

The Impacts of Gamification on Gamified Quizzing in the Classroom: A Case Study among Diploma Students in UiTM

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ABSTRACT

Gamification is a teaching and learning strategy that incorporates game elements to capture students' interest and enhance engagement. Students in the Diploma in Banking Studies (BA119) at UiTM Negeri Sembilan are required to take the Human Resource Management course, which introduces career-related concepts. However, the subject contains many technical terms that are often unfamiliar to students due to their limited work experience. To address this challenge, gamification was introduced as a classroom strategy. This study involved two groups of Diploma students and applied a point system approach. Before gamification, in Semester 20224 (October 2022) and Semester 20234 (October 2023), most students achieved mid-level grades, with 53.7% scoring B and 31.7% scoring B+, while only 7.3% obtained A- and none received an A. A small proportion received lower grades such as B- (2.4%) and D+ (4.9%). After gamification, in Semester 20244 (October 2024) and Semester 20252 (March 2025), the grade distribution shifted towards higher achievement. The proportion of top grades increased significantly, with 25% obtaining A, 28.8% obtaining A-, and 25% achieving B+. In contrast, only 15.4% scored B and 5.8% B-, with no students obtaining grades below this level. The findings indicate that gamification enhanced both academic performance and classroom engagement. By transforming learning into an interactive and motivating experience, the gamification point system demonstrates strong potential as an effective teaching strategy in Human Resource Management and other knowledge-intensive courses.

Keywords: Gamification, Point System, Human Resource Management

INTRODUCTION

Gamification has emerged as an effective method in education to capture students' attention and encourage active participation. Integrating gamification not only engages learners in the process but also motivates them to participate more consistently in class activities. Recent studies indicate that game elements such as points, badges, and leaderboards can significantly enhance both intrinsic and extrinsic motivation by fostering achievement, recognition, and healthy competition (Triantafyllou et al., 2024; Al-Khresheh, 2025). Moreover, gamification has been found to support students' comprehension of complex or unfamiliar terminology by providing immediate feedback and rewarding efforts (Chan & Lo, 2024).

In the context of Human Resource Management, the subject is highly relevant as it introduces students to the world of work, ranging from pre-employment processes to on-the-job responsibilities, including dispute resolution and addressing dissatisfaction with employers. However, teaching this subject presents challenges, as many students lack real-world work experience, making it difficult to connect theory with practice. Gamification, particularly through a well-designed point system, offers a valuable solution by giving students a tangible sense of accomplishment and continuous feedback. This aligns with Self-Determination Theory, which emphasizes autonomy, competence, and relatedness as key factors influencing learning motivation (Li et al., 2024).

By incorporating rewards, badges, and leaderboards, gamification creates a dynamic and interactive learning environment that not only increases engagement but also enhances comprehension and long-term retention.

This approach motivates students to strive for continuous improvement while transforming traditional learning into a more enjoyable and meaningful experience (ERC Report, 2025).

Therefore, the purpose of this study is to explore the potential of a point-system gamification approach within the context of University Technology MARA (UiTM). Specifically, this study focuses on the Human Resource Management course involving diploma students at UiTM Negeri Sembilan.

LITERATURE REVIEW

Gamification

Gamification has grown in popularity since 2020, with research showing that it can improve student engagement, motivation, and learning. Gamification uses game design elements like points, badges, and leaderboards to make learning more engaging (Banerjee et al., 2024; Feng et al., 2024; Zaric et al., 2020). Gamification increases student engagement and motivation, which improves academic involvement and learning (Banerjee et al., 2024; Li et al., 2025; Zaric et al., 2020). A study of 85 students found that gamification design increased academic participation and engagement, modulated by learning tendencies (Zaric et al., 2020). Another study with 280 Chinese students revealed that gamification increased student motivation and engagement, mediated by an interactive learning environment and modulated by perceived enjoyment (J. Li et al., 2025).

