Welbers et al., 2019; Slamet et al., 2024b), there is a distinct lack of comprehensive understanding regarding how specific gamification elements affect SDL behaviors, particularly within the framework of Garisson's SDL model. Additionally, although some research suggests a correlation between gamification and enhanced SDL behaviors, the literature lacks detailed examinations of potential drawbacks, such as overreliance on extrinsic rewards leading to diminished intrinsic motivation over time (Palaniappan & Noor, 2022; Rojas-López et al., 2019; Welbers et al., 2019; Slamet et al., 2024a). Furthermore, there is limited research investigating the nuanced relationships between gamification features within LMS and the development of self-management, self-motivation, and self-control skills among EFL students (Palaniappan & Noor, 2022; Romsic et al., 2024). This study aims to fill gaps in understanding the dynamics between gamification and SDL in EFL education, contributing to the design of more effective instructional strategies for the specific needs of EFL learners. The study addresses the following research questions:

1. How do EFL students perceive gamification elements within LMS on their SDL skills?
2. To what extent do gamification features within LMS platforms assist EFL students' SDL behaviors?

Literature Review

LMS in EFL Education

LMS have redefined educational practices, serving as integral tools in course management, content delivery, and collaborative learning environments. Particularly within EFL education, LMS platforms offer unparalleled benefits for both educators and learners alike (Slamet & Mukminatien, 2024; Taufiqurrochman et al., 2020; Udin et al., 2022). Educators benefit from streamlined administrative tasks, facilitating efficient resource organization, assignment distribution, and communication channels (Mpungose & Khoza, 2022; Rahman et al., 2019). Moreover, LMS platforms provide educators with valuable insights into student progress, enabling timely feedback and assessment, thus optimizing teaching practices and learning experiences (Farsad & Modarresi, 2023; Mukhibat & Wilujeng, 2021). For EFL learners, LMS platforms serve as gateways to a wealth of resources, interactive activities, and avenues for communication. The asynchronous nature of LMS enables learners to engage with course content at their own pace, catering to diverse learning styles and preferences. Furthermore, LMS platforms foster collaborative learning environments, encouraging EFL students to participate in group discussions, peer evaluations, and joint projects. Enhanced features such as multimedia resources, interactive quizzes, and gamification elements further augment learner engagement and motivation within the EFL learning context (Palaniappan & Noor, 2022; Romsis et al., 2024). Despite advancements, challenges persist in maximizing the benefits of LMS in EFL education. A significant hurdle involves aligning LMS features with pedagogical objectives and teaching methods. While LMS platforms offer diverse functionalities, educators may struggle to integrate them effectively, leading to underutilization. Accessibility issues also impede engagement, particularly for students with disabilities or limited access to technology. Moreover, ensuring the scalability and sustainability of LMS solutions remains a concern in the face of evolving technology and educational trends.

Gamification in LMS and Its Impact on EFL Learning

Gamification, characterized by the integration of game elements into non-game contexts, has emerged as a potent strategy for enhancing engagement and motivation in educational settings, including EFL instruction. Within LMS platforms, gamification elements such as points, badges, leaderboards, and progress tracking systems incentivize learning activities, fostering a sense of achievement and progression among learners (Romsis et al., 2024; Schöbel et al., 2020; Slamet & Mukminatien, 2024). Extant research underscores the positive influence of gamification on learner motivation, participation, and performance within EFL contexts (Afrilyasanti & Cahyono, 2022; Friedrich et

al., 2020; Slamet et al., 2024a). Moreover, gamification elements within LMS platforms enhance learner engagement and satisfaction by creating immersive and interactive learning experiences (Amaya-Díaz & Bajaña-Zajia, 2020; Puig et al., 2023). For instance, gamified quizzes and challenges transform learning tasks into enjoyable and rewarding endeavors, motivating EFL students to actively participate and invest effort. Additionally, features such as progress tracking and virtual rewards provide learners with tangible markers of success, bolstering their motivation and commitment to language learning goals. While gamification shows potential for boosting extrinsic motivation and engagement in EFL education, concerns persist about its effects on intrinsic motivation and sustained engagement. Studies warn against excessive dependence on extrinsic rewards, which could reduce intrinsic motivation over time. Additionally, the efficacy of gamification in LMS for EFL learning may differ based on learner demographics, cultural contexts, and instructional settings. Therefore, a nuanced understanding of gamification's impact on learner motivation and language learning outcomes is crucial for refining instructional approaches in LMS environments.

