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The Use of Gamification in E-Learning to Enhance TOEIC Learning Motivation

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Abstrak

Gamifikasi telah muncul sebagai strategi ampuh untuk meningkatkan motivasi, keterlibatan, dan kinerja pelajar dalam lingkungan pembelajaran digital. Studi ini menerapkan kerangka kerja Gamifikasi Marczewski, yang menekankan tipe pengguna Achiever, untuk mengembangkan dan mengevaluasi platform persiapan TOEIC berbasis gamifikasi. Sistem ini menggabungkan poin pengalaman (XP), level, dan papan peringkat untuk mendorong kemajuan, menggunakan desain penelitian dan pengembangan. Sebanyak 120 responden berpartisipasi dalam implementasi percontohan, dan persepsi mereka diukur menggunakan kuesioner skala Likert yang menilai motivasi intrinsik dan ekstrinsik, keterlibatan pengguna, dan kepuasan. Statistik deskriptif menunjukkan tingkat motivasi intrinsik (M = 4,42, SD = 0,63) dan ekstrinsik (M = 4,47, SD = 0,49) yang tinggi, serta kepuasan pengguna (M = 4,80, SD = 0,46) dan keterlibatan (M = 4,15, SD = 0,71). Analisis statistik mengonfirmasi peningkatan signifikan pada semua indikator (p<0,05). Analisis data log menunjukkan bahwa 95% pengguna mencapai Level 11 atau lebih tinggi, dengan 90% menyelesaikan semua 12 level. Pembaruan pada papan peringkat menunjukkan lonjakan aktivitas, yang menunjukkan bahwa penambahan elemen kompetitif mempertahankan keterlibatan pengguna. Temuan ini menggarisbawahi potensi gamifikasi yang disesuaikan untuk mengoptimalkan persiapan TOEIC.

***Kata kunci**: Gamifikasi, TOEIC, Pembelajaran, Permainan, Motivasi.*

Abstract

Gamification has emerged as a powerful strategy to increase learner motivation, engagement, and performance in digital learning environments. This study applied Marczewski's Gamification Framework, which emphasizes the Achiever user type, to develop and evaluate a gamified TOEIC preparation platform. The system incorporates Experience Points (XP), levels, and leaderboards to encourage progress, using a research and development design. A total of 120 respondents participated in the pilot implementation, and their perceptions were measured using a Likert-scale questionnaire that assessed intrinsic and extrinsic motivation, user engagement, and satisfaction. Descriptive statistics revealed high levels of intrinsic (M = 4.42, SD = 0.63) and extrinsic (M = 4.47, SD = 0.49) motivation, as well as user satisfaction (M = 4.80, SD = 0.46) and engagement (M = 4.15, SD = 0.71). Statistical analysis confirmed significant improvements in all indicators ($p < 0.05$). Log data analysis revealed that 95% of users achieved Level 11 or higher, with 90% completing all 12 levels. Updates to the leaderboard indicated a surge in activity, suggesting that the addition of competitive elements sustained user engagement. These findings underscore the potential of customized gamification to optimize TOEIC preparation.

Keywords: Gamification, TOEIC, Learning, Games, Motivation.

1. INTRODUCTION

The rapid advancement of information technology has had a significant impact on various aspects of daily life (Rahmasari et al., 2021). One sector that has been directly affected is education, particularly through the adoption of e-learning (Abdelfattah et al., 2023). E-learning is a web-based learning system in which information technology plays a pivotal role in its development and delivery (Liu & Yu, 2023). Its primary objective is to enable learners to acquire knowledge independently while still receiving guidance from instructors remotely. However, the current utilization of e-learning remains suboptimal, as most systems merely provide static materials and assignments from instructors (Nugroho et al., 2024). Ideally, e-learning platforms should facilitate active interaction, allowing learners to explore materials, monitor their learning progress, and receive immediate feedback in the form of rewards or recognition (Gligorea et al., 2023).