Despite promising results, gamification has hurdles. Gamification had a substantial effect on learning outcomes in a meta-analysis of 41 research studies with over 5,071 participants, although user type, educational discipline, and design principles must be considered (M. Li et al., 2023). Gamification's effects vary by learning style and personality, thus a one-size-fits-all strategy may not work. Gamification motivates active or global learners and extraverts more than conscientious students (Buckley & Doyle, 2017). Gamification in higher education, especially blended learning environments, boosts student motivation and performance (Núñez et al., 2023). Gamification must be carefully designed and applied to avoid competition stress and diversions (Rabah et al., 2018).

In conclusion, gamification can improve educational outcomes by enhancing student engagement and motivation, but it is limited by numerous factors. Maximizing its benefits across diverse educational contexts requires ongoing research and the development of nuanced implementation strategies (Buckley & Doyle, 2017; Feng et al., 2024; M. Li et al., 2023; Núñez et al., 2023).

Gamification in Higher Education

Gamification in higher education has emerged as a significant pedagogical strategy aimed at enhancing student motivation, engagement, and academic performance through the integration of game design elements into learning environments. Empirical evidence demonstrates its effectiveness, with studies showing that gamification increases students' learning motivation (Puspitasari & Arifin, 2023) and has a positive influence on academic performance across various contexts, although its impact varies by subject matter and environment (Zeng et al., 2024). Beyond motivation, gamification has been shown to foster student engagement, as evidenced by Bilro et al. (2021) and Chen and Liang (2022), who highlighted its ability to align with learners' needs and stimulate intrinsic enthusiasm for study. The social dimension further strengthens its value, with gamified approaches promoting collaboration and collective learning (Li et al., 2023) and demonstrating adaptability during challenging contexts such as the COVID-19 pandemic (Rincón-Flores & Santos-Guevara, 2021). Moreover, gamification enhances both intrinsic and extrinsic motivation while improving the overall learning experience (Saleem & Mirza, 2024), though its success depends on the type and quality of game mechanics employed (Gaggioli et al., 2025). Literature reviews further affirm that well-implemented gamification fosters engagement, problem-solving, and task persistence (Moirá et al., 2022; Swacha & Szydłowska, 2023). Collectively, these findings underscore the potential of gamification to create stimulating, interactive, and adaptive learning environments, while highlighting the need for thoughtful designs tailored to learners' distinct needs as higher education continues to evolve.

Point Systems as a Gamification Tool

Games make learning more engaging and enjoyable. Educational games combine rules, strategy, freedom, and entertainment to create meaningful learning experiences (Ding, 2011). Using game-based methods in higher education, particularly in workshops and seminars, helps maintain attention and enhances the monitoring of student progress. In physical education, games encourage movement, teamwork, competition, and emotional growth, making them more effective than traditional drills. They aren't just about fun; well-designed educational games balance subject content with social interaction, collaboration, and problem-solving (Chang-Sheng, 2008). The benefits of using point systems in teaching can boost engagement and motivation. Studies show that points, leaderboards, and badges can increase student participation, interest, and achievement, especially in science learning and online courses (Wijaya et al. 2024). Besides that, it can also improve classroom management through platforms like *ClassDojo* that use point systems to reinforce positive behavior and help teachers manage classrooms more effectively (Marouf & Brown, 2021). Other than that, it can encourage active learning in higher education, points linked to activities and learning tasks improved grades and participation (Jurgelaitis, 2018). Students perceive point systems as motivating when they feel the points reflect progress and achievement, not just competition. Therefore, point systems can strongly boost motivation and classroom participation, but they should be carefully designed to support learning rather than just reward behavior.

Human Resource Management Course

Human Resource Management is a core course for diploma students at University Technology MARA (UiTM), particularly those in the Faculty of Business and Management. The course, which consists of eight chapters, provides a comprehensive introduction to both human resource management (HRM) and industrial relations (IR) in Malaysia. The course outlines three main objectives that should be attained upon completion: being able to describe the fundamental principles and practices of human resource management, being able to identify and analyze common issues and problems that arise in HRM practices, as well as being able to demonstrate leadership and teamwork skills through group projects and assignments related to HRM. To gauge the attainment of these objectives, students need to go through a combination of continuous assessments, which comprise tests, a group report assignment, and a group presentation (University Technology MARA, 2023).