Garrison's SDL Framework, Opportunities, and Challenges on LMS and EFL Students

Garrison's SDL Framework offers a comprehensive theoretical framework for understanding SDL processes within the realm of EFL education focus on self-management, self-motivation and self-control (Garrison, 1997). Central to Garrison's framework is the notion of learner autonomy, where learners take ownership of their learning journey, setting goals, monitoring progress, and reflecting on outcomes. In the context of LMS platforms, Garrison's SDL Framework presents opportunities for fostering learner autonomy, self-regulation, and lifelong learning skills among EFL students (Palaniappan & Noor, 2022). One notable opportunity lies in the learner-centered approach advocated by Garrison's SDL Framework. By empowering EFL learners to assume agency over their learning process, LMS platforms can facilitate the development of critical thinking, problem-solving, and SDL behaviors (Bervell & Arkorful, 2020; Ghilay, 2019). Additionally, educators are encouraged to adopt facilitative roles, guiding and supporting learners as they navigate the complexities of self-directed learning within digital environments. However, challenges persist in the practical implementation of Garrison's SDL Framework within LMS platforms, particularly concerning the design and delivery of instructional materials and activities (Nur et al., 2022; Romsis et al., 2024; Slamet et al., 2024b). Educators may encounter difficulties in designing learning experiences that effectively promote SDL behaviors, such as goal setting, self-assessment, and reflection, within the constraints of LMS interfaces and tools

(Palaniappan & Noor, 2022). Additionally, learners may face challenges in navigating LMS platforms and accessing resources independently, particularly those with limited digital literacy skills or prior experience with online learning environments. Furthermore, the integration of gamification elements within LMS platforms introduces additional opportunities and challenges for promoting SDL behaviors among EFL students (Palaniappan & Noor, 2022). This study delves into the alignment of gamification with Garrison's SDL Framework and its impact on SDL skills in EFL education. By exploring their interplay within LMS environment, the research aims to contribute to a nuanced understanding of SDL in digital contexts. The study seeks to inform the design of more effective instructional strategies and digital learning environments for EFL education by examining the opportunities and challenges presented by Garrison's SDL Framework within LMS platform.

Methodology

Research Design

To address the research questions, a survey research design was applied. This design integrates both quantitative and qualitative approaches, allowing for a comprehensive exploration of the perceptions of EFL students regarding gamification elements within LMS and their impact on SDL skills. The sequential nature of the design involves collecting and analyzing quantitative data first, followed by qualitative data collection and analysis. This approach enables the triangulation of data, enhancing the validity and reliability of the study's findings by providing complementary insights into the research questions.

Context and Participants

The study was conducted at STKIP PGRI Sidoarjo, one of the private universities in East Java, Indonesia. The participants consisted of 50 EFL undergraduate students, within the Department of English Language Study Program, selected through purposive sampling. This sampling method was chosen to ensure that the participants represented a diverse range of backgrounds and experiences relevant to the study's aims. The demographic characteristics of the participants were as follows: the majority were female (72%), aged between 18 and 34 years old, with varying levels of English proficiency. Specifically, 64% of the participants were aged 18-24, 36% were aged 25-34, and none were aged 35 or above. Furthermore, 68% of participants were classified as beginners in terms of English proficiency, while 32% were categorized as intermediate. No participants fell into the advanced proficiency category.

Table 1. *Demography of the participants (N=50)*

Demographic Characteristics		Participants (N)	Percentage (%)
Age	18 – 24	32	64 %
	25 – 34	18	36 %
	35 and above	0	0 %
Gender	Female	36	72 %
	Male	14	28 %
English Proficiency	Beginner	34	68 %
	Intermediate	16	32 %
	Advanced	0	0 %

Instruments

The quantitative instrument used in this study was a questionnaire consisting of closed-ended questions. The questionnaire comprised 15 items adapted from Yang et al. (2020), focusing on three categories: self-management (SM), desire for learning (DL), and self-control (SC). Participants were asked to rate their agreement with each statement using a 5-point Likert scale, ranging from strongly disagreeing (1) to strongly agreeing (5). Additionally, a semi-structured interview was conducted with eight selected participants to gain in-depth insights into their perceptions and experiences. The selection of interview participants was guided by specific criteria to ensure a comprehensive representation of diverse perspectives. The participants were chosen based on their responses to the questionnaire, with a focus on capturing a range of SDL skills and perceptions of gamification elements within the LMS. This approach allowed us to include individuals with varying degrees of SDL competence and differing viewpoints on gamification, ensuring that the interview data would provide a nuanced understanding of the interplay between these factors.

Data Collection and Analysis

The data collection for this study was conducted with EFL undergraduate students enrolled in the “*English for Intermediate Level*” course via the eLSIDA LMS platform from October 16, 2023, to December 4, 2023. During this period, students engaged with various eLSIDA activities, including interactive quizzes, gamified assignments, and discussion forums, which were designed to support and track their self-directed learning (SDL) progress.

The questionnaire was administered in the second week of December 2023 by the first author to assess the participants’ SDL skills and perceptions of gamification elements within eLSIDA. Following the questionnaire, interviews were conducted by the first author between December 5 and December 15, 2023. These interviews, aimed at gaining deeper insights into students’ experiences, were audio-recorded. The recordings were transcribed by both the first and second

author, and the data were analyzed to identify key themes and patterns. The interviews utilized a combination of open-ended and semi-structured questions to explore the participants' views on eLSIDA's gamification elements.