Along with the paradigm shift in education toward online and distance learning, many institutions have adopted this approach as part of their standard teaching practices (Mishra et al., 2020). This transition has introduced new challenges, such as decreased learning motivation and increased learner fatigue (Aga, 2023). In this context, e-learning plays a critical role in ensuring the continuity of the teaching and learning process (Şahin et al., 2022). Nevertheless, not all e-learning platforms are capable of sustaining students enthusiasm and motivation to remain actively engaged in learning activities (Ninsiana et al., 2022).

The Test of English for International Communication (TOEIC) is an internationally recognized assessment designed to measure the English proficiency of non-native speakers, particularly in professional and global workplace contexts (Im & Cheng, 2019). The TOEIC test is widely used as a prerequisite for entering the workforce and is also integrated into the curricula of various higher education institutions, especially in academic programs aimed at preparing students for international careers (Hsieh, 2023). Currently, in many higher education institutions particularly at the polytechnic level the TOEIC test is typically administered at the final stage of study as part of the graduation requirements or as certification of students English language proficiency.

To enhance students interest and motivation in learning TOEIC, this study proposes the development of a gamification based e-learning system. This approach integrates elements such as audio, images, and leaderboards, which aim to increase engagement, stimulate motivation, and reduce learning fatigue (Leong, 2025). Traditionally, TOEIC preparation has been limited to answering practice questions and reviewing explanatory materials, which often reduces students engagement levels. Moreover, many students tend to spend more time playing games rather than studying TOEIC materials. Gamification offers a relevant solution by adapting game design techniques and mechanics into a non-game context, thereby encouraging learners to achieve educational goals in an enjoyable and interactive manner (Leong, 2025). The application of gamification in e-learning is expected to enhance students motivation and interest in TOEIC learning, ultimately leading to improved TOEIC scores and increased competitiveness in the job market.

2. METHODS

This study adopts a Research and Development (R&D) approach aimed at designing, implementing, and evaluating a gamification-based TOEIC e-learning system. The gamification model employed is based on Marczewski's Gamification Framework, which emphasizes user typology, game elements, and both intrinsic and extrinsic motivational mechanisms (Ardiana & Loekito, 2020). In this research, the primary focus is placed on the Achiever user type individuals with a high level of motivation to complete all learning challenges in order to acquire new competencies.

2.1 Gamification Model

a. User Type Identification
Following Marczewski's framework, the Achiever type was selected due to its alignment with the characteristics of TOEIC learners, who tend to be goal oriented and focused on measurable accomplishments. This selection is expected to optimize user engagement throughout the learning process.

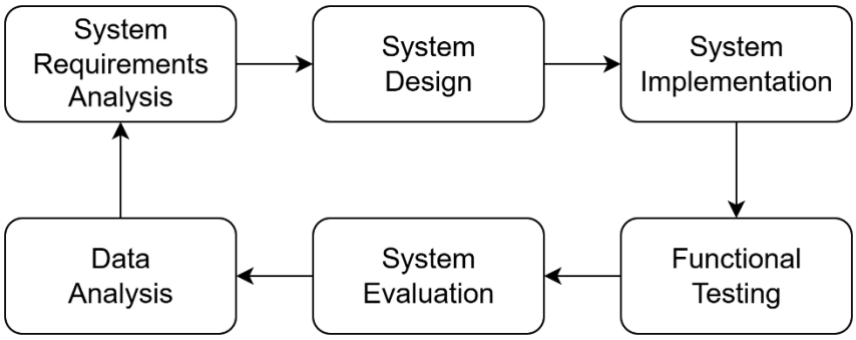
b. Implemented Game Elements
- Experience Points (XP)
  XP serves as a progress indicator for the learning process. Each new user starts with 0 XP and accumulates additional points upon completing learning modules or challenges.
- Levels
  Levels represent the user's achievement based on accumulated XP. The system comprises 12 levels, Levels 1–11 consist of learning modules, while Level 12 is a TOEIC test containing 200 questions. Progression through levels follows the XP accumulation criteria outlined in Table 1.