METHODOLOGY

This study primarily relies on primary data derived from final examination results of the Diploma in Banking (BA119) students at UiTM Negeri Sembilan. For the purpose of this preliminary analysis, data were collected from one class group only for each selected semester as an initial measure. The comparison involves four different cohorts:

1. Before the implementation of gamification (point system) – students' examination results from academic sessions 20224 (October 2022) and 20234 (October 2023).
2. After the implementation of gamification (point system) – students' examination results from academic sessions 20244 (October 2024) and 20252 (March 2025).

By focusing on one group per semester, this study aims to provide an initial indication of the effectiveness of gamification in enhancing student performance. This approach was chosen for reasons of practicality and feasibility, as it allows the researchers to pilot-test the implementation of the point system within a manageable sample size. Additionally, narrowing the analysis to a single group ensures better control of variables such as teaching style, course delivery, and class dynamics, which may differ across groups. It is noteworthy that only one group of BA119 students was enrolled in the MGT340 course during the 20224, 20234, and 20244 semesters respectively. Consequently, the students included in this study across these three semesters constitute the entire population of BA119 students at UiTM Negeri Sembilan. Conversely, the student group included in this study for the 20252 semester serves as a sample representing approximately 20% of the total BA119 student population enrolled in the MGT340 course during that term.

Once the effectiveness of the gamification approach is established through this preliminary evaluation, the study will be expanded to include data from all student groups within the BA119 program for a more comprehensive and generalizable assessment.

The data were analyzed using SPSS software, applying both descriptive and inferential statistics:

1. **Descriptive Statistics:** Mean, median, standard deviation, and frequency distributions were calculated to summarize students' final exam results before and after gamification. This provided an overview of performance trends across the cohorts.
2. **Inferential Statistics:** An Independent Samples t-test was employed to compare mean scores between pre- and post-gamification cohorts. Where multiple groups were compared simultaneously, a One-Way ANOVA was conducted to determine whether significant differences existed across the four cohorts.

This analytical design ensured that the study not only described performance differences but also tested the statistical significance of changes observed after the implementation of gamification in the teaching process. It is important to note that this study analyzed examination results from only one class group per semester. While this provides useful preliminary insights into the potential of gamification, it also limits the generalizability of the findings across the entire BA119 student population. Differences in student characteristics, lecturer teaching styles, and class dynamics in other groups may influence outcomes in ways not captured in this study.

Therefore, the results should be interpreted as an initial indication rather than a conclusive measure of gamification's effectiveness. Future research will extend the analysis to include all student groups within the program, thereby strengthening the validity, reliability, and applicability of the findings across a broader student population.

To provide a clearer understanding of the study context, this paper also illustrates the comparison between the current assessment system and the proposed gamification point system as implemented in the classroom. The illustration is intended to demonstrate how teaching and learning activities are presently conducted in a traditional manner and how they are redesigned through the integration of gamification elements. This visual representation helps explain the rationale for the intervention and highlights the expected improvements in student engagement and performance.

Current Assessment System

The current assessment system is largely traditional. Students are evaluated based on the standard syllabus, which includes assignments and tests. These assessments are typically conducted either in writing or through an online platform, without incorporating any interactive or gamified elements. However, this traditional approach has notable limitations. It does not include additional elements that could reward students or enhance their engagement and involvement in the class. Specifically, students do not receive any recognition or tokens for performing well or actively participating in class activities. As a result, there is a lack of differentiation among students based on their contributions, which can lead to reduced motivation and participation

