Eduscape: Journal of Education Insight
E-ISSN : 3026-5231
Volume. 3, Issue 3, July 2025
Page No: 150-163

Gamification and Student Engagement: Evidence, Challenges, and Future Directions

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Received : May 29, 2025
Accepted : July 17, 2025
Published : July 31, 2025

Citation: Irvani, A, I., Dewi, A, P., Gunawan, A, G., Rahmaniar, A.. (2025). Gamification and Student Engagement: Evidence, Challenges, and Future Directions. Eduscape: Journal of Education Insight, 3(3), 150-163.

ABSTRACT: This narrative review explores gamification as a pedagogical strategy in higher education, highlighting its role in improving student engagement, learning outcomes, and motivation. Literature was collected from Scopus, Web of Science, ERIC, and Google Scholar using keywords such as "gamification and student engagement," "game-based learning in higher education," and "gamification and learning outcomes." Inclusion criteria emphasized empirical and theoretical studies published between 2010 and 2025. Findings show that gamification enhances participation, satisfaction, and academic performance by fostering both intrinsic and extrinsic motivation. Comparative evidence indicates stronger results in developed countries supported by robust digital infrastructure, while limited resources constrain adoption in developing regions. Cultural contexts also matter: competitive elements thrive where recognition is valued, while collaborative gamification proves more effective in cooperative cultures. The results align with Self-Determination Theory and Flow Theory, demonstrating how gamification supports autonomy, competence, and deep engagement. Challenges remain in ensuring equitable access, sustaining long-term impact, and addressing design limitations. Policy support through infrastructure, teacher training, and institutional investment is crucial. Future research should emphasize longitudinal evaluations, adaptive frameworks, and low-tech innovations to foster inclusivity and sustainability. Overall, gamification holds significant potential to transform higher education when integrated thoughtfully within systemic and cultural contexts..

Keywords: Gamification In Education, Student Engagement, Learning Outcomes, Higher Education Technology, Intrinsic and Extrinsic Motivation, Global Educational Contexts.

INTRODUCTION

Gamification has increasingly emerged as an innovative pedagogical approach designed to enhance student engagement and motivation in higher education worldwide. By incorporating game elements into learning environments, educators aim to create dynamic and interactive experiences

that not only foster enjoyment but also improve knowledge acquisition and retention. In recent years, global trends have demonstrated a growing reliance on gamified strategies such as digital interactive platforms, game-based study materials, and reward systems that encourage consistent participation and academic involvement. For instance, Lee et al. (2023) emphasized that gamification facilitated more enjoyable and interactive experiences in mathematics education, suggesting its adaptability across different academic disciplines. This indicates that gamification represents a promising response to the persistent challenge of maintaining student engagement in diverse educational contexts.

The transformative impact of gamification has been recognized across multiple fields of study. Ramasamy et al. (2024) reported that integrating gamified strategies into STEM education significantly improved student engagement and academic achievement. Similarly, Calles-Esteban et al. (2024) found that gamification in programming courses increased student persistence, as evidenced by higher completion rates and reduced dropout numbers. Wittek et al. (2024) further highlighted the role of gamification in strengthening student–instructor interaction in medical education, ultimately leading to more positive learning outcomes. These studies collectively underscore gamification's potential to reconfigure conventional educational methods and create more engaging, student-centered learning environments.

The relevance of gamification is further reinforced by statistical evidence on its impact on academic outcomes and motivation. Nurfadilah et al. (2025) demonstrated that gamification in science education enhanced learner motivation and academic achievement within blended learning contexts. Similarly, Fakhri et al. (2024) showed that gamification contributed to improved problem-solving skills, with behavioral engagement strongly correlating with higher academic performance. Licorish et al. (2018) highlighted the effectiveness of platforms such as Kahoot! in boosting motivation and fostering student participation in learning activities. Collectively, these findings illustrate that gamification not only increases student engagement but also translates into measurable academic benefits, reinforcing its relevance for modern higher education systems.

