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Measuring LMS Design Effectiveness: Identifying and Analyzing the Needs to Develop a Gamification Learning Framework

Penilaian Keberkesanan Reka Bentuk LMS: Analisis Keperluan dalam Membangunkan Rangka Kerja Pembelajaran Gamifikasi

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ABSTRACT

Recent developments in education highlight a paradigm shift towards the incorporation of technology. The shift is anchored in Learning Management Systems (LMS) that make course material management and communication between students and teachers possible but the problems of retention and engagement, usability, and efficacy on LMS's still remain. However, challenges related to user retention, engagement, usability, and efficiency within LMS platforms. This study employs a sequential-exploratory mixed-methods approach to assess the effectiveness of current LMS designs and explore the potential impact of incorporating a Gamification Learning Framework. Data was collected from 117 students via surveys, and 8 educators participated in interviews to examine LMS usage and the role of gamification in enhancing user experience, motivation, and learning outcomes. The findings reveal a significant need for gamified LMS environments in English language learning. This study contributes to the theoretical understanding of LMS design by highlighting the importance of aligning LMS features with learner needs to improve retention and motivation. It proposes that the integration of game elements, such as points, badges, progress tracker and leaderboards, alongside collaborative learning features, may significantly enhance the LMS experience. Additionally, this study highlights the need to address technical problems to ensure the effective implementation of gamified features.

Keywords: Learning Management Systems (LMS); Gamification; User Engagement; Needs Analysis; Language Learning

ABSTRAK

Perkembangan terkini dalam bidang pendidikan menyerlahkan peralihan paradigma ke arah penerapan teknologi. Peralihan ini berteraskan Sistem Pengurusan Pembelajaran (LMS) yang memudahkan pengurusan bahan kursus serta komunikasi antara pelajar dan guru. Namun begitu, isu berkaitan pengekalan pengguna, penglibatan, kebolehgunaan dan keberkesanan dalam platform LMS masih wujud. Kajian ini menggunakan pendekatan campuran meneroka-berurutan (sequential-exploratory mixed-methods) bagi menilai keberkesanan reka bentuk LMS semasa serta meneroka potensi impak penerapan Kerangka Pembelajaran Gamifikasi. Data dikumpulkan daripada 117 pelajar melalui soal selidik, manakala 8 orang pendidik telah ditemu bual bagi meneliti penggunaan LMS dan peranan gamifikasi dalam meningkatkan pengalaman pengguna, motivasi, serta hasil pembelajaran. Dapatan kajian menunjukkan keperluan yang signifikan terhadap persekitaran LMS yang digamifikasi dalam pembelajaran Bahasa Inggeris. Kajian ini menyumbang kepada pemahaman teori mengenai reka bentuk LMS dengan menekankan kepentingan penyelarasan ciri LMS dengan keperluan pelajar bagi meningkatkan pengekalan dan motivasi. Kajian ini mencadangkan bahawa penerapan elemen permainan seperti mata ganjaran, lencana, penjejak kemajuan dan papan pendahulu, bersama ciri pembelajaran kolaboratif, berpotensi meningkatkan pengalaman LMS secara signifikan. Selain itu, kajian ini turut menekankan keperluan untuk menangani masalah teknikal bagi memastikan pelaksanaan ciri-ciri gamifikasi dapat dijalankan secara berkesan.

Kata kunci: Sistem Pengurusan Pembelajaran (LMS); Gamifikasi; Penglibatan Pengguna; Analisa Keperluan; Pembelajaran Bahasa

INTRODUCTION

In the fast-changing world of education, today's students are demanding options that allow them to learn flexibly (Friedman, 2018). This phenomenon is growing at a global level, and is most prominent in South-East Asia, as online learning shows demand in many educational institutions. Despite the growing adoption of Learning Management Systems (LMS) in educational institutions globally, many still struggle to integrate these platforms effectively to meet the technological demands of today's students. Key issues such as complex User Interfaces (UI) and lack of dynamic design elements result in passive interactions between instructors and students, leading to diminished engagement and subpar learning outcomes. This misalignment between LMS design and student needs can lead to suboptimal learning experiences and decreased motivation (Müller & Mildenberger, 2021) Specifically, in language learning, traditional teaching methods persist, and educators often lack the necessary tools and knowledge to effectively incorporate technology-enhanced strategies like gamification. This gap in LMS design and its application in the classroom contributes to reduced motivation and engagement, particularly in the context of language learning.

Aware of the pressing matter, Ministry of Higher Education Malaysia (MOHE) had initiated numerous initiatives to transform higher education sector since early 2018. One strategy is to encourage the integration of novel approaches for teaching methods (e.g. gamification) that introduce game mechanics into non-game context with important implications on students' attentive capability and overall learning process involved in educational settings. Recent studies have emphasized the potential of AI to revolutionize education. For instance, research indicates that AI-driven educational tools can positively influence critical thinking dispositions among university students in Malaysia, emphasizing the importance of adaptive learning environments (Mat Yusoff et al., 2025). To date, the applied gamification has been one of the most feasible approaches in increasing motivation and engagement in language learning contexts. This study aims to bridge these gaps by conducting a comprehensive needs analysis to identify areas where LMS design can be improved to enhance learning effectiveness, particularly in the context of English language education. Specifically, the research seeks to answer the following queries:

1. To what extent is the current LMS model successful in enhancing user engagement, motivation, and learning in a language learning context?
2. Are there implications on LMS usability and learner retentiveness when using gaming elements as part of the LMS?