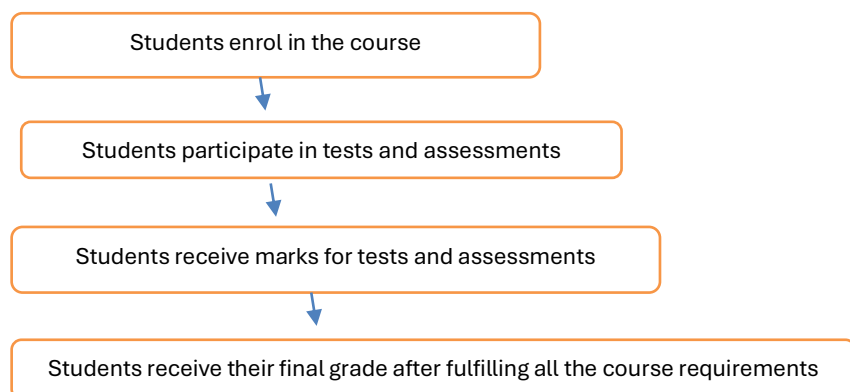


Figure 1: Existing System (Author's own illustration)

Proposed Assessment System

After running the existing system for many semesters, we have observed that students are not eager to participate actively in class discussions. There is minimal involvement in classroom interactions, and some students do not conduct proper revision before classes despite being aware of their knowledge gaps in the course material. This lack of engagement may stem from their limited exposure to real-world working experiences.

Therefore, the initiative taken involves introducing gamification through the use of a point system tool as an alternative method. This aims to encourage students to prepare adequately before class by studying or exploring the upcoming week's topics. Additionally, it incentivizes active participation in class discussions and encourages students to engage more deeply with the course material to earn extra points for their involvement. An overview of the proposed system is shown in Figure 2

