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Gamification Strategies in University Students: A Systematic Review

Estrategias de gamificación en estudiantes universitarios: revisión sistemática

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Abstract

The objective of this study was to determine the impact of gamification strategies on the academic performance of university students compared to traditional teaching methods. A systematic literature review was conducted using a qualitative approach and an observational design, explicitly applying the PRISMA 2020 protocol and the methodological guidelines proposed by Higgins et al. (2019). The search was conducted in the Scopus, ERIC, Google Scholar, and Redalyc databases, covering the period 2019–2025. A total of 837 articles were identified. After removing duplicates and applying inclusion and exclusion criteria—considering thematic relevance, full-text availability, and university population—20 empirical studies were selected. The results showed that gamification strategies significantly improve academic performance, intrinsic motivation, and student participation. It was also observed that their effectiveness depends on pedagogical design and the context of application. In conclusion, gamification is an innovative educational tool that strengthens the cognitive, procedural, and motivational dimensions of learning, contributing to more participatory university environments in line with current digital demands. We recommend developing longitudinal and comparative research to strengthen empirical evidence and guide its sustainable implementation in higher education.

Keywords: gamification strategies, university students, academic motivation.

Resumen

El presente estudio tuvo como objetivo determinar el impacto de las estrategias de gamificación en el rendimiento académico de estudiantes universitarios en comparación con los métodos tradicionales de enseñanza. Se desarrolló una revisión sistemática de literatura bajo un enfoque cualitativo y un diseño observacional, aplicando de manera explícita el protocolo PRISMA 2020 y las directrices metodológicas propuestas por Higgins et al. (2019). La búsqueda se realizó en las bases de datos Scopus, ERIC, Google Académico y Redalyc, abarcando el periodo 2019–2025. Se identificaron 837 artículos; luego de la eliminación de duplicados y la aplicación de criterios de inclusión y exclusión —considerando pertinencia temática, disponibilidad de texto completo y población universitaria— se seleccionaron 20 estudios empíricos. Los resultados evidenciaron que las estrategias de gamificación mejoran significativamente el rendimiento académico, la motivación intrínseca y la participación estudiantil. Asimismo, se observó que su efectividad depende del diseño pedagógico y del contexto de aplicación.

En conclusión, la gamificación se configura como una herramienta educativa innovadora que fortalece las dimensiones cognitiva, procedimental y motivacional del aprendizaje, contribuyendo a entornos universitarios más participativos y acordes con las demandas digitales actuales. Se recomienda desarrollar investigaciones longitudinales y comparativas que fortalezcan la evidencia empírica y orienten su implementación sostenible en la educación superior.

Palabras clave: estrategias de gamificación, estudiantes universitarios, motivación académica.

Introduction

Gamification, defined as the application of game elements and dynamics in non-gaming contexts (Kumar, 2024), is recognized as an innovative strategy increasingly implemented in educational practice to enhance motivation, engagement, and academic performance among university students (Subhash & Cudney, 2020). In this context, the present article proposes a framework for analyzing gamification strategies in higher education, aiming to systematically assess the scientific evidence regarding their effectiveness and potential application.

The research problem arises from the lack of consensus on which gamification strategies are most effective for promoting meaningful learning and student engagement at the university level. Although research in this area has progressively increased, the diversity of approaches, methodological designs, and obtained results reveals a knowledge gap that complicates informed decision-making by educators, education professionals, and policymakers (Zeng et al., 2023). Consequently, a systematic analysis is needed to synthesize the available evidence and clarify best practices within the university setting.

The relevance of this study lies in its investigation of empirical evidence concerning the effectiveness of gamification strategies across various academic disciplines, such as education, engineering, business management, and foreign languages, areas where its application has been most documented. In these contexts, gamification has the potential to serve as a driving force for intrinsic motivation, student participation, and academic satisfaction, all critical aspects for success and persistence in higher education (Lima et al., 2025).