The objectives of this study are:

1. To assess the current effectiveness of LMS platforms in language study.
2. To investigate the use of gamification in LMS in the context of improving user experience and engagement.

LITERATURE REVIEW

Recent studies have extensively examined the role of Learning Management Systems (LMS) in supporting learning, highlighting their potential benefits and limitations in academic performance. Despite the increasing integration of technology in education, many LMS platforms struggle to meet the diverse needs of younger users. This section synthesizes existing research on effective LMS design strategies and explores how gamification has been proposed to address these challenges.

GAMIFICATION AND ITS IMPACT ON STUDENT ENGAGEMENT

Gamification has emerged as a promising strategy to enhance learner engagement in digital environments by integrating game-like elements into non-game contexts (Deterding et al., 2011). Central to this approach is the theoretical principle that students are motivated by both intrinsic rewards, such as mastery and achievement, and extrinsic incentives like points, badges, and leaderboards. These elements foster a sense of progress and accomplishment, significantly influencing student motivation (Werbach & Hunter, 2014).

Research indicates that gamification can enhance student engagement, particularly in areas such as self-efficacy and autonomous learning (Chen & Liang, 2022). Features like progress bars, achievement badges, and skill-based challenges provide immediate feedback, allowing learners to track their progress. However, the effectiveness of gamification may vary among individuals. Smirdele (2020) found that video game elements can assist introverted students in succeeding in learning activities compared to their extroverted peers. This highlights the importance of designing gamified LMS platforms that accommodate diverse learner profiles. To address this, LMS can offer flexible gamified experiences, enabling students to select rewards and challenges that align with their preferences. Müller and Mildenberger (2021) support this approach, suggesting that personalized learning paths can enhance student engagement.

CHALLENGES IN IMPLEMENTING GAMIFICATION IN LMS

Despite the clear advantages of gamified learning, many institutions face challenges in ICT integration, including lack of resources and technical expertise, which hinder the effective implementation of gamification (Mat Yusoff et al., (2023). Recent research on LMS innovations highlights the importance of learner-centered design and usability in enhancing engagement and effectiveness. These studies emphasize that modern LMS platforms must incorporate adaptive features that cater to diverse learner needs (Ferdiansyah et al., 2025; Ahmed & El-Sabbagh 2025). One of the significant barriers is the technical complexity of incorporating gamification features into existing LMS infrastructure. Wahyuningsih, Novitasari, and Kusumaningrum (2022) identified technology-related issues, such as device compatibility and platform integration, as obstacles to effectively implementing gamified language learning. This underscores the necessity for LMS platforms to address fundamental usability issues before integrating gamification. Enhancing the user interface (UI) to ensure intuitiveness and ease of use is crucial for increasing adoption among both students and instructors.

Another significant challenge is ensuring that gamification features enhance learning rather than detract from it. Overemphasizing game elements such as competition and rewards can shift the focus away from educational objectives (Namoco, 2021). LMS platforms should aim for a balanced approach, avoiding superficial implementations of gamification. For example, instead of awarding credit for mere participation, the system could acknowledge verifiable student progress in mastering skills or concepts. Additionally, educators require training to develop and sustain gamified learning environments effectively. Many instructors may lack the technical expertise to incorporate gamification into their teaching strategies (Rodriguez & Klein, 2022).

To address this gap, institutions need to present professional development programs that educate educators about the educational benefits of gamification and how they can use LMS functionalities validly for pedagogy.

THE ROLE OF MOTIVATION AND LONG-TERM EFFECTS OF GAMIFICATION IN EDUCATION

Motivation is crucial to the success of any learning strategy, and gamification is no exception (Gopalan et al., 2017). By fostering both intrinsic motivations, such as the satisfaction of mastering a skill, and extrinsic motivation, like earning badges or points, gamification can significantly enhance student engagement. The literature also emphasizes the importance of self-regulated learning—the ability of students to independently monitor and reflect on their progress (Zimmerman, 2002). To support this, LMS platforms can be designed to facilitate self-regulated learning by providing features that allow students to track their progress, set personal academic goals, and receive feedback. Incorporating adaptive learning technologies into LMS can further enhance this by dynamically adjusting task difficulty based on a student's performance, ensuring that learning remains engaging and aligned with educational objectives.

While existing literature has extensively documented the short-term benefits of gamification, particularly in enhancing student motivation (Smirdele, 2020; Chen & Liang, 2022), there is a need for more longitudinal studies to assess its long-term efficacy. The sustained impact of gamification on student engagement and performance overtime remains underexplored. Conducting longitudinal research can provide valuable insights into how gamification influences learning outcomes in the long term.