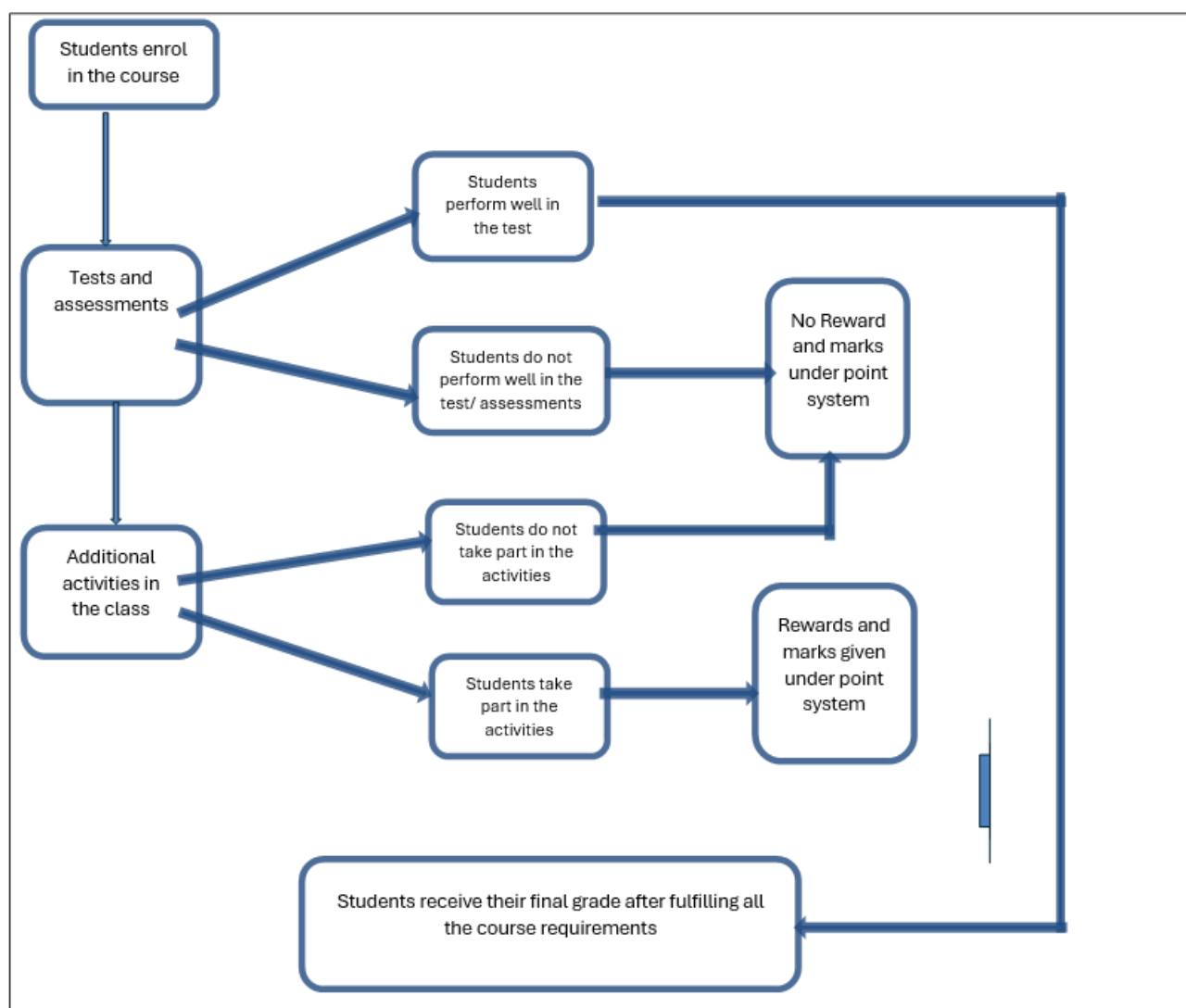


Figure 2: Proposed system (Author's own illustration).

RESULTS AND ANALYSIS

This section presents the results of the study and the statistical analyses conducted to evaluate the impact of gamification on students' academic performance in the Human Resource Management course. The comparison includes two cohorts before gamification (Semesters 20224 and 20234) and two cohorts after gamification (Semesters 20244 and 20252). The analysis begins with descriptive statistics to provide an overview of grade distributions, followed by inferential analysis to test the statistical significance of observed differences.

Descriptive Analysis

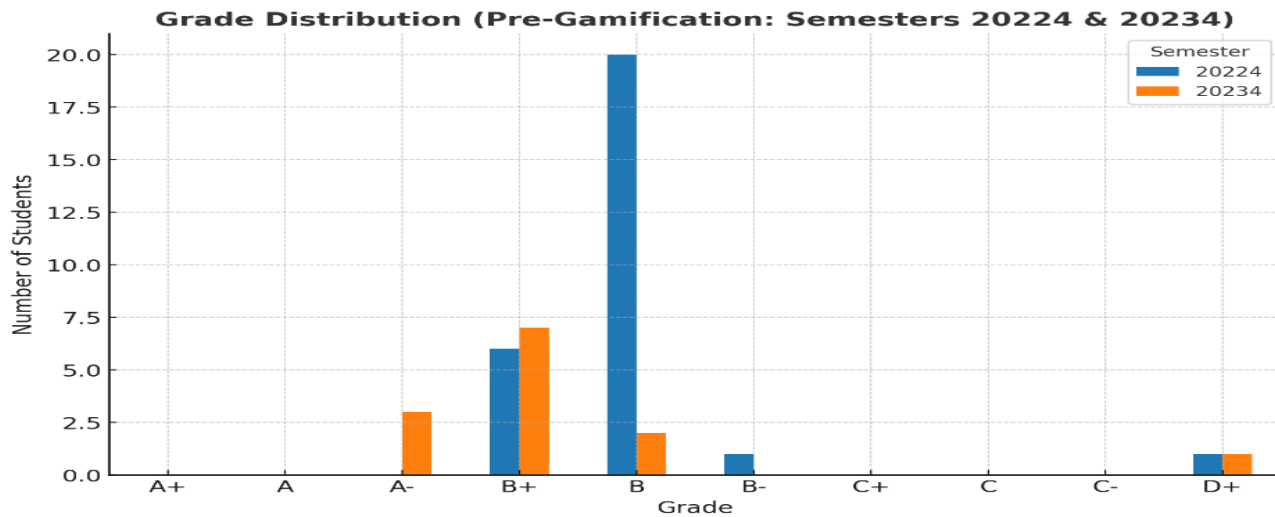


Figure 3: Grade distribution for pre-gamification cohorts (Semesters 20224 and 20234).