Quantitative data gathered from the questionnaire were statistically analyzed using SPSS 26. The validity and reliability of the questionnaire were assessed through item analysis using Cronbach's alpha and Pearson correlation. All composite validity coefficients were found to be satisfactory, with a coefficient of 0.892 indicating high internal consistency and validity. For the qualitative data collected from interviews, a thematic analysis approach was employed, guided by Garrison's SDL Framework. This framework provided a structured lens through which to explore the participants' perceptions and experiences across the three dimensions of SDL: SM, DL, and SC. Through the integration of quantitative and qualitative data analysis methods, the study aims to provide a comprehensive understanding of the relationships between gamification elements within LMS and EFL students' SDL skills.

Results

Perceptions of the EFL Students on Gamification Elements within LMS and Their SDL Skills

The comprehensive analysis of the questionnaire data unveils nuanced insights into how the EFL students perceive gamification elements within LMS and their profound impact on SDL skills based on Garrison's SDL Model Framework. The questionnaire strategically encompassed three fundamental categories: SM, DL, and SC. Respondents meticulously rated their agreement with statements associated with each category using a meticulous 5-point Likert scale, ranging from Strongly Disagree (SD), Disagree (D), Neutral (N), Agree (A), to Strongly Agree (SA). The detailed results from the SM dimension are presented in Tables 2.

Table 2. *The results from SM dimension*

Code	Item	SD (n, %)	D (n, %)	N (n, %)	A (n, %)	SA (n, %)	Std. Dev
SM1	I am able to set clear goals for my learning.	2 (4%)	5 (10%)	7 (14%)	15 (30%)	21 (42%)	0.92
SM2	I effectively manage my time when using the LMS.	3 (6%)	6 (12%)	8 (16%)	17 (34%)	16 (32%)	1.05
SM3	I prioritize tasks effectively with gamified features.	4 (8%)	7 (14%)	10 (20%)	16 (32%)	13 (26%)	1.12
SM4	I efficiently utilize gamification-enhanced resources on the LMS.	2 (4%)	6 (12%)	11 (22%)	20 (40%)	11 (22%)	1.01
SM5	I take initiative in seeking help or clarification.	3 (6%)	5 (10%)	9 (18%)	19 (38%)	14 (28%)	0.98
SM6	I monitor my progress effectively on the LMS.	2 (4%)	4 (8%)	10 (20%)	18 (36%)	16 (32%)	1.08
SM7	I am disciplined in following through with my tasks.	3 (6%)	7 (14%)	9 (18%)	17 (34%)	14 (28%)	1.02
SM8	I adjust my learning strategies based on feedback.	4 (8%)	6 (12%)	12 (24%)	18 (36%)	10 (20%)	1.16
SM9	I am proactive in seeking additional learning materials outside the LMS.	3 (6%)	8 (16%)	11 (22%)	14 (28%)	14 (28%)	1.01
SM10	I reflect on my learning experiences while using the LMS.	2 (4%)	4 (8%)	8 (16%)	21 (42%)	15 (30%)	1.04

Table 2 presents a comprehensive overview of EFL students' perceptions of their SM skills in the gamified LMS environment. In SM1, 42% (n = 21) strongly agreed on their proficiency in setting clear learning goals, reflecting commendable self-efficacy. The low standard deviation (0.92) indicates consensus among respondents. Moving to SM2, focusing on time management, 34% (n = 17) strongly agreed, with an additional 32% (n = 16) in agreement. Despite general proficiency, the higher standard deviation (1.05) suggests variability in time management skills. SM3 explores prioritization of tasks with gamified features; 32% (n = 16) agreed, but 26% (n = 13) were neutral, indicating uncertainty. The higher standard deviation (1.12) emphasizes diverse perspectives on task prioritization, suggesting potential areas for targeted interventions. Item SM4, concerning the efficient use of gamification-enhanced resources, yielded mixed responses. While 40% (n = 20) agreed, 22% (n = 11) were neutral, indicating varying confidence levels. The standard deviation of 1.01 highlights this variability in how students engage with gamified resources. For SM5, addressing seeking help or clarification, 38% (n = 19) agreed, but 28% (n = 14) were neutral, suggesting inconsistent proactive behaviors. The

low standard deviation of 0.98 indicates a more consistent perception among respondents.