TOWARDS A GAMIFIED LMS FOR LANGUAGE LEARNING

Language learning presents unique challenges, as it involves mastering multiple skills simultaneously, including reading, writing, listening, and speaking. Traditional LMS platforms often fail to offer the interactive features necessary for effective skill-based learning. Alzahrani (2022) observed that many language educators still rely on outdated methods, such as lecture-based teaching and handing out handouts, which often fail to engage students. Recent studies have shown how gamification can also play a crucial role in supporting formative assessments in language learning environments, ensuring that learners receive continuous feedback and have opportunities to demonstrate mastery (Mat Yusof et al., (2023). Gamification offers a potential solution by enabling the design of tasks centered on skill mastery, allowing students to progress at their own pace and earn rewards for demonstrating proficiency. However, it is crucial to balance

technical performance with pedagogical objectives. When incorporating gamification, it is essential to ensure that the design remains strategically aligned with the learning goals to maximize both motivation and educational effectiveness.

METHODOLOGY

This research employs a mixed-method design, combining quantitative and qualitative data to analyze the effectiveness of Learning Management Systems (LMS) integrated with gamification elements. A mixed-method approach was chosen to provide a comprehensive understanding of LMS usage, incorporating both numerical data and rich, detailed perspectives.

The quantitative data was collected via a survey administered to 117 students, distributed through Google Forms. The survey used Likert scales to assess students' experiences with LMS, focusing on aspects such as engagement, motivation, and usability. These items were carefully selected based on existing literature on LMS design and gamification, ensuring they were contextually relevant and aligned with the research objectives. For the qualitative phase, semi-structured interviews were conducted with eight educators from diverse tertiary-level institutions. These educators were selected for their experience in both LMS platforms and language instruction, making them well-suited to provide valuable insights into the implementation of gamification in education. The interviews aimed to explore how educators perceive LMS effectiveness, the integration of gamification elements, and the potential benefits or challenges faced in their teaching contexts.

The use of LMS and perceived effectiveness of gamification were explored in a large sample of participants in such ways as to gain broad understanding in LMS and gamification. To obtain in-depth perspectives of lecturers on how LMS can be customized according to their teaching preferences and student learning styles, the qualitative interviews were used. This synthesis improves the level of evidence of the impact of gamified LMS platforms on students' learning and engagement. Given the study's context in Malaysia, cultural and institutional factors were considered when designing both the survey and interview protocols. The instruments were targeted to fit the educational context where the traditional way of teaching is the most endorsed. The interview questions also took into account cultural appropriateness with regard to technology integration in education. Additionally, the survey and interview protocols were reviewed by a panel of experts to ensure content and linguistic validity. These experts assessed the instruments to ensure they were both contextually and linguistically appropriate for the Malaysian educational system.

The sample size of 117 students and 8 teachers was derived from best methodological practices in mixed-methods research in educational technology. The quantitative phase sample size was sufficiently large to support the statistical treatment of data, whilst the balanced against the qualitative study of 8 teachers were needed to ensure detailed and diverse pictures without compromising the depth of analysis. The two complementary phases enhance the credibility and trustworthiness of the findings as the study can offer students' perspectives on a broad scale and teacher views on a deeper level. To ensure the anonymity and confidentiality of all participants, no personal data was collected, and all responses were anonymized. The study was conducted in compliance with the guidelines of the responsible ethics review board.

RESULTS AND DISCUSSION

The data gathered were interpreted in various parts, corresponding to the two research styles of quantitative and qualitative, as explained in the section below.

QUANTITATIVE ANALYSIS

Prior to distribution of the survey instrument with key respondents, a pilot study was undertaken for reliability testing.

TABLE 1. Reliability Statistics

Cronbach's Alpha	N of Items
.968	78

Cronbach's Alpha values were calculated to measure the reliability between items across various constructs. The overall Cronbach's Alpha score of 0.968 indicates excellent internal consistency across the survey items. Descriptive statistics were used to obtain the frequency, mean and percent values of the study data. In addition, the interpretation of the mean score is based on the interpretation of the five-point Likert scale by (Landell, 1997) and Wimolmas (2013) for the interpretation of mean score in motivation in gamification.

TABLE 2. Mean Score Interpretation

Total Mean Score	Level (Landell, 1997)	Level of Motivation in Gamification (Wimolmas, 2013)
1.00 – 2.33	Low	Low Degree of Motivation
2.34 – 3.67	Moderate	Moderate Degree of Motivation
3.68 – 5.00	High	High Degree of Motivation

The survey was administered among 117 undergraduate students from three faculties. The gender distribution mirrors broader trends in higher education, where females represent a significant majority. Out of 117 respondents who participated in the study, 91 respondents (77.8%) are students of Bachelor's Degree and 26 respondents (22.2%) are students of Diploma courses. From the TABLE, it can be concluded that majority of respondents are First Year students (41.9%), followed by Second Year students (35.9%). Only 2 students who participated in the survey are on the Fourth Year which comprises of 1.7% of the total percentage.