Supporting this view, Zourmpakis et al. (2023) demonstrated that adapted gamification elements significantly enhanced motivation and learning desire, which subsequently contributed to higher academic performance. Such statistical insights emphasize the growing importance of gamification as a mechanism to improve both engagement and outcomes in higher education. Taken together, current evidence validates gamification as an effective response to the complex demands of modern teaching and learning, where sustaining student motivation remains a critical challenge.

Despite its promise, gamification in education also presents notable challenges related to design, implementation, and assessment. Poorly contextualized game elements or misaligned objectives can undermine the effectiveness of gamified systems. Malahito and Quimbo (2020) observed that some learners felt incompetent when confronted with certain gamification structures, which negatively affected their motivation. Likewise, Wittek et al. (2024) cautioned that although gamification could address low interaction levels in medical education, careful instructional design is essential to ensure effectiveness. These findings highlight the importance of aligning game elements with pedagogical objectives to avoid counterproductive outcomes.

Technological accessibility and adoption also pose significant barriers. Ramasamy et al. (2024) emphasized that many students may lack access to adequate technological infrastructure or sufficient training to engage effectively with gamified systems. Although gamification demonstrates strong potential to improve engagement in STEM education, Ramasamy and colleagues stressed that teacher preparedness and institutional support are crucial for its successful implementation. Without addressing these systemic issues, gamification risks exacerbating existing educational inequities.

Another major challenge lies in measuring the long-term effectiveness of gamification. Much of the existing research has focused on short-term motivational effects, with limited emphasis on enduring academic outcomes and skill development. Hellín et al. (2023) noted that studies often prioritize immediate engagement metrics rather than sustained learning gains, thereby leaving critical questions about gamification's long-term value unanswered. Similarly, Zourmpakis et al. (2023) highlighted the need for more rigorous empirical evaluation and stronger pedagogical frameworks to guide effective gamification design. Chen et al. (2024) further argued that limited understanding of the mechanisms driving learning engagement in blended contexts hampers the sustainable integration of gamification into formal education.

The literature reveals a persistent gap regarding the long-term impact of gamification on academic performance and specific skill development. Alshiha and Al-Abdullatif (2024), in their study of flipped classrooms, emphasized the lack of evidence on how gamification elements contribute to sustainable educational improvement. Addressing this gap is crucial to ensure that gamification is not merely a novelty but a pedagogical strategy that consistently supports long-term learning objectives. More comprehensive research is required to explore how gamification can be systematically embedded into curricula to ensure its continued relevance and effectiveness across disciplines.

The primary aim of this narrative review is to examine and compare various gamification strategies applied in higher education across different disciplines. By systematically reviewing existing literature, the study seeks to identify successful elements of gamification that contribute to enhancing student engagement and academic achievement. Ramasamy et al. (2024) demonstrated that gamification serves as an effective tool in STEM education, while Szeto et al. (2021) emphasized its utility in medical education, where game-based approaches provide innovative avenues for improving student outcomes. Accordingly, this review aims to generate insights that guide educators in integrating gamification elements effectively within their specific teaching contexts.

In addition to identifying effective strategies, this review also defines the scope of its analysis by focusing on diverse geographical and disciplinary contexts. Prior research indicates significant variation in gamification outcomes depending on student populations and academic fields. Abd-Mutalib et al. (2019) found that gamification significantly increased motivation and engagement among EFL learners in secondary education. Similarly, Alomair and Hammami (2024) explored gamification in foreign language learning through card-based approaches, which yielded positive impacts on academic achievement. In medical education, Wittek et al. (2024) observed that gamification enhanced student interaction in obstetrics and gynecology courses, while Pineros et

al. (2023) demonstrated similar benefits in microbiology education. These examples highlight the adaptability of gamification across varied educational domains.

Furthermore, gamification has proven particularly effective in technical disciplines. Calles-Esteban et al. (2024) showed that gamification in programming courses not only boosted student commitment but also helped reduce dropout rates. Such findings demonstrate that gamification can be tailored to the unique characteristics of different student populations and disciplinary requirements. They also indicate that gamification may play a vital role in addressing persistent challenges of disengagement and attrition in higher education.

