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Gamification In Education: Exploration Through Reviews

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Abstract

This study investigates how gamification affects learning results and student motivation in online and hybrid learning settings. The research emphasizes how gamified instructional design, with features like points, badges, leaderboards, and instant feedback, can improve learners' autonomy, competence, and engagement. It does this by drawing on empirical studies and theoretical frameworks, especially Self-Determination Theory (SDT). Two groups were compared using a quasi-experimental methodology: one group received traditional training, while the other group participated in gamified learning activities. Interactive digital learning was facilitated using tools like Kahoot! Quizlet, and Duolingo. To evaluate how learner performance had changed, pre- and post-tests were administered. The gamified group's motivation, engagement, and conceptual understanding all significantly improved, according to the results. The study highlights the significance of careful and long-term implementation by taking into account the possible negative effects of badly designed gamification, such as elevated pressure and shallow engagement. The results indicate that gamification is a successful pedagogical approach for improving digital learning when game features are purposefully incorporated with curriculum objectives. To guarantee long-term efficacy in a variety of educational contexts, this review ends by promoting more flexible, learner-centered gamified techniques that complement upcoming educational technologies like AI and VR.

Key words: Gamification, Learner-centred gamified techniques, Kahoot, ClassDojo, MinecraftEdu

1. INTRODUCTION

Gamification is "the use of game design elements in non-game contexts" (p. 1), according to Deterding et al. (2011). This definition emphasizes the fundamental concept of using game components to enhance user experience across a range of fields, including education.

Gamification is used in the field of education to make conventional learning exercises more interesting. According to recent studies, gamification is becoming more and more popular and has a favourable effect on a range of academic subjects and educational levels. Huseinović (2024) and Korkmaz (2020) conducted quasi-experimental studies that showed how gamified platforms improved student interest and performance in social science and English classes. Similar to this, gamification facilitates both individual and group learning in blended learning settings by assisting students in making the connection between abstract ideas and real-world, hands-on experiences (Mohamad, 2018). Understanding the complex effects of gamification on student motivation and learning outcomes is crucial as educational institutions embrace hybrid models of instruction more and more. To pinpoint best practices and upcoming tactics for optimizing gamification's efficacy, this review paper examines empirical data and theoretical frameworks about gamification in online and hybrid contexts.

The COVID-19 epidemic has expedited the shift toward online and hybrid learning, bringing to light the shortcomings of conventional teaching techniques in virtual environments. The lack of in-person interaction and spontaneity in online learning frequently results in lower motivation and higher dropout rates. Teachers have responded by using gamification to reframe education as an activity motivated by rivalry, teamwork, curiosity, and ongoing feedback. In addition to being games, tools like Kahoot! Quizizz, ClassDojo, and MinecraftEdu are educational platforms made to support curriculum objectives and keep students engaged in their learning process (Cózar-Gutiérrez, 2016; Nyćkowiak, 2023). Fundamentally, gamification uses game features like quests, levels, leaderboards, medals, and points to encourage a sense of advancement and accomplishment. Self-Determination Theory (SDT), which holds that learners' motivation is increased when they feel competent, autonomous, and linked, is in line with this approach. By incorporating these psychological demands into the framework of classes, gamified learning environments encourage students to take ownership of their education (Mohamad, 2018). Additionally, research indicates that gamification may improve intrinsic motivation, which could result in increased engagement and better cognitive performance (Gökçe Pelin Türkmen, 2019). Notwithstanding its potential, gamification's efficacy varies depending on the context and student body. For example, while some students do well in competitive settings, others may feel anxious or less motivated as a result of continuous performance evaluation (Eva Jablonka, 2017). Furthermore, gamification done poorly, with game components that are shallow or unrelated to learning goals, might produce
short-lived novelty effects. Therefore, while incorporating gamified tactics, educators need to take a deliberate and learner-centered approach.

2. REVIEW OF RELATED LITERATURE

In modern education, gamification has grown in popularity as a teaching method, particularly in online and mixed learning settings. Gamification, defined as the use of game-design features outside of games (Deterding, Dixon, Khaled, & Nacke, 2011), aims to increase the motivation, engagement, and interactivity of learning experiences. To investigate how gamification affects student motivation and learning outcomes, especially in digital learning environments, this literature review looks at a variety of empirical research and theoretical perspectives.