TABLE 3. Demographic Profiles of Respondents

Demographic	Options	Frequency	Percentage
Gender	Male	91	77.8%
	Female	26	22.2%
Educational Level	Degree	91	77.8%
	Diploma	26	22.2%
Compared to all other LMS do you think LMS provided by your university is better?	Maybe	56	47.9%
	Yes	40	34.2%
	No	21	17.9%
How often do you access the LMS platform for your academic activities?	Only when required	53	45.3%
	A few times a week	38	32.5%
	Everyday	12	10.3%

	Once a week	11	9.4%
	Rarely	2	1.7%
	Only during exam	1	0.9%
On average, how many hours per week do you spend on LMS for coursework?	Less than 1 hour	56	47.9%
	1 to 3 hours	43	36.8%
	4 to 6 hours	16	13.7%
	More than 10 hours	2	1.7%

The reliance on university-provided systems is significant, though a substantial portion of students (47.9%) indicated that they only access LMS when required, suggesting room for improvement in terms of engagement. When asked how often respondents access LMS platform for related academic activities, majority of the data indicated that respondents only use LMS when they are required to do so (45.3%). This data indicated that students are not reaching out to LMS independently on their own to access class-related materials but only happened to open LMS when they are told to do so. Subsequently, 38 respondents' access LMS on regular basis which are on a few times a week (32.5%) which can be hypothesized that students only open LMS when in their classes, which occurred a number of times a week on their timeTABLE.

The data regarding LMS usage aligns with studies from Chen & Wang (2022) and Panda (2024), which emphasize the low autonomy in LMS use. Half the respondents (47.9%) indicated they access the LMS platform only when required. This observation links to global concerns about learner autonomy and technology adoption, suggesting that LMS platforms are largely seen as mandatory tools rather than being integrated into everyday learning activities. Emerging solutions such as AI-supported LMS personalization (May Yusoff et al. 2024) could be pivotal in addressing this gap.

TABLE 4. Primary purpose on the use of LMS platform

		N	**Percent**	**Percent of Cases**
Primary Purpose of Using LMS[a]	Course Content Access	86	22.4%	76.8%
	Assignment Submission	**107**	**27.9%**	**95.5%**
	Online Assessments Submission	86	22.4%	76.8%
	Online Quiz	51	13.3%	45.5%
	Resource Downloads	54	14.1%	48.2%
	Total	384	100.0%	342.9%

a. Dichotomy group tabulated at value 1.

The primary use of LMS for assignment submission (27.9%) suggests that LMS is more of an administrative tool than a learning environment. This supports Deterding et al. (2011), who noted that many LMS platforms are underutilized in promoting student engagement beyond task management. Future improvements should aim to make LMS more integrated into the learning experience, not just a repository for assignments.

TABLE 5. Features respondents find beneficial about LMS platform to support learning

		N	**Percent**	**Percent of Cases**
Beneficial Features of LMS[a]	**Schedule for exams and homework, task and assignments**	**91**	**26.2%**	**91.9%**
	Online tests availability	69	19.9%	69.7%
	Giving self-attendance	27	7.8%	27.3%
	Communication with Instructors	22	6.3%	22.2%
	Interaction with Peers	12	3.5%	12.1%
	Forum Participation	18	5.2%	18.2%

Resource Downloads	64	18.4%	64.6%
Grade Tracking	40	11.5%	40.4%
Not interested in additional features	4	1.2%	4.0%
Total	347	100.0%	350.5%

a. Dichotomy group tabulated at value 1.

Key features students found beneficial included scheduling for exams and in-class tasks (91.9%), online tests availability (69.7%) and downloading of resources (64.6%), while less importance was placed on interaction with peers (12.1%) align with Rodriguez & Klein (2022), who argue that LMS platforms excel in administrative functionalities but fail to adequately engage students in deeper learning experiences.

TABLE 6. Descriptive Analysis on User Learning Experience while Using LMS

User Learning Experience while Using LMS	Median / Mode	Strongly Disagree / Very Unsatisfied	Disagree / Unsatisfied	Neutral	Agree / Satisfied	Strongly Agree / Very Satisfied
I perceive the assignment submission system on LMS as cost efficient and user-friendly process	4.00 / 4.0	3 (2.6%)	3 (2.6%)	30 (25.6%)	59 (50.4%)	22 (18.8%)
I find the content delivery on LMS to be effective	4.00 / 4.0	3 (2.6%)	2 (1.7%)	29 (24.8%)	65 (55.6%)	18 (15.4%)
Overall, I am satisfied with my experience using LMS for online learning	4.00 / 4.0	3 (2.6%)	8 (6.8%)	33 (28.2%)	52 (44.4%)	21 (17.9%)
LMS plays a crucial role in fostering interaction with teachers in the virtual environment	4.00 / 4.0	2 (1.7%)	8 (6.8%)	34 (29.1%)	54 (46.2%)	19 (16.2%)
I would recommend LMS to others for online learning	4.00 / 4.0	2 (1.7%)	9 (7.7%)	37 (31.6%)	45 (38.5%)	24 (20.5%)
LMS significantly enhances the learning process	4.00 / 4.0	2 (1.7%)	5 (4.3%)	38 (32.5%)	56 (47.9%)	16 (13.7%)
I perceive the quizzes on LMS as an effective means of assessment	4.00 / 4.0	4 (3.4%)	6 (5.1%)	34 (29.1%)	59 (50.4%)	14 (12.0%)
I rate my satisfaction with the user interface of LMS as	4.00 / 4.0	2 (1.7%)	8 (6.8%)	44 (37.6%)	52 (44.4%)	11 (9.4%)

TABLE 6 depicted the Likert-item analyses for respondents' learning experience while using LMS platform. As Likert-type items, data were analyzed for median and mode for central tendency as well as percentage for frequency. This type of analyzation is suggested for ordinal measurement scale data, as proposed by Boone & Boone (2012).