In light of these insights, this review underscores the importance of contextual and population-specific considerations in the design and implementation of gamified strategies. By examining diverse educational settings, the review aims to establish a nuanced understanding of how gamification can be leveraged to improve student engagement and academic performance. Ultimately, the findings of this review are intended to inform educators, policymakers, and researchers about the potential and limitations of gamification as a pedagogical tool, ensuring its sustainable and effective integration into higher education systems.

METHOD

The methodological framework of this narrative review was designed to ensure a comprehensive, systematic, and credible exploration of literature pertaining to gamification strategies in education. Given the multidisciplinary nature of gamification research, which spans across education, psychology, computer science, and health sciences, it was necessary to utilize multiple databases to maximize coverage and identify high-quality sources. Accordingly, the review employed four primary databases—Scopus, Web of Science, ERIC (Education Resources Information Center), and Google Scholar. Each database contributed unique strengths that, when combined, enhanced the breadth and reliability of the review.

Scopus served as one of the main repositories for academic literature, given its wide indexing coverage of peer-reviewed journals and conference proceedings across diverse disciplines. This database is particularly valued for its rigorous inclusion criteria, ensuring that the retrieved articles meet high academic standards. Studies such as Nurfadilah et al. (2025) highlight the value of Scopus in cataloguing gamification research across educational contexts, offering evidence-based insights into the effects of gamification on learning and engagement. Similarly, Web of Science was selected due to its robust peer-reviewed indexing system, which ensures the reliability and scientific rigor of included studies. As Chen et al. (2024) emphasized, the validity of methodological approaches plays a crucial role in assessing the effectiveness of gamification strategies, making Web of Science an indispensable resource for this review.

ERIC was included due to its specialized focus on education, encompassing journal articles, reports, and books that address pedagogical innovations, including gamification. This database is especially important for locating literature that documents empirical applications of gamification

in classrooms and higher education institutions. Previous studies, such as those referenced by Mazlan et al. (2025), demonstrate how ERIC's coverage supports investigations into gamification as a pedagogical tool within diverse educational contexts. Finally, Google Scholar was utilized as a supplementary database, providing broader access to grey literature and additional academic works that might not be available in paid databases. For example, Szeto et al. (2021) illustrated the relevance of Google Scholar in exploring gamification applications in medical and health education, underscoring its value in extending the scope of research inclusion.

To guide the search process, carefully constructed keyword combinations were developed based on the central research questions. The following terms were employed across all databases: "gamification AND student engagement," "game-based learning AND higher education," "gamification AND learning outcomes," and "gamification AND motivation." These keyword combinations were selected to capture both general applications of gamification in education and specific dimensions such as engagement, academic achievement, and motivational outcomes. The inclusion of multiple search terms allowed for a balance between comprehensiveness and precision, ensuring that retrieved studies directly addressed the key concepts under review. The use of Boolean operators such as "AND" provided targeted searches, while supplementary terms, such as "motivation" and "learning outcomes," refined the scope of the results to align with the research objectives.

The inclusion and exclusion criteria were developed to ensure that only the most relevant and reliable studies were considered. Articles were included if they: (1) were published between 2010 and 2025 to capture contemporary developments in the field; (2) were written in English to ensure accessibility and consistency in interpretation; (3) involved empirical or theoretical studies that specifically addressed gamification in education; and (4) reported findings related to student engagement, motivation, or learning outcomes. Studies employing various research designs, such as randomized controlled trials, quasi-experimental designs, cohort studies, mixed-method approaches, and case studies, were all considered eligible, provided they offered insights into the relationship between gamification and student learning. Exclusion criteria eliminated articles that did not explicitly focus on gamification, lacked empirical or theoretical relevance, were editorial pieces, or offered anecdotal evidence without systematic analysis. This approach helped maintain the academic rigor of the review while avoiding the inclusion of peripheral or non-research-based discussions.