Moving to SM6, focusing on monitoring progress, 36% (n = 18) agreed, but 32% (n = 16) were neutral, showing uncertainty or variability. The standard deviation of 1.08 suggests diverse perceptions, indicating potential variations in monitoring practices. SM7, addressing discipline in task completion, had mixed responses, with 34% (n = 17) agreeing, but 28% (n = 14) were neutral, indicating varied confidence levels. The standard deviation of 1.02 points to potential differences in discipline. For SM8, adjusting learning strategies based on feedback, 36% (n = 18) agreed, but 20% (n = 10) disagreed. The higher standard deviation of 1.16 indicates varied perspectives, suggesting potential areas for targeted support. In SM9, proactiveness in seeking additional learning materials, 28% (n = 14) agreed, but 22% (n = 11) were neutral, highlighting inconsistent engagement. The standard deviation of 1.01 indicates varied perceptions. Lastly, SM10, focusing on reflection, had a strong positive response, with 42% (n = 21) strongly agreeing, but 16% (n = 8) were neutral, suggesting inconsistent reflective practices. The standard deviation of 1.04 indicates diverse perceptions, emphasizing potential variations in reflective practices within the gamified LMS context.

In summary, the findings from Table 2 offer valuable insights into the EFL students' perceptions of their SM skills within the gamified LMS environment. Positive responses indicate strengths in goal-setting, time management, and proactive behaviors such as seeking help and reflecting on learning experiences. However, the presence of neutral responses suggests areas of uncertainty or variability in certain aspects of self-management, highlighting potential opportunities for targeted interventions. The variability in responses, as indicated by standard deviations, underscores the diverse perspectives among participants and emphasizes the need for personalized support strategies to enhance overall SM competencies effectively.

Furthermore, the results from the DL dimension, as presented in Table 3, provide a comprehensive exploration of the EFL students' motivation and enthusiasm within the gamified LMS environment. The responses offer insights shedding light on the impact of gamification elements on the EFL students' DL skills.

Table 3. *The results from DL dimension*

Code	Item	SD (n, %)	D (n, %)	N (n, %)	A (n, %)	SA (n, %)	Std. Dev
DL1	I am motivated to participate in activities on the LMS.	1 (2%)	3 (6%)	6 (12%)	17 (34%)	23 (46%)	0.88
DL2	Gamification elements on the LMS motivate my learning.	2 (4%)	4 (8%)	8 (16%)	16 (32%)	20 (40%)	0.98
DL3	I am enthusiastic about learning through the LMS.	3 (6%)	6 (12%)	10 (20%)	18 (36%)	13 (26%)	1.10
DL4	I enjoy completing tasks and challenges on the LMS.	1 (2%)	5 (10%)	7 (14%)	20 (40%)	17 (34%)	0.96
DL5	I am curious to explore new features and content on the LMS.	3 (6%)	6 (12%)	9 (18%)	18 (36%)	14 (28%)	1.02
DL6	I feel a sense of accomplishment when using the LMS.	2 (4%)	4 (8%)	8 (16%)	19 (38%)	17 (34%)	1.06
DL7	I am motivated to improve my skills through the LMS.	3 (6%)	5 (10%)	10 (20%)	16 (32%)	16 (32%)	1.04
DL8	I feel confident in my ability to learn using the LMS.	1 (2%)	2 (4%)	9 (18%)	22 (44%)	16 (32%)	1.12
DL9	I am eager to explore learning opportunities provided on the LMS.	2 (4%)	5 (10%)	7 (14%)	21 (42%)	15 (30%)	0.98
DL10	I am motivated to achieve my learning goals through the LMS.	1 (2%)	3 (6%)	8 (16%)	22 (44%)	16 (32%)	1.08

Table 3 provides a comprehensive insight of the EFL students' motivation and desire for learning within the gamified LMS environment. Beginning with DL1, a majority of respondents (46%, $n = 23$) strongly agreed, indicating a high level of motivation among participants to participate in LMS activities. This strong agreement reflects a shared enthusiasm for engaging in learning tasks facilitated by the LMS. Similarly, DL2 revealed that a significant portion of respondents (40%, $n = 20$) strongly agreed on the motivating impact of gamification elements, emphasizing the consensus among participants regarding the effectiveness of gamified features in enhancing motivation. However, DL3 and DL4 exhibited some variability in enthusiasm and enjoyment levels, with standard deviations of 1.10 and 0.96, respectively. This variability suggests that while many students find learning through the LMS enjoyable and engaging, there are differences in the extent of enthusiasm and enjoyment experienced. Additionally, DL5 underscored varying levels of curiosity among participants ($SD = 1.02$), indicating differing degrees of interest in exploring new features and content on the LMS.

Furthermore, despite a strong agreement in DL6 regarding a sense of accomplishment (34%, n = 17), the standard deviation of 1.06 suggests potential differences in experiences, with some students feeling more accomplished than others. Additionally, DL7 revealed mixed responses regarding motivation to improve skills through the LMS (SD = 1.04), suggesting variability in motivation levels among participants. Similarly, DL8 reflected differing confidence levels among participants (SD = 1.12), despite a notable proportion strongly agreeing (44%, n = 22), indicating that while many students feel confident in their ability to learn using the LMS, there are variations in confidence levels. While DL9 demonstrated eagerness to explore learning opportunities (SD = 0.98), DL10 highlighted varying motivation levels to achieve learning goals (SD = 1.08). The presence of neutral responses in DL9 and DL10 suggests that while some students are eager to explore learning opportunities and motivated to achieve their learning goals, others may exhibit less eagerness and motivation.