The overall values of each statement for user learning experiences indicate that LMS platform satisfaction at 4.0 median and mode, which translates to satisfied level. This is in line with previous research noting that whilst students value the capabilities of LMS, they can also be very critical about its shortcoming. The highest agreement score found on recommendation for the use of LMS for online learning (24 / 20.5%), suggesting that respondents prefer having LMS as a learning platform. The data also recommended that respondents found the content delivery through LMS is effective, signifying 55.6% agreement and satisfaction score from 65 respondents. From the responds of 117 respondents in this study, it is worth noting that the highest neutral score (37.6%) from 44 respondents was on user interface of the LMS, which translates moderate level of satisfaction despite its high central tendency score on median and mode (4.00 / 4.0). This finding coordinated with Panda (2024) which found that user interface issues remain a significant barrier

to engagement. In overall, these findings underline the importance of UI improvements in enhancing student engagement and addressing the technology adoption gap.

TABLE 7. Needs to Improve LMS through Gamification Key Metrics

Gamification Metric #1 (Engagement Rate)	**N**	**Mean**	**Std. Deviation**
Point (each time users excel in answering questions, participate in forums, or did assessments will be rewarded with points)	117	3.5641	.75868
Active participation points - (points rewarded to users who participated)	117	3.6154	.79704
Activities involvement points - (points rewarded for active involvement)	117	3.6667	.78784
Active return visit points - (points rewarded for patterns for returning visits to the LMS)	117	3.6667	.77682
Gamification Metric #2 (Completion Rate)	**N**	**Mean**	**Std. Deviation**
Level (accumulation of points equal to level, eg: 100 points = 1 level)	117	3.4615	.78277
Challenge (solving new challenge provides opportunity to understand new concepts at users' own pace)	117	3.5983	.84138
Course completion percentage tracker - (lets users aware of their own learning progress)		3.6838	.83717
Badges - (rewarded for completion of series of tasks / quests) (badges can also be earned when users reach certain level threshold)	117	3.5726	.88392
Leaderboard (each week, or month, or semester, the leaderboard TABLE will be displayed to show which users has the highest points)	117	3.5043	.87714
Title (title will be displayed under users' profile to show distinction for those who excel in the long run)	117	3.5897	.80036
Gamification Metric #3 (Proficiency Progression Rate)	**N**	**Mean**	**Std. Deviation**
Avatar (avatar provides users opportunity to use the avatar rewarded to beautify their profile picture once users achieved proficiency on certain skills)	117	3.5128	.87706
Skill mastery quest (users must demonstrate their expertise in specific English language areas. Successfully complete challenges and tasks related to these skills, they unlock new levels and earn digital credentials, showcasing their proficiency)	117	3.5641	.81351
Skill (Reading, Writing, Listening, Speaking) mastery progress bar	117	3.6068	.84033
Gamification Metric #4 (Collaboration Communities Rate)	**N**	**Mean**	**Std. Deviation**
Interactions effort points - (rewarded for users who are confidence in spark interactions)	117	3.5556	.85545
Collaborative challenge points - (user work in pair or in group to complete challenge for bigger and better rewards, earning them collectively)	117	3.5641	.81351
Team leader points - (rewarded for team leader who manage to bring their team to win a certain task or quest)	117	3.5299	.83638
Gamification Metric #5 (Time on Platform Rate)	**N**	**Mean**	**Std. Deviation**
Narrative (this feature is like a role-playing quest for users, providing extra information to begin the learning)	117	3.5726	.87411
Time-attack challenge - (short or mini challenge that user must complete within time given)	117	3.5812	.80128
Role-Playing Quest - (usually a main quest that require user to complete side quests, require user to return later for milestone completion)	117	3.5470	.85597
Returning user session points - (instructor reward returning users for deeper immersion into the gamification learning environment)	117	3.5299	.82601
Gamification Metric #6 (User Feedback Rate)	**N**	**Mean**	**Std. Deviation**
Feedback - (users who are having difficulties with completing tasks may ask feedback from LMS instructors)	117	3.5812	.84322
Feedback gathering points - (any feedback that proved to be useful for optimization of the gamification LMS will be rewarded)	117	3.6325	.83664
Crucial feedback alignment - (resource for fine-tuning the gamified LMS ensuring it aligns with user expectations)	117	3.6325	.80514

TABLE 7 outlines the analysis of constructs of gamification metrics given to respondents through survey. In total there were 23 micro questions on the needs of gamification elements. Among the elements are points (m = 3.56, sd = 0.75), levels (m = 3.46, sd = 0.78), leaderboards (m = 3.50, sd = 0.87), progress completion bar (m = 3.68, sd = 0.83), quests (m = 3.54, sd = 0.85) and narration (m = 3.57, sd = 0.87), feedback (m = 3.58, sd = 0.84) and other micro gaming elements. These elements, as found from previously suggested by Deterding et al (2011), Smirdele (2020), Werbach & Hunter (2014) and Müller and Mildenberger (2021) are among the essential contributors in investigating whether there is a need to implement gamification into LMS system and solve future problems with motivation and self-autonomy, considering the digital transformation of education phenomena around the world. One potential solution, as indicated in the literature, is gamification. Gamification can increase motivation and engagement by turning passive learners into active participants. This is consistent with the findings in Chen & Wang (2022), who discuss the positive impact of gamification on student engagement, an issue that resonates with our study where 3.63 out of 5 students indicated high satisfaction with gamified LMS features.