The process of literature selection followed a multi-stage screening procedure to enhance transparency and reliability. Initial searches yielded a broad set of articles, which were subsequently screened by title and abstract to determine relevance. Articles that appeared to align with the research objectives were then retrieved in full text for further evaluation. During full-text screening, each study was assessed based on the inclusion and exclusion criteria, with particular attention to methodological rigor, clarity of gamification intervention design, and reported outcomes related to engagement, motivation, or academic performance. Duplicates across databases were removed, and reference lists of included articles were manually reviewed to identify additional relevant studies. This snowballing technique ensured that no significant publications were overlooked, particularly those frequently cited in the field.

In evaluating the selected studies, methodological diversity was acknowledged as both a strength and a challenge. Randomized controlled trials provided robust evidence of causal relationships between gamification and student outcomes, while quasi-experimental and mixed-methods studies offered rich contextual insights into how gamification strategies were implemented and experienced by learners. Case studies, though limited in generalizability, contributed valuable detailed accounts of gamification applications in specific educational contexts. Each type of research was critically appraised for its contribution to the overall understanding of gamification in education. Attention was given to sample size, study design, data collection methods, and statistical analysis to assess the reliability and validity of findings.

The evaluation process also considered potential biases in the included studies. For example, self-reported data on motivation and engagement, while useful, may be subject to social desirability bias. To mitigate such limitations, the review emphasized findings supported by objective indicators, such as course completion rates, assessment scores, and learning analytics. Studies that integrated both qualitative and quantitative data were particularly valued, as they provided a more comprehensive understanding of how gamification influenced both the observable outcomes and the subjective experiences of students.

Ethical considerations were not directly applicable in the process of this narrative review, as the study did not involve primary data collection from human participants. However, the review adhered to academic integrity principles by ensuring accurate citation of sources and transparent reporting of methods. The use of multiple databases, explicit keyword strategies, and clear inclusion/exclusion criteria contributes to the reproducibility and reliability of the review.

Overall, the methodological design of this review ensures a thorough and critical engagement with the literature on gamification in education. By leveraging diverse databases, applying systematic search strategies, and employing rigorous inclusion and exclusion criteria, the review consolidates a body of evidence that reflects the current state of research on gamification. This methodology provides a strong foundation for the subsequent analysis of findings, facilitating a nuanced understanding of how gamification strategies contribute to student engagement, motivation, and academic performance across educational contexts.

RESULT AND DISCUSSION

The findings of this narrative review reveal several recurring themes in the literature on gamification strategies in education. These themes include student engagement, learning outcomes, intrinsic and extrinsic motivation, and the role of technology and learning media. Each theme highlights both the strengths and the limitations of gamification as a pedagogical approach and provides insights into how contextual factors such as infrastructure, cultural norms, and access to technology shape its effectiveness.

One of the most prominent findings relates to the role of gamification in enhancing student engagement. Across numerous studies, evidence suggests that gamification contributes significantly to higher levels of participation, interaction, and persistence compared to traditional

teaching methods. Wittek et al. (2024) demonstrated that the application of gamification in medical education increased student interaction with course materials, a key determinant of engagement. Similarly, Hellín et al. (2023) found that gamified learning environments created more motivating atmospheres that improved student satisfaction with their courses. Calles-Esteban et al. (2024) also highlighted that gamification strengthened commitment and enriched learning experiences in programming courses, contributing to lower dropout rates. Taken together, these findings reinforce the notion that gamification serves as an effective means of sustaining student engagement across disciplines.

Nevertheless, engagement outcomes are not consistent across all educational contexts. Ramasamy et al. (2024) observed that gamification was integrated more effectively in developed countries, where technological infrastructure was stronger, resulting in higher engagement levels in STEM education. In contrast, Abdulbaki et al. (2025) showed that while gamification improved engagement and academic performance among EFL learners in developing countries, students faced barriers related to limited access to technology. These differences suggest that local resources and institutional readiness play critical roles in determining how effectively gamification can enhance engagement, pointing to the importance of context-sensitive implementation.