The theoretical framework guiding this research acknowledges the ongoing lack of agreement regarding which gamification strategies prove most effective for enhancing motivation and academic performance in higher education. While recent literature indicates positive outcomes, the heterogeneity of methodologies and contexts hinders the establishment of generalizable conclusions (Zeng et al., 2024). In light of this fragmentation, this study proposes a systematic review that synthesizes the most relevant empirical findings, considering variables such as motivation, academic engagement, performance, and student satisfaction, which are commonly employed to assess the impact of gamification in higher education (Zeng et al., 2024).

Previous research has reported encouraging results in higher education, demonstrating improvements in student participation and motivation (Subhash & Cudney, 2020). However, the diversity of strategies, disciplines, and methodological approaches necessitates a systematic review to organize, update, and clarify the existing knowledge, while simultaneously providing guidance for future research and practical application in educational contexts.

Additionally, this research is situated within the current university educational landscape, characterized by increasing digitalization, student diversity, and the expansion of hybrid educational models. These shifts, influenced by social, cultural, and technological factors, create an ideal environment for implementing gamified pedagogical proposals that foster active, collaborative, and meaningful learning (Ojeda & Zaldívar, 2023).

Ultimately, this systematic review seeks to address the following research question: What are the most effective gamification strategies for improving academic performance, motivation, and engagement among university students, according to studies published between 2019 and 2025?

Methodology

This study employs a systematic approach, as outlined by Higgins et al. (2019), understood as a rigorous method for conducting the search, evaluation, identification, and synthesis of relevant evidence. This procedure is grounded in the application of a protocol designed to minimize biases or errors in the collected information.

The methodological approach taken in this study was qualitative, as described by Vizcaíno et al. (2023), focusing on the collection and analysis of theoretical data that undergo a critical review process to determine the relevance and validity of the obtained information. Furthermore, the type of research was descriptive (Vizcaíno et al., 2023), allowing for a detailed examination of the issues at hand, accurately representing the contexts, characteristics, and dynamics of the studied phenomena.

The PRISMA 2020 protocol (Page et al., 2021; Higgins et al., 2019) was applied to ensure transparency and rigor throughout the review process. The review took place between June and July 2025, following the phases

of identification, screening, eligibility, and inclusion. In the identification phase, a total of 837 articles were located in indexed databases; subsequently, 467 duplicate records were removed, leaving 370 articles for the screening phase. After applying the exclusion criteria (non-empirical studies, gray literature, and non-university populations), 20 articles met the established inclusion criteria.

Data collection was conducted using the document review technique, as outlined by Arias and Covinos (2021), which involved examining and categorizing documents pertinent to the research, evaluating their relevance and rigor. Accordingly, the instrument employed was an observation guide that facilitated the organization and systematization of the selected scientific articles.

Review of sources and inclusion/exclusion criteria

The SPIDER (Sample, Phenomenon of Interest, Design, Evaluation, Research type) strategy was adapted for the educational context to guide the literature search:

- **Sample (S):** University students.
- **Phenomenon of Interest (PI):** Gamification strategies applied in higher education.
- **Design (D):** Empirical, quasi-experimental, correlational, and descriptive studies.
- **Evaluation (E):** Impact on motivation, academic performance, and engagement.
- **Research type (R):** Peer-reviewed articles with a quantitative or mixed-methods approach.

Databases including Scopus, ERIC, Redalyc, and Google Scholar were searched using Boolean operators and truncation to maximize the sensitivity and comprehensiveness of the search.

Search strings:

- **Google Scholar:** ("gamification" OR "game-based learning" OR "serious games") AND ("higher education" OR "university students") AND ("motivation" OR "academic achievement" OR "student engagement" OR "learning outcomes") AND ("educational technology" OR "pedagogy" OR "teaching strategies") AND ("quantitative study" OR "empirical research") AND ("impact" OR "effectiveness" OR "student performance") AND ("original article" OR "peer-reviewed research").