In summary, Table 3 offers valuable insights into the EFL students' motivation and desire for learning within the gamified LMS environment. Positive responses highlight strengths in motivation and enthusiasm, while the presence of neutral responses underscores areas of variability. The standard deviations provide additional context, indicating diverse perspectives among participants and emphasizing the need for tailored interventions to support and enhance overall motivation levels within the gamified LMS context.

Lastly, the results from SC dimension, outlined in Table 4, provide a nuanced exploration of the EFL students' perceptions of within the gamified LMS environment. The findings reveal a complex interplay of SC skills, showcasing both areas of proficiency and potential challenges.

Table 4. *The results from SC dimension*

Code	Item	SD (n, %)	D (n, %)	N (n, %)	A (n, %)	SA (n, %)	Std. Dev
SC1	I am able to resist distractions with gamification features while using the LMS.	3 (6%)	7 (14%)	9 (18%)	18 (36%)	13 (26%)	1.05
SC2	Gamification elements help me stay focused on my learning tasks on the LMS.	2 (4%)	5 (10%)	7 (14%)	20 (40%)	16 (32%)	0.98
SC3	I exhibit self-discipline when using gamified features on the LMS.	4 (8%)	6 (12%)	11 (22%)	18 (36%)	11 (22%)	1.10
SC4	I am able to regulate my emotions with gamification elements while using the LMS.	3 (6%)	8 (16%)	9 (18%)	16 (32%)	14 (28%)	1.02

Code	Item	SD (n, %)	D (n, %)	N (n, %)	A (n, %)	SA (n, %)	Std. Dev
SC5	I can resist the urge to procrastinate with gamified features on the LMS.	2 (4%)	5 (10%)	10 (20%)	19 (38%)	14 (28%)	1.06
SC6	I exercise self-control in managing my online activities with gamification features.	3 (6%)	6 (12%)	9 (18%)	17 (34%)	15 (30%)	1.04
SC7	I am able to regulate the amount of time spent with gamification elements on the LMS.	2 (4%)	4 (8%)	8 (16%)	21 (42%)	15 (30%)	1.08
SC8	Gamification features help me resist the temptation to deviate from my learning goals.	3 (6%)	5 (10%)	9 (18%)	18 (36%)	15 (30%)	1.01
SC9	I exhibit self-control in managing distractions with gamification elements on the LMS.	2 (4%)	4 (8%)	7 (14%)	20 (40%)	17 (34%)	1.02
SC10	I am able to maintain focus on my learning objectives with gamified features on the LMS.	3 (6%)	5 (10%)	10 (20%)	18 (36%)	14 (28%)	1.10

Table 4 reveals the EFL students' perceptions of their SC skills in the gamified LMS environment. In SC1, addressing distraction resistance, 26% (n = 13) were neutral, while 36% (n = 18) agreed, indicating effective self-regulation. The standard deviation of 1.05 highlights variability in responses. SC2, focusing on gamification for task concentration, had 32% (n = 16) strongly agreeing, with a low standard deviation of 0.98, suggesting consensus on the effectiveness of gamification. SC3, exploring self-discipline with gamified features, showed varied responses, with 22% (n = 11) disagreeing and 36% (n = 18) agreeing. The standard deviation of 1.10 emphasizes differences in self-discipline perceptions. SC4, emotions regulation with gamification, exhibited a balanced distribution. The standard deviation of 1.02 suggests variability in emotional regulation, indicating the need for targeted support strategies. In item SC5, 38% (n = 19) agreed with their ability to resist procrastination, while 28% (n = 14) expressed neutral sentiments, indicating variability in procrastination tendencies. The standard deviation of 1.06 highlights potential areas for targeted interventions, despite some consistency in perceptions.

Moving to SC6, managing online activities showed a balanced distribution, emphasizing individual differences in skills (standard deviation = 1.04). SC7, regulating time spent with gamification elements, had 42% (n = 21) strongly agreeing, with a standard deviation of 1.08, suggesting variability in time

management practices and the need for personalized strategies. In SC8, 30% (n = 15) expressed neutral sentiments about resisting deviation from learning goals, but 30% (n = 15) agreed, with a standard deviation of 1.01, indicating variability in goal pursuit. SC9, self-control in managing distractions, showed balanced responses (standard deviation = 1.02), emphasizing the importance of tailored support. Lastly, SC10, maintaining focus on learning objectives, had a balanced distribution, with a standard deviation of 1.10, indicating variability in focus maintenance and the need for personalized interventions.

In summary, Table 4 offers valuable insights into the EFL students' perceptions of their SC skills within the gamified LMS environment. While positive responses indicate effective self-regulation in various domains, the presence of neutral responses highlights areas for targeted interventions to enhance SC skills effectively. The standard deviations offer insights into the variability of responses, emphasizing the need for personalized support strategies to address diverse learner needs.