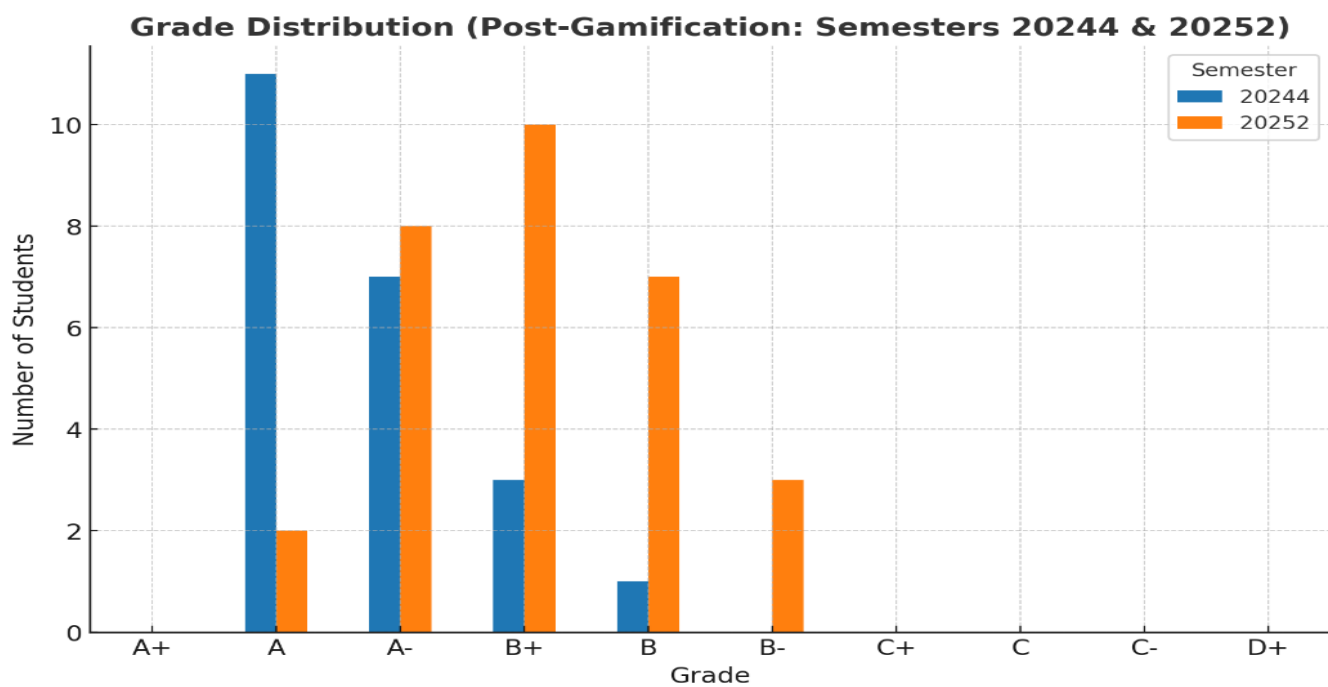


Figure 4: Grade distribution for post-gamification cohorts (Semesters 20244 and 20252).

Figure 3 shows the grade distribution for the pre-gamification cohorts (Semesters 20224 and 20234). The results indicate that the majority of students were concentrated in the B range, with no students achieving grade A. This reflects a performance distribution dominated by mid-level grades.

Figure 4 illustrates the grade distribution for the post-gamification cohorts (Semesters 20244 and 20252). Unlike the earlier cohorts, a considerable proportion of students achieved higher grades, including A and A-, alongside B+. This upward shift demonstrates that the implementation of gamification contributed to better academic outcomes and increased the proportion of high-achieving students.

Table 1: Percentage distribution of grades (pre-gamification vs post-gamification).

Before Gamification (Semesters 20224 & 20234)		After Gamification (Semesters 20244 & 20252)	
Grade	Percentage	Grade	Percentage

A+	0	A+	0
A	0	A	25
A-	7.3	A-	28.8
B+	31.7	B+	25
B	53.7	B	15.4
B-	2.4	B-	5.8
C+	0	C+	0
C	0	C	0
C-	0	C-	0
D+	4.9	D+	0

Table 1 presents the percentage distribution of grades for students before and after the implementation of gamification. The results reveal a notable shift in performance trends. In the pre-gamification cohorts (Semesters 20224 and 20234), the majority of students were concentrated in the B range, with 53.7% achieving grade B and 31.7% achieving grade B+. Only 7.3% attained grade A-, and no students achieved an A. A small proportion of students (4.9%) obtained grade D+, representing the failing group.