TABLE 8. Aggregated Mean Score on Gamification Key Metrics

Aggregated Mean Score on Gamification Key Metrics	N	Mean	Std. Deviation
Engagement Rate	117	3.6282	.73154
User Feedback	117	3.6154	.80303
Completion Rate	117	3.5684	.74154
Proficiency Progression	117	3.5613	.79347
Time On Platform	117	3.5577	.76309
Collaborative Communities	117	3.5499	.77102

Analysis from TABLE 7 were then recoded and aggregated for average mean score since its Likert-scale in nature and computed for a single value as proposed by Boone & Boone (2012) to determine attitude and perception of respondents towards the need of gamification. The first key gamification element is identified as engagement rate (m = 3.62, sd = 0.73). As previous studies discovered, one of the ways to increase engagement was to reward points for being actively involved and participating. This confirms previous research studies on the use of gamification within LMS features and its contribution to continuous adoption from students. The inclusion of active return visit points (and orientation fee) was also marked beneficial and could help drive regular use through gamification. Next, the completion rate is the key element (m = 3.56, sd = 0.74). Completion Rate acts as a tracking behavior on how far a student goes and giving them feedback on their visual progress is extremely valuable to the students. Gamification features like progress bars, levels, and badges are proven to improve the level of student involvement and motivation. Including such features can enhance participation among students as they receive immediate response, which aligns with Panda (2024), a user-centric gamification approach could result in improved adoption and retention rates.

The third identified key gamification element is proficiency progression (m = 3.56, sd = 0.79). Progress bars are important for the sake of knowing one's own progression on personalized learning path. Feedback on the skills mastery progress bar and challenges that unlock new levels were positive. In language learning environments where students must continuously be building specific subject-area skills, the use of gamification to track progress has been especially successful. The other element identified gamification element in this study is known as collaborative communities which means the extent to which gamification elements fostered team-based learning and peer community (group challenges, leaderboards) had the highest mean rating (m = 3.54, sd =

0.77). This is also corroborated by the research that claims gamified tasks can improve collaborative learning.

On the other hand, how much time students spend on the learning platform is also considered as one of the key gamification elements and is analyzed throughout the questionnaire. Time-attack challenges and role-playing quests were found to be effective in deepening engagement, with a mean score of 3.55, with standard deviation score of 0.76. This reflects findings from game-based learning studies that demonstrate how time-limited tasks can improve focus and immersion in learning environments. The final element of the gamification is User Feedback. Gathering feedback from students and incorporating it into system design was identified as a key element, with a mean score of 3.61. In overall, the analysis from TABLE 8 suggested that there is moderate to high need of gamification as to increase motivation of students, if implemented in LMS. Prior research has emphasized the importance of continuous user feedback in refining LMS platforms to better meet students' needs.

TABLE 9. Technical challenges respondents most frequently encounter during use of LMS

		N	Percent	Percent of Cases
Technical Challenges While Using LMS[a]	**Slow Loading Times**	**73**	**20.9%**	**84.9%**
	Lack of proper Notification System	57	16.3%	66.3%
	Difficulty in Accessing Course Content	36	10.3%	41.9%
	Issues with Uploading/Downloading Files	37	10.6%	43.0%
	Navigation Challenges within the Platform	19	5.4%	22.1%
	Compatibility Problems with Devices/Browsers	22	6.3%	25.6%
	Login/Authentication Problems	38	10.9%	44.2%
	Connectivity Issues	36	10.3%	41.9%
	Lack of Mobile Responsiveness	18	5.2%	20.9%
	Problems with Online Assessments/Quizzes	13	3.7%	15.1%
	Total	349	100.0%	405.8%

a. Dichotomy group tabulated at value 1.

According to survey data, several technical issues slow the user experience: so-called 'slow downloading'. The technical barriers, particularly slow loading times (84.9%) and login issues (44.2%), are consistent with ICT barriers reported in Rodriguez & Klein (2022). These technical shortcomings must be addressed to ensure a seamless learning experience. Institutions should prioritize investing in robust technical infrastructures that can manage the growing demands of digital learning platforms.