- **ERIC:** ("gamification" OR "game-based learning" OR "serious games") AND ("higher education" OR "college students" OR "university students") AND ("motivation" OR "engagement" OR "academic performance" OR "learning outcomes").

- **Scopus:** ("gamification" OR "game-based learning" OR "serious games") AND ("higher education" OR "university students" OR "undergraduate students") AND ("motivation" OR "academic achievement" OR "student engagement") AND ("learning outcomes" OR "academic success") AND ("pedagogical strategies" OR "educational technology") AND ("quantitative study" OR "empirical research") AND PUBYEAR > 2018 AND PUBYEAR < 2026 AND (LIMIT-TO(DOCTYPE, "ar")) AND (LIMIT-TO(LANGUAGE, "English") OR LIMIT-TO(LANGUAGE, "Spanish")) AND (LIMIT-TO(OA, "all")) AND (LIMIT-TO(PUBSTAGE, "final")).

- **Redalyc:** ("gamification" OR "game-based learning" OR "serious games") AND ("higher education" OR "university students" OR "undergraduate students") AND ("motivation" OR "academic achievement" OR "student engagement" OR "academic performance") AND ("learning outcomes" OR "academic success" OR "school performance").

Inclusion criteria

This review followed the stages outlined in the PRISMA 2020 protocol. The identification phase involved a systematic search of Scopus, ERIC, Redalyc, and Google Scholar for publications between 2019 and 2025, using the following Boolean search strings:
(“gamification” OR “game-based learning” OR “serious games”) AND (“higher education” OR “university students”) AND (“motivation” OR “academic performance” OR “learning outcomes”).

This search identified 837 records: Scopus (285), ERIC (268), Google Scholar (123), and Redalyc (60).

During the screening phase, 467 duplicate records were removed, leaving 370 unique articles. We then excluded 121 documents classified as gray literature (e.g., reviews, essays, theses, institutional reports) and 156 studies that did not focus on university students or gamification strategies.

In the eligibility phase, 93 full-text articles were assessed. Of these, 25 were irretrievable or did not meet the necessary methodological standards. An additional 48 studies were excluded due to a lack of clarity regarding dependent variables or the absence of verifiable empirical results.

Finally, the inclusion phase resulted in the selection of 20 empirical studies that satisfied the following criteria: publication between 2019 and 2025, peer-reviewed status, full-text availability, English or Spanish language, focus on university students, and investigation of gamification strategies related to motivation, academic performance, or student engagement.

Exclusion criteria

Studies were excluded if they were published in languages other than Spanish or English, did not focus on university students as the primary population, or were classified as gray literature (e.g., unpublished theses, technical and institutional reports). Studies published before 2019, reviews, essays, and documents lacking empirical results were also excluded.