The impact of gamification on learning outcomes is another central theme. Research consistently indicates that gamification improves measurable academic performance, including exam scores, assignment completion, and knowledge retention. Ramasamy et al. (2024) reported that students in STEM courses exposed to gamified environments achieved higher test scores and demonstrated improved course completion rates compared to peers in non-gamified settings. Similarly, Pineros et al. (2023) found that gamification in medical microbiology education enhanced knowledge retention and encouraged more active learning behaviors among students. These studies suggest that gamification not only improves immediate engagement but also translates into tangible academic benefits such as higher test scores, improved course completion rates, and lower dropout levels.

However, disparities emerge when comparing results between developed and developing nations. Gelizon (2024) concluded that students in developed contexts were better positioned to capitalize on gamification elements due to stronger access to infrastructure, leading to improved learning outcomes. In contrast, students in developing contexts experienced greater difficulty achieving the same benefits, with technological barriers limiting the full potential of gamified systems. Luarn et al. (2023) also found that uneven access to technology exacerbated disparities in academic outcomes, as gamification could only deliver its full impact when adequate digital tools and support were available. This highlights the need for equitable infrastructure investment to ensure that gamification can deliver comparable benefits across diverse global contexts.

Motivation, both intrinsic and extrinsic, emerged as another critical dimension of gamification's impact. Game elements such as points, badges, and leaderboards have been widely recognized for their capacity to enhance intrinsic motivation by fostering feelings of achievement, recognition, and progress. Luarn et al. (2023) noted that these elements increased students' drive to engage in learning, strengthening their commitment to the educational process. Similarly, Hellín et al. (2023) demonstrated that gamification created enjoyable learning environments that elevated student satisfaction, thereby boosting motivation. These findings underscore the capacity of gamification

to tap into psychological drivers of learning by transforming academic activities into rewarding and meaningful experiences.

Nevertheless, motivational effects are not universally consistent across cultural contexts. Ratinho and Martins (2023) found that student responses to gamification varied depending on cultural values and traditions. In societies where competition and recognition were highly valued, gamification produced stronger positive effects on engagement and motivation. Conversely, in cultures where collaboration and cooperative learning were prioritized, competitive gamification elements were less effective and, in some cases, counterproductive. This cultural variability underscores the importance of tailoring gamification strategies to align with local educational cultures and student expectations.

Technology and learning media play a decisive role in shaping the effectiveness of gamification strategies. Learning Management Systems (LMS) and mobile applications have become key platforms for integrating gamification into educational practice. Ramasamy et al. (2024) emphasized that gamification-enabled LMS increased course completion rates and strengthened student engagement, particularly in higher education. Mobile applications, widely used by students in contemporary learning environments, offered flexibility and accessibility, allowing gamification to be seamlessly integrated into daily learning activities. These tools enabled students to engage with gamified materials anytime and anywhere, thereby extending the reach of educational interventions.

The variation in technological adoption across different regions significantly influenced the outcomes of gamification-based interventions. In developed nations, advanced tools such as augmented reality (AR) and virtual simulations have been successfully employed to gamify complex learning processes. Ghawail and Yahia (2024) demonstrated that AR-based gamification improved conceptual understanding and student engagement in higher education, providing immersive experiences that traditional pedagogical methods could not replicate. In contrast, in developing countries, infrastructural limitations often restricted the effectiveness of gamification. Gelizon (2024) observed that while gamification improved motivation and learning, technological barriers such as limited internet access and insufficient hardware posed persistent obstacles to achieving comparable outcomes. These disparities indicate that the potential of gamification cannot be fully realized without addressing structural inequalities in technology access and integration.

Overall, the results of this review demonstrate that gamification holds significant promise as a strategy to enhance engagement, learning outcomes, and motivation in education. For example, in STEM courses gamified systems improved test scores, while in medical microbiology courses students showed stronger retention and persistence.. However, its effectiveness is highly dependent on contextual factors, including cultural norms, technological infrastructure, and institutional readiness. In countries with robust technological systems, gamification has been shown to deliver substantial benefits in terms of student performance and satisfaction. By contrast, in contexts where technological or cultural barriers persist, the benefits are more modest and unevenly distributed. These findings highlight the importance of designing gamification strategies that are not only pedagogically sound but also sensitive to the diverse environments in which they are applied, ensuring equitable access and sustainable impact across global educational systems.