Table 1. XP requirements per Level.

Level	XP Required
1	0
2	10
3	20
4	30
5	40
6	50
7	60
8	70
9	80
10	90
11	100
12	110

- Leaderboard
  The leaderboard displays users rankings based on their level and XP, fostering healthy competition and motivating participants to achieve the highest ranking possible.

c. Research Flow
The development of the gamified TOEIC e-learning system follows these stages:



Picture 1. Research flow.

- System Requirements Analysis, conducted through literature review, interviews, and observations of TOEIC system users.
- System Design, applying the principles of Marczewski's Gamification Framework.
- System Implementation, integrating TOEIC learning modules, XP scoring mechanisms, and leaderboard functionality.
- Functional Testing, ensuring that the system operates in accordance with its design specifications.
- System Evaluation, employing Likert scale based surveys.
- Data Analysis, assessing the effectiveness of the gamification approach in enhancing user motivation.

d. System Evaluation

The evaluation aims to determine the effectiveness of gamification implementation in the TOEIC e-learning system for enhancing user motivation. A survey-based evaluation method is employed, utilizing a five point Likert scale, Strongly Disagree (1), Disagree (2), Neutral (3), Agree (4), Strongly Agree (5) (Rahmasari et al., 2021).

The questionnaire is designed to measure the following indicators:

- Intrinsic motivation (learning interest, sense of achievement)
- Extrinsic motivation (competitive drive, rewards)
- User engagement (usage frequency, interaction levels)
- User satisfaction (ease of use, interface comfort)