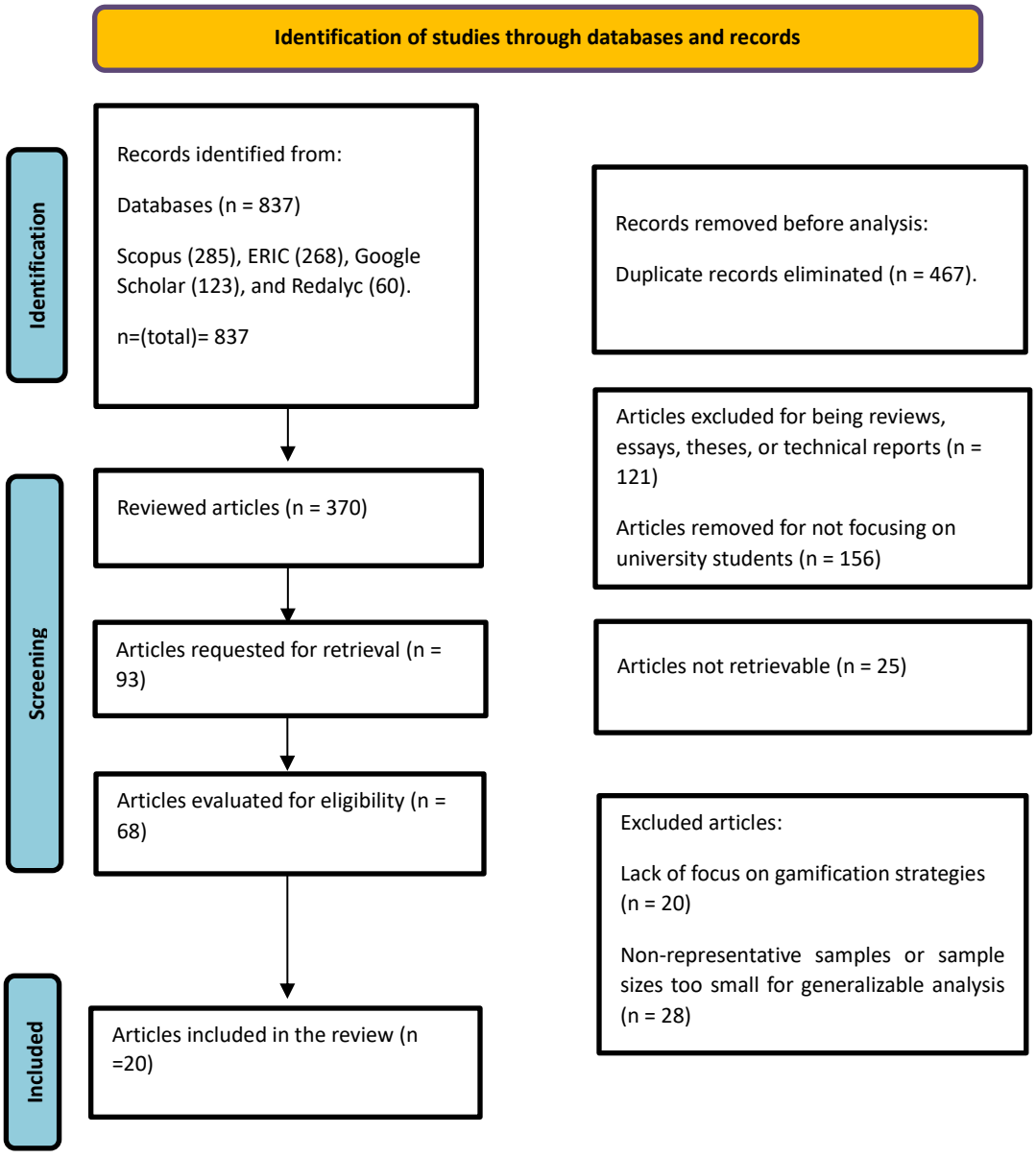
Search results in databases

The search results indicate a growing academic interest in gamification within the university setting. The distribution of identified studies was as follows:

- **Scopus:** 285 articles, reflecting the topic's significant presence in recent higher education research.
- **ERIC:** 268 articles, demonstrating a diverse range of methodological and thematic approaches.
- **Google Scholar:** 123 articles related to gamification, academic motivation, and pedagogical strategies in universities.
- **Redalyc:** 60 articles focusing on the application of gamification and its impact on university learning and performance.

In total, 837 articles were identified, highlighting the increasing interest in gamification as a pedagogical strategy with the potential to transform educational practices in higher education.

Figure 1
PRISMA flow diagram



Method of analysis

The analysis was conducted via a systematic review of the 837 articles initially identified. Following the removal of duplicates and a methodological assessment, along with the application of eligibility criteria, 20 studies were included for the final analysis.

The selected articles were organized into a comparative matrix that considered:

- research objectives,
- participating population,
- instruments utilized,
- methods of analysis,
- applied gamification strategies,
- comparison methods with traditional practices,
- reported results.