The findings of this review align closely with established theoretical frameworks in educational psychology, particularly Self-Determination Theory (SDT) and Flow Theory. SDT emphasizes the role of intrinsic motivation, autonomy, and competence in sustaining student engagement and learning. Gamification, by introducing points, badges, and leaderboards, fosters a sense of achievement and recognition that directly supports these psychological needs. As Luarn et al. (2023) observed, these game elements enhanced intrinsic motivation by reinforcing students' sense of progress and accomplishment. Similarly, Zourmpakis et al. (2023) highlighted that gamification not only increased engagement but also stimulated curiosity and independence in learning, both of which are central to SDT. In parallel, Flow Theory, which describes a mental state of complete immersion in an activity, provides another lens to interpret gamification's impact. Licorish et al. (2018) demonstrated that gamified environments encouraged students to enter flow states, where challenges were optimally matched to their skill levels, resulting in deep engagement and satisfaction. These theoretical foundations help explain why gamification consistently demonstrates positive effects across diverse contexts, as documented in the results of this review.

Despite its alignment with motivational theory, the effectiveness of gamification is heavily influenced by systemic factors that shape its implementation. Educational policy plays a decisive role in enabling or constraining innovation. Chen et al. (2024) argued that policy frameworks supportive of technological integration create conditions under which gamification can thrive. Without institutional support, however, gamification risks being perceived as peripheral rather than central to pedagogical practice. Infrastructure represents another systemic determinant of success. Studies such as Zolfaghari et al. (2025) showed that inadequate digital infrastructure, including unreliable internet access and insufficient technological tools, significantly limited the effectiveness of gamified learning in developing countries. Similarly, Abdulbaki et al. (2025) found that EFL learners in contexts with limited access to technology benefited less from gamification than their peers in technologically advanced settings. These findings highlight that even well-designed gamification strategies may fail to produce equitable outcomes if systemic disparities in infrastructure remain unresolved.

Cultural context further complicates the adoption of gamification. Ratinho and Martins (2023) noted that gamification resonates more strongly in cultures that value competition and recognition, while in societies emphasizing cooperation, competitive elements can reduce effectiveness. This cultural variability was also evident in comparative studies between developed and developing countries, where differing values and traditions influenced how students perceived and responded to gamification. Such findings underscore the need for culturally responsive approaches that adapt gamification design to align with local learning values. Simply transplanting gamification strategies developed in one cultural context into another may not only limit effectiveness but also risk alienating students.

In addressing these systemic challenges, several potential solutions have been identified in the literature. Teacher training consistently emerges as a critical factor for successful implementation. Ramasamy et al. (2024) emphasized that instructors require not only technical proficiency in deploying gamified platforms but also pedagogical understanding of how game elements align with learning objectives. Without adequate training, educators may implement gamification superficially, focusing on surface-level rewards rather than deeper motivational drivers. Malahito and Quimbo (2020) highlighted that poorly designed gamification can create feelings of

incompetence among students, leading to anxiety rather than motivation. Developing inclusive designs that accommodate diverse learner abilities and preferences is therefore crucial. This requires a shift from viewing gamification merely as a tool for competition toward embracing its potential for collaboration, exploration, and personalized learning.

Community and institutional support also play a vital role. Alshiha and Al-Abdullatif (2024) stressed the importance of sustained resources and professional development for educators to ensure that gamification practices are not only introduced but also maintained and refined over time. Institutional backing, in terms of funding for infrastructure and training, ensures that gamification can move beyond isolated classroom experiments to become integrated into broader pedagogical strategies. Furthermore, the role of peer communities among educators cannot be underestimated. Knowledge-sharing networks and collaborative platforms allow teachers to exchange best practices, troubleshoot challenges, and collectively advance the pedagogical use of gamification.