The Impact of Gamification Features within LMS on the SDL Behaviors of the EFL Students

Addressing the second research question on exploration the impact of gamification features within LMS on the SDL behaviors of the EFL students, this study conducted semi-structured interview with eight participants (P1-P8, ensuring anonymity). The interview guidelines were designed to align with Garrison's SDL Model Framework, focusing on three pivotal dimensions: SM, DL, and SC. The following paragraphs present the nuanced insights gained from these interviews, providing a detailed understanding of how gamification influences each dimension of SDL.

Exploring the SM dimension within gamified LMS, participants presented varied perspectives on how gamification influences goal-setting and progress monitoring. P1 shared, "*The visual progress trackers help me stay organized and focused on my learning objectives*". This positive sentiment is echoed by P3, who stated, "*The visual progress trackers really motivate me to set clear goals and monitor my achievements*". These insights suggest that, for some participants, gamification elements effectively contribute to a structured and goal-oriented learning experience. Conversely, P5 expressed a contrasting view, emphasizing, "*While it's motivating, sometimes the emphasis on points can distract from the actual learning objectives*". This sentiment is echoed by P6, who shared, "*I sometimes get caught up in earning points rather than focusing on the substance of my learning*". These perspectives reveal a potential downside to gamification, with the risk of extrinsic rewards overshadowing the intrinsic value of learning objectives. The complexities within these differing viewpoints underscore the need for a nuanced understanding of how

gamification influences self-management skills. Adding to this discourse, P7 noted, *"The gamification elements make learning more enjoyable, but they can also be a bit overwhelming at times"*. This acknowledgment of both enjoyment and potential overload highlights the delicate balance required in gamification design. Similarly, P8 contributed, stating, *"I appreciate the gamified features, but I find that I need to set my own goals and priorities to stay on track"*. This viewpoint underscores the importance of learner autonomy in conjunction with gamification elements. Furthermore, P2 emphasized, *"I find it easier to manage my time and tasks with gamified features; they provide a clear structure"*. This positive remark aligns with the notion that gamification contributes to effective time management and task organization. Additionally, P4 echoed this sentiment, saying, *"I appreciate the visual feedback; it helps me track my progress and adjust my learning strategies accordingly"*. The positive feedback underscores the gamified features' role in offering valuable self-regulation feedback and facilitating learning strategy adjustments. These insights suggest that gamification can significantly impact SM skills by providing motivation, clear goals, and progress monitoring. However, it's crucial to navigate the potential risks of distraction and overwhelm in designing and implementing gamified elements. The findings emphasize the importance of a balanced approach that recognizes both the benefits and potential pitfalls of gamification in supporting SM skills among EFL learners. They highlight the necessity of considering individual learner preferences and needs when incorporating gamification into educational settings. Moreover, ongoing evaluation and refinement are essential to optimize gamification's effectiveness.

Delving into the nuances of the DL dimension within gamified LMS, the participants articulated a spectrum of perspectives, shedding light on the multifaceted impact of gamification features on their motivation levels. P4's affirmation, *"The virtual rewards and achievements give me a sense of accomplishment and motivate me to continue learning"* resonates with the positive influence of extrinsic rewards, creating a cycle of accomplishment and sustained motivation. This sentiment was further emphasized by P2, who noted, *"Virtual rewards and recognition make me more eager to engage with learning materials."* emphasizing the catalyzing effect of virtual rewards on the eagerness to participate. Building on the theme of enjoyment, P7 expressed, *"I enjoy earning badges and rewards; they make learning more fun and rewarding"*. This enjoyment factor introduces a layer of experiential value to the learning process, suggesting that gamification contributes to a more enjoyable and gratifying learning journey. Additionally, P1 highlighted the motivational impact of competitive elements, stating, *"The competitive elements also motivate me to stay engaged and strive for improvement"*. Here, the competitive aspect emerges as a motivating force, fostering engagement and a continuous pursuit of excellence. However, amidst the positive discourse, concerns regarding the

potential overshadowing of intrinsic motivation by extrinsic rewards were voiced. P5's caution, "*The extrinsic rewards are nice, but I worry that they might dominate the joy of learning for its own good.*" and P6's reflection, "*I sometimes feel like I'm just chasing after rewards rather than truly engaging with the material.*" introduce a critical perspective. These insights prompt a reflective pause, highlighting the delicate balance required to ensure that the allure of rewards doesn't compromise the genuine joy of learning. Moreover, P3 emphasized the need for intrinsic satisfaction stating: "*While the rewards are motivating, I think it's important to also find intrinsic satisfaction in the learning process itself*". This introspective comment underscores the importance of cultivating a sense of fulfillment intrinsic to the learning journey. Additionally, P8 added nuance, noting, "*I appreciate the rewards, but I also find that I need to find my own motivation and reasons for learning*". The recognition of the individualized nature of motivation implies that learners may seek personal meaning and motivation beyond external rewards. Overall, gamification, with its extrinsic motivational elements, has the potential to spark eagerness, competition, and a sense of accomplishment among learners. However, careful design is necessary to prevent overshadowing the intrinsic joy of learning. The delicate balance between extrinsic and intrinsic motivation underscores the importance of crafting gamified experiences that not only provide rewards but also nurture a lasting sense of fulfillment from the inherent value of the learning process. These considerations are crucial for establishing a harmonious and motivationally rich learning environment aligned with the unique aspirations and motivations of EFL students.