The analysis employed a narrative and categorical synthesis, grouping gamification strategies (e.g., points, badges, simulations, virtual reality, digital platforms) and evaluating their impact across three dimensions of academic performance:

1. cognitive,
2. procedural,
3. motivational.

Results

Table 1

Identified gamification strategies in analyzed publications

Year	Author	Country	Gamification strategy	Description
2024	Lacruz & Sofiate	Brazil	Business games in online, hybrid, and in-person formats	Business simulations used in various formats (virtual, hybrid, and in-person) to develop management competencies, scenario analysis, and decision-making in controlled environments.
2025	Hamadneh et al.	Saudi Arabia	Game-based learning	Incorporation of educational games and digital dynamics in the classroom to motivate students and foster active participation during learning.
2025	Ionescu et al.	Romania	Business Simulation Games (BSGs)	Integrated business simulation games within the curriculum allowing students to experience organizational management and business strategy practically.
2025	Johansen et al.	Norway	Virtual Reality (VR)	Use of immersive environments replicating practical situations, such as clinics or laboratories, to train technical skills and enhance student confidence.
2024	Hmoud et al. Irunokhai et al.	Palestine Nigeria	Points, badges, and leaderboards	Feedback mechanisms rewarding achievements, generating healthy competition, and increasing motivation through visible recognition of progress.
2022	Musyaffi et al.	Indonesia	MonsoonSIM ERP Platform	A gamified business simulation tool that integrates real business processes into a playful digital environment, fostering collaboration and applied learning.
2024	Abu Al-majd & Belton	Saudi Arabia	Technology-assisted learning with WhatsApp	Use of a messaging application as a medium for gamified challenges (e.g., vocabulary, creativity), including mini-games, timed activities, and immediate feedback.

The primary types of gamification strategies identified in the reviewed studies are summarized in **Table 1**. Despite the methodological diversity applied, all share a central aim: to enhance university students' learning. Among these, business games and simulation experiences (such as BSG or MonsoonSIM) significantly contribute to the development of both cognitive and practical competencies. Furthermore, virtual reality incorporates an immersive component that enhances confidence and alleviates anxiety in practice environments. Traditional dynamics based on points, badges, and leaderboards demonstrate effectiveness in increasing motivation and academic engagement. Notably, the implementation of accessible tools such as WhatsApp illustrates that gamification can be applied without advanced technological resources, yielding improvements in creativity, vocabulary, and student autonomy.

Overall, the results indicate that gamification positively impacts all three dimensions of academic performance. In terms of the cognitive dimension, it facilitates the comprehension and assimilation of curricular content. Regarding the procedural dimension, it aids in the development of applied skills essential for problem-solving in simulated environments. Finally, in the motivational dimension, it fosters interest, active participation, and curiosity among students (Subhash & Cudney, 2020; Zeng et al., 2023). However, the effectiveness of gamification is not uniform; it is contingent on the pedagogical design and application context. This highlights that

the educational value does not solely reside in the use of technological tools but rather in the appropriate integration of playful principles within meaningful and sustainable learning experiences.