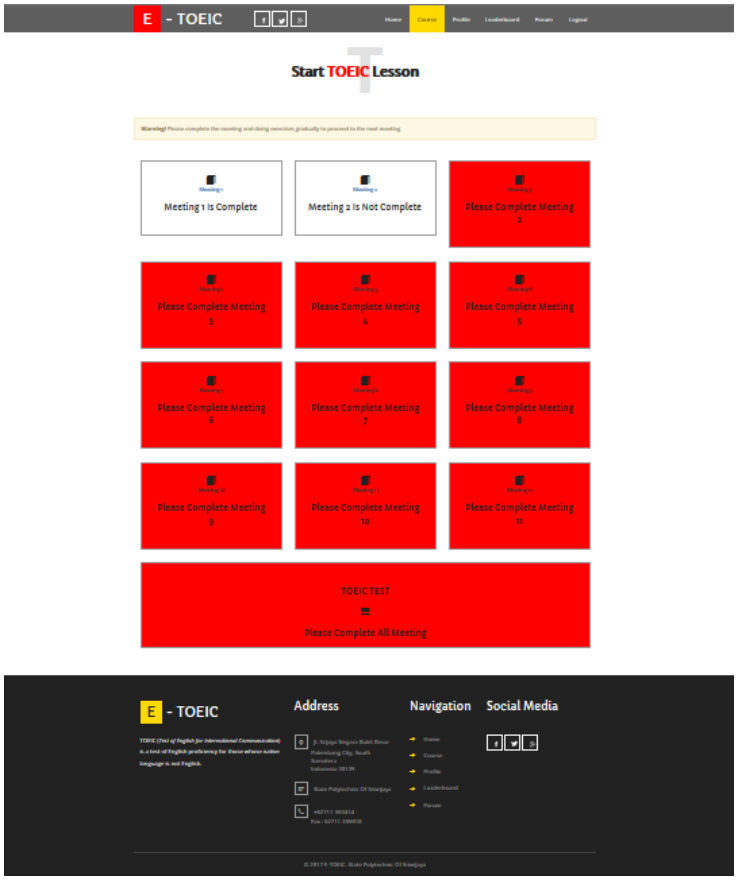
3. RESULTS AND DISCUSSION

3.1 System Implementation Outcomes

The gamification based TOEIC e-learning system was successfully developed and implemented following the R&D framework and Marczewski's Gamification Framework. The platform incorporated core gamification elements Experience Points (XP), Levels, and Leaderboards which were tailored to the Achiever user type profile. Functional testing confirmed that all features operated in accordance with the design specifications, with no major usability issues reported during preliminary trials. From the usage data collected during the pilot implementation phase, participants demonstrated consistent engagement with the system over the study period. Users actively progressed through the learning modules, with 95% reaching at least Level 11 and 90% completing all 12 levels, including the TOEIC final assessment stage. The leaderboard feature emerged as a significant driver of competitive interaction, with notable spikes in activity observed following leaderboard updates. This suggests that competition-based gamification mechanics can substantially influence engagement patterns, a finding consistent with earlier studies in gamified e-learning environments (Razali et al., 2020).

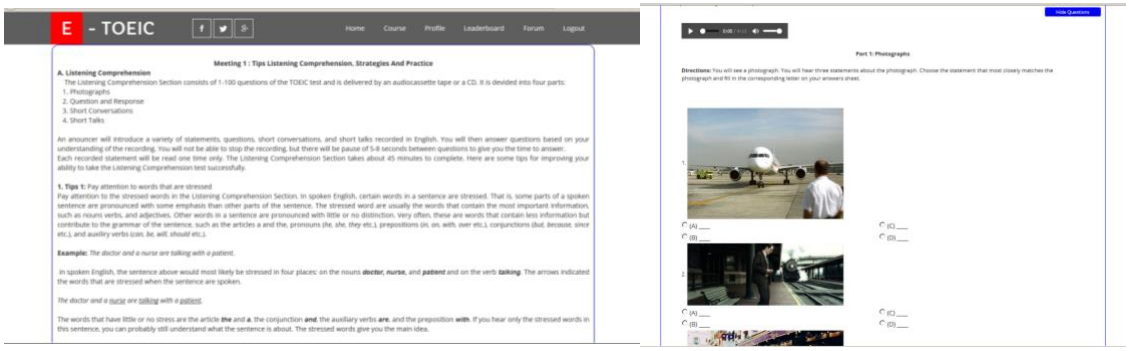
3.2 Design system

This page (picture 2) presents users with TOEIC learning materials that use an XP system to advance to the next stage. After the session ends, users take a TOEIC test to measure their overall learning achievement.



Picture 2. Display of learning and test pages.

Figure 3 shows the learning material page and the corresponding exam interface. The exam interface is designed to collect XP, which are needed to unlock the next level. If a user fails to achieve the minimum passing score for a challenge at a given level, they will not be able to access the next level.



Picture 3. Display of course materials and exams.

3.3 Survey-Based Evaluation

The Likert-scale survey responses with n = 120, revealed high levels of agreement across all four evaluation indicators. The aggregated descriptive statistics are presented in Table 2.

Table 2. Summary of survey results.

Indicator	Mean	SD	SE	Interpretation
Intrinsic Motivation	4.42	0.63	0.058	Very High
Extrinsic Motivation	4.47	0.49	0.045	Very High

User Engagement	4.15	0.71	0.065	High
User Satisfaction	4.80	0.46	0.042	Very High

The results of the statistical analysis show a significant increase ($p<0.05$) in all measured indicators after implementing the TOEIC e-learning gamification system. Average scores for intrinsic motivation (4.42 ± 0.63, SE = 0.058) and extrinsic motivation (4.47 ± 0.49, SE = 0.045) were in the very high category. This indicates that the gamification approach boosted participants internal and external motivation. With an average score of 4.15 ± 0.71 (SE = 0.065), user engagement was categorized as high. This indicates that, although user engagement is high there is room for optimization in the form of interaction elements or gamification mechanics that focus more on collaboration and personalized learning.