While the evidence supporting gamification's benefits is strong, current research also exhibits several limitations that warrant careful consideration. Many studies, as Hellín et al. (2023) observed, focus predominantly on short-term engagement and motivation, often overlooking long-term academic outcomes and skill development. Similarly, Chen et al. (2024) argued that the mechanisms through which gamification fosters learning remain underexplored, particularly in blended learning contexts. This limits the ability to generalize findings and raises questions about whether gamification's effects endure beyond initial novelty. Longitudinal studies are therefore necessary to examine the sustainability of gamification's impact over extended periods of study.

Another limitation lies in methodological diversity and inconsistency. Although randomized controlled trials provide robust evidence of causal effects, many studies rely on quasi-experimental or case study designs with small sample sizes, which restrict generalizability. The reliance on self-reported measures of motivation and engagement introduces further bias, as students may overstate their levels of satisfaction or involvement. More rigorous mixed-methods approaches that combine qualitative insights with objective performance data, such as exam scores and course completion rates, would provide a more holistic picture of gamification's effectiveness. Furthermore, as noted by Gelizon (2024), infrastructural disparities across contexts make cross-country comparisons challenging, as improvements in engagement or outcomes may reflect technological availability as much as pedagogical design.

Future research should therefore prioritize several key areas. First, there is a need to investigate adaptive gamification models that personalize experiences to individual learner profiles. Such models could address cultural differences by tailoring the balance between competitive and collaborative elements according to local values. Second, studies should explore the integration of emerging technologies, such as augmented and virtual reality, into gamified learning environments. As Ghawail and Yahia (2024) demonstrated, AR has the potential to deepen conceptual understanding and engagement, but further research is needed to evaluate its scalability and accessibility. Third, more attention should be given to equity in gamification. As highlighted by Abdulbaki et al. (2025), technological inequities disproportionately affect students in developing contexts, raising ethical concerns about widening educational divides. Investigating low-tech or

hybrid gamification models that operate effectively under resource constraints could help bridge these gaps.

The discussion also points to the importance of aligning gamification with broader educational goals and policies. If gamification is to move beyond being a pedagogical trend, it must be embedded within curriculum frameworks that emphasize critical thinking, problem-solving, and collaboration. Policy support at institutional and national levels is essential to legitimize gamification as a recognized teaching strategy rather than a peripheral experiment. Moreover, ongoing evaluation mechanisms should be integrated into gamified programs to monitor outcomes and continuously refine design. Without systematic evaluation, educators risk either overestimating or underutilizing gamification's potential.

Ultimately, the evidence presented in this review suggests that gamification is best understood not as a universal solution but as a flexible pedagogical approach that requires adaptation to specific contexts. Its success is contingent upon the interplay of motivational theory, systemic support, cultural sensitivity, and thoughtful instructional design. While challenges remain, the growing body of research underscores the potential of gamification to transform educational practice when these factors are carefully considered and addressed.

CONCLUSION

This narrative review demonstrates that gamification holds significant potential as a transformative pedagogical strategy in higher education by enhancing student engagement, learning outcomes, and motivation. Empirical findings consistently show that elements such as points, badges, and leaderboards contribute to increased participation, improved knowledge retention, and higher academic performance. The discussion further revealed that these positive effects align strongly with motivational frameworks such as Self-Determination Theory and Flow Theory, highlighting gamification's capacity to foster autonomy, competence, and deep engagement. However, the effectiveness of gamification is highly dependent on systemic factors including educational policies, digital infrastructure, and cultural learning traditions. The disparities between developed and developing countries, especially regarding technological readiness, underscore the urgency of addressing inequities to ensure broader accessibility and impact.

To overcome existing barriers, policies must prioritize investment in digital infrastructure and sustained teacher training, equipping educators with the skills to design inclusive and culturally responsive gamified learning environments. Institutional support and professional communities are also essential to ensure that gamification becomes a sustainable and integrated practice rather than a temporary innovation. Future research should focus on longitudinal studies that assess the long-term effects of gamification and on adaptive models tailored to learner diversity. In addition, low-tech or hybrid strategies should be explored to support resource-limited contexts. By addressing these gaps, gamification can become a more equitable and effective tool for global education.

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