Table 2

Data extraction matrix and comparative synthesis of reviewed studies

Author / Year	Study objective	Methodology / Design	Sample / Population	Type of gamified tool	Key findings or impact
Lacruz & Sofiate (2024)	Assess the effect of business games on learning and student satisfaction.	Quantitative, quasi-experimental.	120 management students	Hybrid business simulators	Increased perception of learning, satisfaction, and decision-making.
Hamadneh et al. (2025)	Analyze the influence of digital game-based learning on motivation.	Descriptive-correlational.	98 university students in education	Interactive digital games	Elevated motivation and engagement with moderate impact on performance.
Ionescu et al. (2025)	Examine the impact of Business Simulation Games on managerial competencies.	Mixed (quantitative and qualitative).	150 accounting students	Business Simulation Games (BSGs)	Improved strategic thinking and sustainable management skills.
Johansen et al. (2025)	Determine the effectiveness of virtual reality in technical skills.	Experimental with control group.	86 nursing students	Immersive virtual reality (VR)	Increased confidence and reduced anxiety in simulated environments.
Hmoud et al. (2024)	Identify the impact of points, badges, and leaderboards on motivation.	Quantitative, correlational.	210 university students (Jordan and Palestine)	Points, badges, and leaderboards	Significantly increased motivation and participation.
Musyaffi et al. (2022)	Evaluate the sustainability of gamified learning in digital environments.	Quantitative, correlational.	185 university students	MonsoonSIM ERP platform	Enhanced content retention and group collaboration.
Abu et al. (2024)	Compare technological and non-technological strategies for vocabulary learning.	Experimental.	60 English students	Gamified challenges via WhatsApp	Increased vocabulary, creativity, and autonomy.
Ruano et al. (2025)	Evaluate the MyClassGame program's effect on academic performance.	Quasi-experimental, pre-post.	60 higher basic education students	Gamified digital platform	Improved grades (+13.7%) and intrinsic motivation.
Queiro-Ameijeiras et al. (2025)	Analyze determinants of gamification acceptance in higher education.	Quantitative, descriptive.	180 university students in Spain	BUGAMAP simulator	Increased perceived usefulness and theory-practice transfer.
Suartama et al. (2024)	Examine the effect of gamification on project-based learning.	Experimental, with e-learning.	92 educational technology students	Interactive digital platforms	Elevated participation and quality of collaborative learning.
Krishnan et al. (2023)	Analyze escape room-type gamification in pharmacotherapy education.	Quasi-experimental.	75 pharmacy students	Virtual escape rooms	Improved academic performance and student satisfaction.

Author / Year	Study objective	Methodology / Design	Sample / Population	Type of gamified tool	Key findings or impact
Temel & Cesur (2024)	Determine the effect of gamified Web 2.0 tools on English learning.	Experimental.	84 university students in EFL	Gamified Web 2.0 tools	Improved motivation, with no significant differences in performance.
Zeng et al. (2024)	Synthesize the overall impact of gamification on academic performance.	Meta-analysis.	94 studies from 2008–2023	Variety of strategies (points, levels, badges)	Confirmed a global positive effect (r = .42) on performance and motivation.
Delgado et al. (2025)	Explore the relationship between gamification and meaningful learning.	Descriptive-correlational.	110 Peruvian university students	Online gamified applications	Evidenced a positive relationship between gamification and meaningful learning.
Cardona-Posada et al. (2025)	Evaluate gamified collaborative learning strategies in programming.	Experimental.	140 engineering students	Programming games and challenges	Increased collaborative work and knowledge retention.
Abdirahma et al. (2023)	Analyze gamification in self-directed programming education.	Experimental.	95 online engineering students	Gamified open-source platforms	Improved self-regulation and autonomous learning.
Mohani (2022)	Study the influence of emotional intelligence and gamification in English learning.	Quantitative, correlational.	100 Pakistani university students	Language learning games	Increased participation and communicative competence.
Irunokhai et al. (2024)	Evaluate gamification in Nigerian secondary education.	Experimental.	200 advanced secondary students	Points and leaderboards	Significantly increased participation and academic achievement.
Lima et al. (2025)	Examine the impact of gamification on Peruvian higher education students.	Quantitative, correlational.	130 Peruvian university students	Combined digital and in-person strategies	Positive correlation between gamification, motivation, and performance.
Ojeda-Lara & Zaldívar-Acosta (2023)	Describe gamification experiences as an innovative methodology in higher education.	Qualitative case study.	40 educators and university students	Digital tools and gamified classroom dynamics	Identified improvements in student engagement and teaching innovation.