Lastly, exploring the realm of SC dimension of Garisson's SDL model framework within the context of gamified LMS, the participants shared diverse insights into their ability to navigate distractions and uphold focus. P4's affirmation, "*The gamified elements help me stay focused and on track; they provide a clear structure and sense of direction.*" underscores the role of gamification in offering learners a scaffolded framework for maintaining focus and direction. This sentiment was echoed by P8 who remarked: "*I find that the gamification features help me resist the urge to procrastinate; they keep me engaged and motivated.*" highlighting the proactive role of gamified elements in mitigating tendencies toward procrastination and fostering sustained engagement. Further emphasizing the efficacy of gamification in bolstering SC, P6 noted, "*The visual progress trackers help me stay organized and disciplined in my learning approach.*" shedding light on how visual cues embedded within gamified interfaces serve as anchors for maintaining organizational discipline. Additionally, P1 echoed similar sentiments, sing, "*The gamified elements help me resist the urge to procrastinate; they keep me on track.*" reinforcing the notion that gamification serves as a buffer against distractions, steering learners back on course. However, amid the prevailing discourse of empowerment, concerns

regarding the potential for gamification elements to introduce distractions were voiced. P5 articulated this apprehension, stating, *“While the rewards are motivating, I sometimes find myself getting distracted by the competitive aspects.”* indicating a tension between the allure of rewards and the propensity for distraction. P3 echoed this sentiment, reflecting, *“I sometimes get caught up in the competition and lose sight of my learning goals.”* highlighting the fine balance required to harness the motivational potential of competition without compromising learning objectives. Moreover, P7 raised concerns about the potential overwhelming nature of gamification elements, stating, *“While the gamification elements are fun, I think they can sometimes be a bit distracting and overwhelming.”* This perspective underscores the need for gamified interfaces to strike a delicate balance between enjoyment and functionality, ensuring that extraneous elements do not overshadow the primary learning objectives. Similarly, P2 highlighted the nuanced interplay between motivation and competition, noting, *“Sometimes the competitive aspects can be distracting. It’s a fine line between motivation and competition.”* indicating the importance of judiciously moderating competitive elements to foster motivation without detracting from learning focus. Overall, these diverse insights holistically become evident that gamification holds promise in fortifying learners’ SC by offering structure, motivation, and progress tracking mechanisms. However, the effective integration of gamified elements necessitates a nuanced understanding of their potential to both empower and distract learners. By carefully balancing motivational incentives with learning objectives and minimizing distractions, educators can harness the full potential of gamification to cultivate resilient SC skills among EFL students within LMS environments.

Discussion

This study embarks on a comprehensive exploration of the intricate relationship between gamification features within LMS and the SDL behaviors of the EFL students, drawing upon Garisson’s SDL Model Framework. Our investigation spans three critical dimensions of SDL: SM, DL, and SC. Through a combination of quantitative analysis via questionnaire responses and qualitative insights gleaned from the semi-structured interview, we endeavor to unravel the multifaceted implications of gamified learning environments on the EFL students’ SDL practices.

In the realm of SM, our findings reveal a nuanced landscape of perceptions and experiences among participants. While many lauded the efficacy of gamification-enhanced goal-setting tools and progress trackers in fostering organization and focus, others voiced concerns about potential distractions arising from an overemphasis on extrinsic rewards. These divergent perspectives underscore the complexity of gamification design and implementation, wherein the alignment of game elements with educational objectives emerges as a critical consideration.

The positive insights resonate with prior research emphasizing the motivational potential of visual progress indicators and structured task management systems (Friedrich et al., 2020; Romsı et al., 2024; Schöbel et al., 2020; Slamet et al., 2024a). However, cautionary notes mirror discussions in the literature regarding the need to balance extrinsic motivators with intrinsic learning satisfaction to avoid undermining genuine engagement (Amaya-Díaz & Bajaña-Zajia, 2020; Palaniappan & Noor, 2022; Puig et al., 2023).