1. Morote Seguid (2024) surveys 125 students in a variety of academic subjects to investigate how Spanish university students use gamification in geography classrooms. According to the study, even though they had little experience with it before, students thought gamification was a fun and useful teaching method that used interactive maps, Kahoot, and strategic games. Nonetheless, the study highlights that gamification needs to be properly included into the curriculum and teacher preparation for the best outcomes.
2. Jang (2024) investigates how gamification affects economic behavior in South Korea through mobile fitness apps by analyzing data from 7,558 users across 170 localities. Spatial disparities in spending behavior are revealed by the study, which shows that social integrative benefits decrease purchasing activity while epistemic and social integrative benefits enhance shopping frequency. The study adds to the domains of behavioral economics, spatial analytics, and tourism marketing by highlighting the significance of location-based gamification tactics for companies and local governments.
3. The development of "BHASHA," an interactive web-based platform intended to enhance the learning of Indian languages such as Tamil, Bengali, Gujarati, and Hindi, is the main emphasis of Patel (2024). The platform incorporates user-centric design and visual communication to engage learners through gamified elements including challenges, quizzes, and interactive writing systems. The findings demonstrate how BHASHA effectively promotes linguistic variety in the digital era by increasing accessibility and engagement in learning intricate Indian scripts.
4. Huseinović (2024) evaluated the effect of gamification on English language acquisition in higher education using a quasi-experimental approach with pre- and post-tests. The study discovered that gamification greatly increased student enthusiasm, engagement, and language proficiency using Quizizz and Kahoot! applications.
5. Nyćkowiak (2023) investigated gamification in education using digital tools like ClassDojo, Kahoot! and Morpa Campus, focusing on aspects like point systems, badges, and leaderboards. Games such as "I Will Shoot a Basket," "Crazy Racket," and "Keep Dancing" encourage participation, teamwork, and

memory retention. The study comes to the conclusion that these tactics improve self-evaluation, motivation, and a joyful learning atmosphere.

4. Using data from Scopus from 2017 to 2022, Supriyadi (2022) performed a bibliometric analysis to investigate gamification trends in math instruction using Excel and SciVal. The study demonstrates gamification's increasing influence on engagement and educational outcomes and points to a growing research interest, especially in Indonesian elementary-level learning.

6. Baiden (2022) uses a quasi-experimental approach with 100 students to examine how gamification affects the motivation and engagement of Ghanaian senior high school home economics students. According to the study, students' interest and performance in drawing exercises were much enhanced by gamification, which included elements like levels, leaderboards, badges, and points. The findings imply that gamification is a successful teaching method for raising student interest and learning.

7. The usefulness of gamification—specifically, memory games—in teaching history to primary school pupils is examined by Sivakumar (2022). According to the study, the experimental group, which played memory games, performed better academically than the control group, demonstrating increased focus, engagement, and recall of historical information. The findings imply that by encouraging cognitive engagement, gamification, particularly memory games, improves learning outcomes

8. In Jember, Indonesia, Siswati (2021) uses the Plomp development paradigm to create gamification-based biology learning materials for senior high school students in an industrial agricultural area. According to the study, the gamification approach, which included interactive
learning elements, successfully raised student interest and engagement. Expert validation also confirmed the usefulness and efficacy of the resources in improving educational possibilities.

9. The impact of gamified student response systems (GSRS), such as Kahoot!, on anxiety levels in introductory biology lectures at two American institutions is investigated by Adkins-Jablonsky (2021). According to the study, Kahoot!'s features—such as leaderboards, time limitations, and points—improve engagement and lessen anxiety without adding to stress, particularly for students who perform poorly. According to the findings, gamification may be a useful tactic for raising student interest and reducing nervousness in biology classrooms.

10. Moreno-Delacruz (2021) uses the "Strategies and Markets in Economics" (EMERCO) simulation game with 135 participants to investigate the effects of gamification on teaching economics to college students who are not majoring in the field. In comparison to traditional teaching techniques, the study reveals that gamification—which incorporates awards, competitiveness, and strategic decision-making—improves students' academic performance and grasp of economic topics, leading to considerable grade gains.