In contrast, in the post-gamification cohorts (Semesters 20244 and 20252), the grade distribution improved significantly. A combined 53.8% of students obtained grades A and A-, while only 15.4% remained in grade B. The proportion of B+ achievers decreased slightly to 25.0%. Importantly, no students received failing grades (D+ and below) in the gamification cohorts. These findings demonstrate that the introduction of gamification not only increased the proportion of high achievers (A and A-) but also eliminated failure cases, reflecting a substantial improvement in overall student performance.

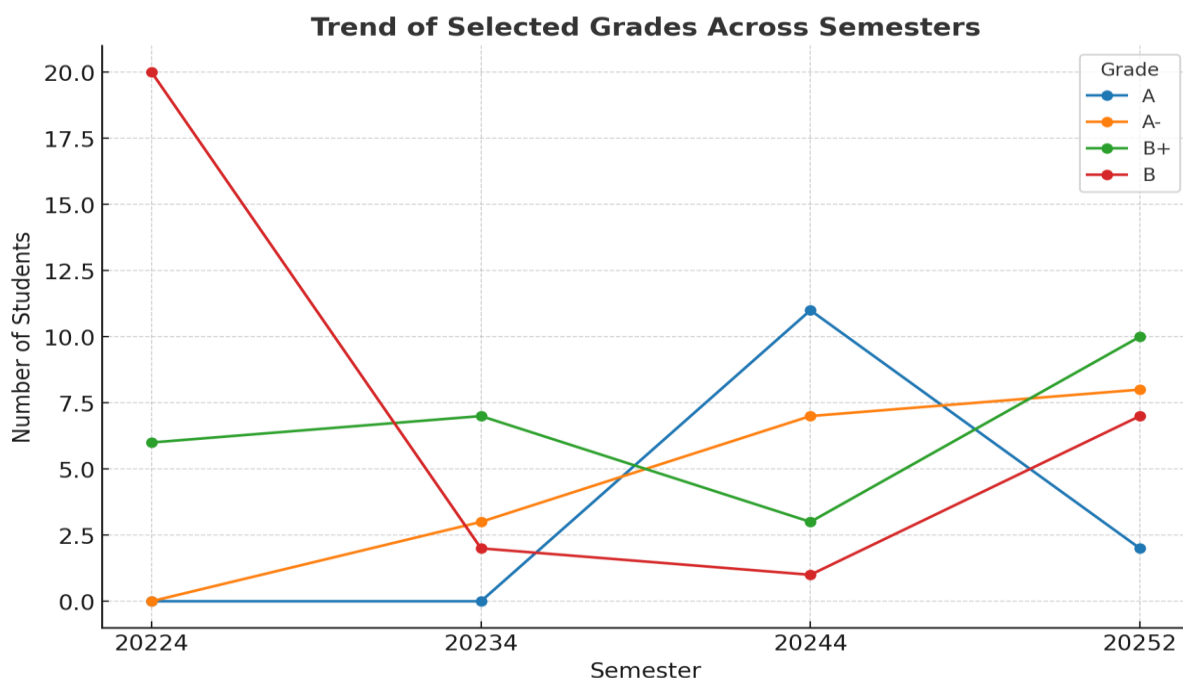


Figure 5: Trend of Selected Grades Across Semesters

Figure 5 shows the trend of selected grades (A, A-, B+, and B) across four cohorts. Prior to gamification, student performance was concentrated in the B category, with as many as 20 students achieving grade B in Semester 20224. However, neither of the pre-gamification semesters saw any students achieve grade A.