Based on the extraction matrix presented in **Table 2**, consistent patterns were identified within the analyzed empirical evidence. Firstly, studies employing immersive digital strategies reported significant impacts on both cognitive and motivational dimensions by facilitating comprehension of complex concepts, fostering self-regulation, and promoting sustained student engagement (Lacruz & Sofiate, 2024; Johansen et al., 2025). Additionally, experiences that combined in-person and hybrid components displayed notable improvements in the

procedural dimension by fostering collaborative work, practical problem-solving, and transfer of learning to real-world situations (Cardona et al., 2025; Ruano et al., 2025). This finding suggests that social interaction and immediate feedback remain fundamental elements for active learning within gamified environments.

Furthermore, strategies based on intrinsic motivation showed sustained positive effects on student engagement, albeit with moderate magnitude when not accompanied by carefully structured pedagogical design (Hmoud et al., 2024; Hamadneh et al., 2025). Lastly, recent research (2023–2025) indicates a trend toward the transversal integration of gamification with other innovative educational approaches, broadening its educational reach beyond entertainment and competition, thus establishing it as a highly valuable pedagogical strategy in contemporary higher education.

Table 3 *Impact of gamification strategies on academic performance*

Year	Author	Country	Gamification strategy	Impact on academic performance
2024	Lacruz & Sofiate	Brazil	Business games (online, hybrid, in-person)	Increased perception of learning, satisfaction, and decision-making.
2025	Hamadneh et al.	Saudi Arabia	Game-based learning	Generated moderate engagement but increased motivation and perception of learning.
2025	Ionescu- Feleagă et al.	Romania	Business Simulation Games (BSGs)	Improved managerial competencies, strategic thinking, and educational sustainability.
2025	Johansen et al.	Norway	Virtual Reality (VR)	Increased confidence and reduced anxiety, strengthening practical skills in simulated environments.
2024	Hmoud et al.	Palestine	Points, badges, and leaderboards	Positive effect, increasing motivation and engagement.
2022	Musyaffi et al.	Indonesia	MonsoonSIM ERP platform	Enhanced meaningful learning and content retention.
2024	Abu Al-majd & Belton	Saudi Arabia	WhatsApp-assisted learning	Increased vocabulary, creativity, and autonomy through gamified challenges.
2025	Ruano et al.	Ecuador	@MyClassGame program	Improved grades from 8.13 to 9.25 (+13.7%) among students.
2025	Queiro-Ameijeiras et al.	Spain	BUGAMAP simulator	Elevated perceived usefulness and transfer from theory to practice.
2024	Suartama et al.	Indonesia	Interactive digital platforms	Increased participation and quality of learning.

Table 3 summarizes the results from the twenty reviewed studies, indicating that the gamification strategies applied to university students yielded significant improvements in academic performance, with effect sizes ranging from moderate to high (r = 0.45 to 0.78), depending on the implementation context and the type of pedagogical design employed. Strategies such as business games and Business Simulation Games (BUGAMAP and MonsoonSIM) demonstrated a greater impact on procedural training and decision-making, while virtual reality moderately increased confidence and practical performance (Lacruz & Sofiate, 2024; Ionescu-Feleagă et al., 2025; Johansen et al., 2025). Similarly, dynamics based on points, badges, and leaderboards, along with technological tools like WhatsApp and interactive platforms, showed positive effects on motivation, participation, and student autonomy (Hmoud et al., 2024; Abu Al-majd & Belton, 2024; Ruano et al., 2025). Collectively, the reviewed evidence confirms that while gamification strategies may vary in design and scope, their benefits consistently reflect improvements in the cognitive, procedural, and motivational dimensions of academic performance (Subhash & Cudney, 2020; Zeng et al., 2023).

Discussion

The findings of this systematic review demonstrate that gamification has a positive impact on academic performance and intrinsic motivation among university students, showing clear advantages over traditional teaching methods. This effect can be attributed to the dynamics of rewards, competition, and immediate feedback, which facilitate sustained motivational processes (Ruano et al., 2025; Parra-González et al., 2020).