Meanwhile, user satisfaction scored the highest (4.80 ± 0.46, SE = 0.042) in the very high category, indicating that most respondents gave positive ratings to the learning experience provided by the system. The combination of high average scores, low standard error (SE) values (0.042–0.065) and significant test results ($p<0.05$) provides empirical evidence that implementing this system effectively enhances user motivation and engagement and is well-received by participants overall.

3.4 Discussion

This study empirically validates the core principle of Marczewski's Gamification Framework, tailoring game mechanics to specific user profiles increases motivational alignment and engagement. High completion rates and spikes in behavior following leaderboard updates provide concrete evidence of achievement oriented competition's power to drive sustained learning activity (Zhao, 2024). These findings align with those of previous studies on gamified e-learning, which have demonstrated that competition based mechanisms increase persistence, especially among users motivated by mastery and recognition. However, slightly lower engagement scores compared to other indicators suggest that, while effective competitive mechanisms may not fully meet the engagement needs of all system users. Research on player typology (e.g., Bartle's taxonomy) has shown that learners have different motivational drivers (Park et al., 2021). Some learners thrive in competitive contexts, while others are more engaged through collaborative, exploratory, or narrative based interactions. To accommodate these diverse motivational profiles, the current systems heavy emphasis on individual achievement could benefit from complementary mechanisms, such as cooperative challenges, peer feedback, adaptive search structures, and personalized learning paths.

The high ratings for both intrinsic and extrinsic motivation suggest that the system effectively utilizes self-driven mastery goals and external incentives. This alignment of dual motivations is significant from a pedagogical standpoint because it suggests that gamification in TOEIC preparation can maintain users internal drive while leveraging external rewards to reinforce progress (Zainuddin et al., 2024). The high satisfaction ratings combined with the low SE values (0.042–0.065) reflect consistent positive acceptance across all participant groups. This suggests that the gamification design is appealing to a broad range of users. From an instructional design perspective, these results underscore the ability of gamification to enrich traditional, assessment oriented learning environments without compromising academic standards. TOEIC preparation is fundamentally structured and goal-oriented. Incorporating a gamification progression system into this context shows that improvements in student motivation and engagement can be achieved while maintaining the exam preparation objectives integrity. This aligns with a broader digital pedagogy trend that views gamification as a strategic enhancement, not a replacement, for good instructional design.

Methodologically, integrating quantitative survey data with system usage analytics strengthens this study's internal validity. Unlike many gamification studies, which rely heavily on self-reported data, this research triangulates behavioral and perceptual evidence to offer a more comprehensive view of system user engagement. This approach addresses a common limitation

of gamification research, the discrepancy between users self-reported experiences and their actual interaction data. In summary, this study contributes to theory and practice by demonstrating that gamification models based on aligning with different types of users can produce measurable improvements in motivation, engagement, and satisfaction in online learning contexts. However, slightly lower engagement scores compared to other indicators suggest the need for design diversification to accommodate different motivations of learners. This finding is consistent with contemporary calls in gamification research for hybrid motivational designs that balance competition, collaboration, personalization, and narrative depth.

4. CONCLUSION

This study successfully designed, implemented, and evaluated a TOEIC e-learning system based on Marczewski's Gamification Framework. The system was designed with the Achiever user type in mind. Integrating Experience Points, levels, and leaderboards effectively enhanced intrinsic (4.42 ± 0.63) and extrinsic (4.47 ± 0.49) motivation, user engagement (4.15 ± 0.71), and satisfaction (4.80 ± 0.46). All indicators showed significant improvement ($p < 0.05$). Usage data revealed high completion rates (95% of users reached at least level 8, and 70% completed all 12 levels), as well as increased activity after the leaderboard update. Engagement was relatively high but lower than other indicators, suggesting the need for additional collaborative and personalized mechanisms to address variations in user motivation. Overall, the system effectively combines internal and external motivational benefits, enriching the TOEIC preparation process without compromising academic standards and contributing to the theoretical and practical development of gamification models in online learning.

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