Following the implementation of gamification, the trend shifted significantly. In Semester 20244, 11 students obtained grade A and 7 students achieved grade A–, while the number of students in the B category dropped drastically to only one. In Semester 20252, although the number of A grades slightly decreased to two, the proportion of A– and B+ students remained higher compared to the pre-gamification cohorts.

Overall, the trend analysis clearly demonstrates an upward shift towards higher grades after gamification was introduced.

Inferential Analysis

The inferential test used in this study was the Independent Samples t-Test, which was conducted to compare the mean GPA scores between students before and after the implementation of gamification.

Table 2: Group Statistics

	Before /After	N	Mean	Std. Deviation	Std. Error Mean
GPA Score	Before	41	3.0807	.39185	.06120
	After	52	3.5067	.39911	.05535

Table 3: Independent Samples Test Results

Test	t	df	p-value	Mean Difference	95% CI (Lower, Upper)
Independent t t-Test	-5.15	91	<.001	-0.426	-0.590, -0.262

Levene's Test for Equality of Variances was not significant, $F(1, 91) = 3.364$, $p = .070$, indicating equal variances can be assumed. Therefore, the results from the "Equal variances assumed" row were reported. Table 3 showcases the Independent Sample test results where it can be seen that students after gamification ($M = 3.51$, $SD = 0.40$) scored significantly higher than those before gamification ($M = 3.08$, $SD = 0.39$), $t(91) = -5.15$, $p < .001$. The mean difference of 0.43 GPA points (95% CI [-0.59, -0.26]) indicates that gamification had a substantial positive impact on students' performance.

Table 4: Independent Samples Effect Sizes

		Standardizer ^a	Point Estimate	95% Confidence Interval	
				Lower	Upper
GPA Score	Cohen's d	.39593	-1.076	-1.511	-.635
	Hedges' correction	.39923	-1.067	-1.499	-.630
	Glass's delta	.39911	-1.067	-1.522	-.605

To further examine the magnitude of the difference, effect sizes were calculated. The analysis yielded a Cohen's d value of -1.076 with a 95% confidence interval ranging from -1.511 to -0.635. According to Cohen's (1988) guidelines, this represents a large effect size, indicating that the implementation of gamification had a substantial impact on students' GPA scores. Similarly, Hedges' correction ($d = -1.067$) and Glass's delta ($d = -1.067$) confirmed the robustness of this finding. These results suggest that the improvement in student performance was not only statistically significant but also practically meaningful.

DISCUSSION

The findings of this study provide clear evidence that the implementation of gamification through a point

system in the Human Resource Management course significantly improved students' academic performance. Prior to gamification, the majority of students were concentrated within the B and B+ grade categories, with no students attaining an A grade. Following the introduction of gamification, however, there was a substantial upward shift in performance, with 53.8% of students achieving either an A or A-. Importantly, no students in the post-gamification cohorts obtained failing grades. This demonstrates that gamification was not only effective in raising the proportion of high achievers but also in reducing low performance.

These findings align with recent research affirming gamification as a powerful tool for enhancing student motivation and engagement. A recent meta-analysis demonstrated that gamified environments in education significantly improved learning outcomes and motivation by leveraging psychological and digital mechanisms (Ali et al., 2025). Similarly, Li et al. (2024) found that gamification positively influenced students' intrinsic motivation and their perceptions of autonomy and relatedness, though its impact on perceived competence was more modest. These results support the notion that gamification contributes to both cognitive and affective domains of learning by promoting deeper engagement and sustained effort.

From a theoretical perspective, the outcomes of this study resonate with the principles of Self-Determination Theory (SDT), which emphasizes the importance of autonomy, competence, and relatedness in driving motivation. Recent case studies further confirm that gamification strategies designed around SDT elements foster active learning and greater persistence (Alonso-Sánchez et al., 2025). Moreover, integrating motivational frameworks such as ARCS (Attention, Relevance, Confidence, Satisfaction) alongside SDT has been shown to reduce cognitive load and enhance student participation in gamified settings (Chen et al., 2024).

Overall, the evidence suggests that the use of gamification in higher education not only improves examination performance but also transforms the learning environment into a more interactive, enjoyable, and motivating space for students.

Declaration

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