QUALITATIVE ANALYSIS

The thematic analysis is gathered from the qualitative data drawn from interviews with educators in relation to their experiences of LMS and the gamification integration within educational contexts. The interviewees have been examined to protect participant confidentiality and permission was obtained from all participants ahead of the interviews conducted for this study. TABLE 8 below summarizes the interview respondent details, including respondents' gender, current position, and number of experience (in years) in teaching, educational background (e.g. highest academic qualification) and number of years the respondents have experience of using LMS:

TABLE 10. Interview Respondents Details

Respondent	Gender	Current Position and Experience in Teaching	Educational Background	Years of Experience of Using LMS
A1	Female	Lecturer (UNIRAZAK) 12 Years of Teaching	Masters in Business Administration	8 Years
A2	Male	Lecturer (MMU) 10 Years of Teaching	Masters in English Linguistic	10 Years
A3	Female	Head of School (University Malaya - Wales) 10 Years of Teaching	PhD in Communication and Media Studies	6 Years
A4	Male	Lecturer (UNISEL) 15 years of Teaching	Masters in Education TESL	8 Years
A5	Female	Lecturer (UPTM) 31 Years of Teaching	Master in Science (Educational Administration)	7 Years
A6	Male	Language Instructor (USM) 14 Years of Teaching	Masters of Education (Educational Psychology)	12 Years
A7	Male	Lecturer (Xiamen University) 14 Years of Teaching	Master of Human Sciences in English Language Studies	10 Years
A8	Male	Lecturer (UNIKL) 13 Years of Teaching	Masters in Counseling (Substance Abuse)	7 Years

Information on the demographic and professional characteristics of interview participants is presented in the TABLE, providing relevant context for understanding interviewee perspectives on LMS usage. The participants are disparate in gender and teaching experience, from teachers in the early stage of career to those with more than 30 years, with an average of one decade. Their academic qualifications range from business, English linguistics, TESL, educational psychology to communication and media studies, offering diverse disciplinary views of LMS implementation. All teachers have 6-to-12-year experience using LMS and can provide reasonable commentary regarding the changes to these systems. The variety of teaching experience and discipline background also lends a breadth of perspectives to a deep, rich view of LMS use in higher education, a nuanced view of the intersections of technology and teaching practice.

Upon carrying out thematic analysis on the respondents' interviews' transcripts, researchers were able to find several themes. The analysis draws on the major and minor themes derived from the interviewees' experiences, highlighting commonalities and differences in their perceptions. The first major theme observed during the interview session is the LMS itself. Specifically, there are three sub-themes that can be categorized under this major theme which are the pros, the cons and the improvements that can be made to current LMS. LMS, meanwhile, received plaudits for its flexibility and the ability to house resources in a single location. For example, one interviewed instructor pointed out that the LMS offers "a central point for learning resources" and allows students to be flexible when they complete coursework. Another educator shared, "it saves so much space, it saves so much time and less paper". This can be assumed as an adaptable feature of paperless and digital atmospheres which are increasingly popular with students, too, due to their accessibility given affordable internet connections.

Despite the known advantages mentioned by the respondents, many of them discussed problems using LMS, usually on user-friendliness and technical issues. One lecturer explained: "The UI user interface is not friendly students need to make an extra initiative just learning how it works". Another instructor shared her concerns, saying: "These technical problems can interrupt the learning process" or anything LMS related such as logging-in and resetting passwords were

mentioned by several of them. The complexity is heightened by the requirement for learning experiences to be personalized, with an individual citing LMS as "not delivering personalization in the learning experience".

The recurring theme in the interviews was that there is a need for LMS improvement. Participants recommended a more user-friendly interface, as described by one educator: "The main thing is it's supposed to be user friendly". One proposal was for LMS that could handle "varied learning styles" underlining the need to accommodate more-styles of learners so they can interact with lessons better. These results suggested that a user-friendly interface is essential and pointed to technical problems such as UI and the difficulties in logging as barriers for LMS effective use. There are similar concerns expressed by Chen & Wang (2022) when focusing on the importance of individualized learning and appropriate faculty support.

Another major theme discovered during the interview is the gamification – or incorporating game-like elements in education. Furthermore, other interviewees also talked about how gamification can increase students' motivation to learn and their academic performance or just make them more engaged.

Taking a step back, looking at the general contribution of gamification, gamification was seen as a valuable element of LMS. One of the respondents contributed to that gamification "will bring motivation on students" because they will think, hence there is "something I have do in order to get something". A few participants also pointed to gamification as a measure for increasing engagement, with one saying it can help students "find out more about what they are learning in the class that they attend".

Rewards, recognition and the added sheer motivative experience was what they viewed as core of gamification. Another educator suggested that it "sort of increases motivation, because the offerings are approached as carrots which induce students into working with data". Nonetheless, as pointed out by multiple interviewees, rewards must inch towards a harmonious equilibrium when considering other gaming elements. As one educator warned, "If we focus too much on the reward… they will be like 100% game instead of 50/50 gaming and academics". Gamification was perceived as a potential means of enhancing student engagement. But there were worries about how it might be implemented and the possibility of overwhelming non-competitive students. This observation is in line with Deterding et al. (2011), who warned of the dangers of over competition in gamified applications.

Although gamification was generally well-received, there were some caveats about how it could be implemented. To an extent, this goes hand in hand with the theme of fairness that emerged from some interviews as one interviewee explained that competition is core of game as "it would not be a game if it wasn't about competing" meaning they may lead to students falling behind & being stressed or demotivated. As another respondent put it, "the competitive nature of gamification might "pull back students" who are not gamers themselves" and thus the importance of ensuring that any gamified experience is accommodative to all type of learners.