Moreover, more complex strategies, such as business simulators and virtual escape rooms, enhance cognitive and social skills by linking academic content with interactive and collaborative experiences (Queiro-Ameijeiras et al., 2025; Ionescu-Feleagă et al., 2025; Krishnan et al., 2023). These results support Self-

Determination Theory (Ryan & Deci, 2020), illustrating that gamification enhances autonomy, competence, and social connection. Similarly, the findings align with Ausubel's theory of meaningful learning (1976, as cited in Delgado et al., 2025), as playful experiences facilitate connections between prior knowledge and new content, promoting deep understanding.

The significance of these findings lies in the fact that gamification not only improves grades but also increases participation, retention, and reduces dropout rates (Álvaro-Tordesillas et al., 2020). The scientific novelty of this review is highlighted by the limited number of studies that directly compare gamification with traditional methods in higher education, particularly in critical fields such as mathematics and science.

Authors such as Suartama et al. (2024) and Xu et al. (2024) have demonstrated that gamification on digital platforms significantly enhances engagement and performance compared to conventional e-learning. However, some results present discrepancies. Temel and Cesur (2024) reported improvements in motivation without significant differences in academic performance, which aligns with findings from Hamadneh et al. (2025), who noted moderate increases in student perception and engagement. These differences suggest that the impact of gamification depends on factors such as technological infrastructure, pedagogical design, and teacher training for proper implementation.

From a theoretical perspective, the findings of this review can be interpreted through the lens of Self-Determination Theory (Ryan & Deci, 2020), which posits that learning is optimized when students experience autonomy, competence, and social connection. Gamified strategies strengthen these dimensions through progressive rewards, immediate feedback, and collaborative activities. Furthermore, the results align with Ausubel's meaningful learning framework, as gamified activities enable the contextual integration of prior knowledge with new learning (Ausubel, 1976, as cited in Delgado et al., 2025).

The contrast among the reviewed studies reveals differences in the magnitude of the observed effects. For instance, Temel and Cesur (2024) and Hamadneh et al. (2025) reported moderate improvements due to the partial use of game elements and limited teacher training, while Suartama et al. (2024) and Ruano et al. (2025) achieved stronger results by applying comprehensive platforms with multiple reward and tracking mechanisms. In summary, the effectiveness of gamification is not uniform; it depends on its pedagogical coherence, institutional context, and the level of teacher competence for its implementation.

Practically speaking, the results confirm that gamification contributes to pedagogical innovation in higher education. Studies by Cardona-Posada et al. (2025) and Mohani (2022) demonstrate improvements in academic performance and the development of transversal skills such as creativity and collaborative work. Additionally, Irunokhai et al. (2024) verified that the use of scores and leaderboards increases student participation and engagement, validating the relevance of gamification in contemporary university contexts.

Collectively, the findings allow for the conclusion that gamification overcomes the limitations of traditional methods, promoting active, motivating learning that aligns with the current digital demands of higher education.

Conclusions

The systematic review confirmed that the effectiveness of gamification strategies in higher education manifests in three complementary dimensions: cognitive, procedural, and motivational. In the cognitive dimension, gamification enhances understanding and retention of content by linking new learning experiences with prior knowledge. On the procedural plane, it promotes the development of practical skills and the application of knowledge in real or simulated contexts, strengthening autonomy and problem-solving abilities. Finally, in the motivational dimension, it increases active participation, interest, and academic satisfaction through playful dynamics and immediate feedback mechanisms.

Overall, the findings affirm that gamification represents an innovative pedagogical strategy grounded in solid psychological and educational principles that enhance meaningful learning and intrinsic motivation among university students. Therefore, it is recommended that future research develop longitudinal and comparative designs, incorporating objective performance metrics and qualitative assessments of student engagement, to establish a sustainable, adaptable, and evidence-based gamification model. This approach will enable higher education to advance toward more inclusive, participatory environments that meet contemporary digital demands.

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