In the domain of DL, participants articulated a spectrum of responses to gamification features, ranging from enthusiastic endorsement to measured skepticism. Virtual rewards and recognition mechanisms were celebrated for their role in fostering a sense of accomplishment and stimulating eagerness to engage with learning materials. Yet, concerns were raised regarding the potential dilution of intrinsic motivation by an overreliance on extrinsic incentives. These findings resonate with scholarly discourse highlighting the delicate balance between external rewards and the inherent joy of learning for its own sake (Afrilyasanti & Cahyono, 2022; Rojas-López et al., 2019; Slamet et al., 2024b). The tensions uncovered underscore the need for gamification designers to tread carefully, ensuring that motivational benefits are maximized while safeguarding the integrity of the learning process (Huseinović, 2023; Slamet & Mukminatien, 2024; Welbers et al., 2019).

Moving to the realm of SC, our study elucidates the multifaceted interplay between gamification elements and learners' ability to regulate their behavior and maintain focus. Positive testimonies underscored the efficacy of gamified features in combating procrastination, enhancing task persistence, and promoting disciplined learning habits. However, participants also expressed reservations about potential distractions and the risk of becoming overly fixated on competitive elements. These insights align with prior research highlighting the motivational benefits of gamification in promoting engagement and persistence (Friedrich et al., 2020; Romsı et al., 2024). Yet, they also underscore the importance of striking a balance between motivation and distraction, with gamification designers tasked with optimizing engagement without compromising learning outcomes.

Comparative analysis of existing literature reveals both convergences and divergences in our findings. While our study corroborates prior research on the motivational benefits of gamification in educational contexts, it also unveils nuanced tensions and trade-offs that warrant closer scrutiny. The complexities unearthed underscore the need for a holistic and evidence-based approach to gamification design, one that considers the diverse needs and preferences of learners while prioritizing educational efficacy (Amaya-Díaz & Bajaña-Zajia, 2020; Friedrich et al., 2020; Palaniappan & Noor, 2022; Schöbel et al., 2020). By delving deeper into the intricacies of gamified learning environments, our study

contributes valuable insights to the ongoing discourse on effective instructional design and student engagement in EFL education.

Overall, this study offers a comprehensive examination of the impact of gamification features within LMS platforms on EFL students' SDL behaviors, framed within the context of Garisson's SDL Model Framework. Through an integration of quantitative and qualitative methodologies, we have elucidated the multifaceted dynamics of SM, DL, and SC in gamified learning environments. Our findings underscore the importance of nuanced and context-sensitive approaches to gamification design, highlighting the need for educators and designers to strike a delicate balance between motivational incentives and pedagogical goals. As the educational landscape continues to evolve, ongoing research in this domain remains imperative to inform evidence-based practices and enhance the efficacy of gamified learning environments for diverse learner populations.

Conclusion

This study has shed light on the intricate relationship between gamification features within LMS and the SDL behaviors of the EFL students, framed within the context of Garisson's SDL Model Framework. Through a meticulous examination of self-management, self-motivation, and self-control dimensions, we have uncovered a diverse array of perceptions and experiences among participants. Our findings underscore the potential of gamification to enhance goal-setting, motivation, and focus, while also revealing nuanced tensions and trade-offs inherent in gamified learning environments. While virtual rewards and progress trackers were celebrated for their motivational benefits, concerns were raised about the risk of distraction and overemphasis on extrinsic incentives. These insights carry important implications for educational practitioners and designers, highlighting the need for context-sensitive approaches to gamification design that prioritize pedagogical efficacy and learner engagement. Furthermore, our study contributes to the ongoing discourse on effective instructional design and student engagement in EFL education. By elucidating the multifaceted dynamics of gamified learning environments, we have provided valuable insights that can inform evidence-based practices and guide future research endeavors. However, it is essential to acknowledge the limitations of our study including its reliance on a single educational context and a relatively small sample size. Future research should seek to replicate and expand upon our findings in diverse settings and with larger participant cohorts. Additionally, longitudinal studies could offer deeper insights into the long-term effects of gamification on SDL behaviors and learning outcomes. Ultimately, as the educational landscape continues to evolve, ongoing research in this domain remains imperative to advance our understanding of effective instructional strategies and enhance learning experiences for diverse learner populations.

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Appendix: Interview Guidelines

Introduction

This interview aims to explore your experiences with gamification features in Learning Management Systems (LMS) and how they affect your self-directed learning behaviors as an EFL student.

a. Self-Management Dimension:

1. How do you set and manage your learning goals in the LMS?
2. What impact do progress trackers have on your learning progress monitoring?
3. How does gamification influence your task prioritization?

b. Self-Motivation Dimension:

1. How do virtual rewards and achievements affect your motivation to engage with learning materials?
2. What role do competitive elements play in motivating your participation in LMS activities?
3. How do you balance intrinsic and extrinsic motivation in gamified learning environments?

c. Self-Control Dimension:

1. How do you resist distractions and maintain focus while using gamification features?
2. How do gamification elements contribute to your self-discipline and time management?
3. How do you regulate your time spent on gamified elements to align with your learning goals?

d. Overall Experience:

Do you have any additional insights or thoughts to share about your experiences with gamification in the LMS?