11. Yığ (2021) used social network, lexical, and content analysis to provide an exploratory holistic investigation of gamification in mathematics education. The study emphasizes how gamified technologies, especially those with features like leaderboards, levels, and challenges, can improve engagement, achievement, and problem-solving skills, particularly in elementary school.

12. Korkmaz (2020) used a quasi-experimental pre- and post-test methodology to examine how gamification affected students' attitudes, cooperative learning, and academic achievement in a Social Studies course. Comparing tools like Crazy Racket and quiz-based games to more conventional approaches, the former greatly increased student motivation, engagement, and achievement.

13. Using a mixed-method approach, Türkmen (2019) investigated how gamification affected the attitudes and mathematical performance of fifth-grade pupils using EBA games. The study discovered no statistically significant gain in achievement levels, despite the fact that gamification raised student interest and engagement.

14. Hursen (2019) used a mixed-method approach that included pre/post exams and interviews to examine how ClassDojo can be used to increase students' engagement in scientific classes. According to the study, gamification with badges and feedback greatly increased motivation, engagement, and communication. Parents and students also had favorable opinions about this approach.

15. Rai (2019) explored gamification in biology education using gamified lesson plans, modules, and virtual lab simulations based on the Plomp development model. The study, conducted with senior high school students, showed significant improvements in comprehension, motivation, and engagement. The findings support gamification as an effective strategy for creating dynamic and engaging biology learning environments.

16. By evaluating the literature on popular gamification features including badges, points, levels, and leaderboards, Octaviati (2018) investigates how gamification can improve student motivation and engagement in computer science education. According to the study, these elements enhance students'

performance, motivation, and engagement in courses like programming, cloud computing, and data structures. It also draws attention to the fact that poorly thought-out gamification techniques can lower motivation, underscoring the necessity of cautious application.

17. Shavab (2018) investigates how gamification might be used in history classes to improve student engagement by introducing elements like leaderboards, levels, badges, and points using programs like Kahoot!, Socrative, and Minecraft: Education Edition. Gamification makes learning more dynamic and engaging by increasing motivation, curiosity, teamwork, and historical recall, according to the study. Finally, it encourages originality and involvement in history lessons.

18. The Game Development Life Cycle (GDLC) technique was used in the study "Gamification for Elementary Mathematics Learning" by Yogi Udjaja (2018) to produce interactive learning materials that were enriched with multimedia components such as text, graphics, sound, and animations. The study discovered that gamification greatly enhanced students' mathematics abilities using pre-test and post-test assessments; however, improvements in animations and visuals might increase engagement even more.

3. CONCLUSION

There is strong evidence from empirical studies by Huseinović (2024), and Korkmaz (2020) that gamification can boost student motivation in a variety of disciplines and educational levels. According to these studies, gamified tactics increase participation rates, boost academic achievement, and foster more positive attitudes about learning. Notably, the advantages are seen in quantifiable learning results as well as student motivation, particularly when game components are incorporated into fundamental teaching strategies rather than being viewed as flimsy extras.

The literature study highlights the increasing importance and revolutionary possibilities of gamification in contemporary education, especially in online and mixed learning settings. Gamification is not just a fad but a scientifically supported teaching approach that can improve learning results and student motivation as educational institutions continue to adjust to digital transformation and hybrid instructional models.

Furthermore, gamification's usefulness for online and blended learning is increased by its adaptation to different technical platforms. Tools that promote interactive and collaborative learning, such as Kahoot!, Quizizz, ClassDojo, and MinecraftEdu, help to counteract the loneliness that is frequently connected to distance learning. In virtual classrooms, these tools

In conclusion, research supports the idea that gamification can improve educational experiences by increasing their impact, engagement, and participation. However, planned execution, ongoing assessment, and comprehension of the various requirements of learners are necessary for success. Future studies should examine the long-term effects of gamification, cross-cultural applicability, and the incorporation of cutting-edge technology like artificial intelligence (AI) and augmented reality (VR) into gamified learning settings as the digital world continues to change. In the end, gamification should be seen as a pedagogical innovation that has the power to transform how students engage with peers, content, and the learning process itself, rather than only as a tool for incentive.

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