One minor theme that was analyzed throughout the series of interviews was on how important it is to have a core group of teachers in place who can make gamification work for them. Interviewees underscored the point that for gamification to be effectively brought into their learning environments "teachers must step up". A clearly formulated response was that teachers should be "knowledgeable in the area of gamification" and create authentic learning experiences. Educators were also considered as requiring necessary training and preparation: "if well trained, they should understand the concept".

Most interviewees are optimistic about the future of gamification in education. One respondent expressed, "gamification is the current need of the current hour in education" and will help engage youth for future learning. Similarly, another comment echoed the same feeling; "there will be more cases in which gamification is relevant for students who are born now" and already attuned to digital environments. This is further evidence of the promising long-term value that gamification presents as a solution for improving education and student outcomes. The topic of gamification was also identified as a promising area for further development of the future LMS platforms, as the respondents perceived the effect of gamification on student engagement and motivation positively. The interviewees acknowledged that the incorporation of game mechanics such as quizzes or interactive platforms like Kahoot might result in far higher levels of involvement and enhance a more vibrant learning environment (Deterding et al, 2011). However, successful application of gamification depends on training to use it for both instructors and students. The research found that some lecturers did feel ready to implement gamification, but others were concerned that they may be unprepared, especially older lecturers who may be less accustomed to using digital tools. Therefore, there was a call for well-developed training programs to facilitate the successful utilization of gamification making sure that lecturers and students would be able to utilize all its capabilities (Panda, 2024).

Based on the findings from both quantitative and qualitative data, LMS not only functions to enhance the learning process, but also a platform to increase students' motivation for better adaptation to technology and independent learning. Therefore, the design mechanisms of LMS can influence learning outcomes. Designing LMS with gamification elements will be able to deter the problems of low levels of user engagement among students and teachers as a sustained learning environment. However, the implementation needs to be cautious as not to overload students with competition as mentioned by Chen & Wang (2022). In the case of user interface and usability enhancement, it is essential for LMS to have its own mobile version as students nowadays do not just access internet through laptop or computer but mainly using mobile phones. It is therefore no denying that designing LMS with mobile version capabilities will have higher impacts on students to fulfill students' gratification thus proving beneficial.

Furthermore, more longitudinal studies are required to determine the effects of gamification on students learning experience. Similarly, Johnson & Gupta (2023) suggested that a long-term investigation should be done to look at how various forms of gamification impact students' engagement. Ultimately, Educators will require instruction and support from the administrative departments in the institutions to implement gamified components for teaching that would not detract from academic content but instead amplify learning outcomes. Similarly, as noted by some educators in the qualitative interviews, new LMS features can also have a steep learning curve – especially for those instructors who are not that tech-savvy (Rodriguez & Klein, 2022). So, institutions need to offer robust professional development programs that provide teachers with the proper know-how on how to take full advantage of gamification and other cutting-edge LMS tools.

This present study is limited by its cross-sectional nature, which limits our ability to observe changes over time. More longitudinal study in the future should be implemented in addressing whether the impact of gamification supports long-term effects in student engagement and academic performance. As Johnson & Gupta (2023) pointed out, future research should aim at investigating how AI-based LMS systems can individualize learning to meet the variety of learner requirements. Additionally, more research is needed to explore institutional barriers to

LMS adoption, as outlined in Rodriguez & Klein (2022), and how these barriers can be overcome through professional development for educators.

CONCLUSION

In summary, the findings of this study provided a comprehensive solution to the two research questions according to the data collected and the analyses conducted. The research highlighted key weaknesses in current LMS primarily around their limited effectiveness, ease of use, and motivation. Technical errors were also identified, positioning these platforms as mostly a warehouse of media and content, rather than integrated learning environments. This demonstrates that the LMS system needs to be reengineered, particularly through the integration of a gamification learning framework, which could address these shortcomings. The successful incorporation of gamification in LMS could address the concerns of language learners and teachers by increasing learners' interest and improving their performance in a language-learning environment.

The survey and interview data revealed that while LMS platforms offer clear advantages, they face significant challenges, particularly related to ease of use and classroom incorporation. These results reinforce the claim that while gamification can be effective in influencing student motivation, educators and developers should be careful not to over emphasize these foundations. If gamification is too strong, it might mask cognitive content, or leave non-gamers out, pointing towards the necessity for a sensible design.

Looking ahead, it is essential that educators are well-trained and adequately supported to fully leverage the potential of gamification and digital tools in enhancing educational experiences, as proposed by Ma, et al. (2024) towards reconnecting digital competency and teacher training. In the context of this research, it can be viewed in the context of an ongoing discussion related to the modernization of LMS design and how LMS design can further work towards improving usability and increasing student retention via gamification. However, the findings of this study also propose a transformational turn in the world of digital education, where gamification could be viewed as a driving force of paradigm change, having the potential to shape and accommodate new pedagogical values, such as developing learner autonomy or creating personalized and engaging learning contexts. This distinction places the study within a larger discourse on LMS innovation, reflecting the concepts that appear in recent work about digital education systems future as it has been suggested before by Ferdiansyah et al. (2025) and El-Sabbagh (2025).

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