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Challenges with Gamification in Higher Education: A Narrative Review with Implications for Educators and Policymakers

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Abstract: This narrative review critically examines the application of gamification in higher education. Gamification, the integration of game elements into learning, is increasingly used to enhance student engagement and motivation. However, the effectiveness of gamification depends on its alignment with learning objectives. Superficial use of game elements, such as irrelevant badges, can hinder meaningful learning outcomes. Moreover, over-reliance on extrinsic rewards can lead to short-term motivation but may compromise deep learning. Additionally, a competitive culture fostered by gamification might hinder collaboration and stress individual achievement. To harness gamification's benefits, educators must carefully design game mechanics to promote collaboration, select suitable activities, and consider diverse learning styles. This review underscores the need for thoughtful integration of gamification and the importance of evaluating its impact on pedagogical goals in higher education. The article concludes by providing implications for research and practice.

Keywords: higher education, game-based learning, gamification, classroom technology, pedagogy, motivation, challenges

1. Introduction

There is increasing pressure to innovate the modern classroom (Bist et al., 2022; Fuchs, 2022a; Serdyukov, 2017) and increase the integration of technology-enhanced learning (TEL) methods in an attempt to improve the quality of education (Al Maani & Shanti, 2023; Yu, 2022). TEL is the implementation of technology into teaching methods to enhance the learning process (Zourmpakis et al., 2022). This can take many shapes and forms, wherein gamified learning (or gamification of learning) is a popular method (Rodrigues et al., 2022). Gamification in higher education refers to the integration of game mechanics and design principles into the learning experience in order to increase student motivation, engagement, and retention (Gironella, 2023).

Gamification can take many forms, such as incorporating point systems, leaderboards, badges, and other game-like elements into traditional coursework, or creating educational games that simulate real-world situations and challenges (Ghai & Tandon, 2023). One of the reasons why gamification is so popular in higher education is that it has been shown to be effective in increasing student engagement and motivation (Thurairasu, 2022). When students are immersed in a game-like environment, they are more likely to become invested in the learning experience, which can lead to improved academic performance and retention (Aguilos et al., 2022; Gironella, 2023; Ghai & Tandon, 2023; Thurairasu, 2022).

Additionally, gamification can help students develop critical thinking and problem-solving skills, as well as promote collaboration and teamwork (Gironella, 2023). However, despite its popularity, gamification in higher education is not without its critics. Some argue that gamification can be superficial, with game-like elements added to the learning experience without fully integrating them into the underlying curriculum (Landers & Sanchez, 2022). Alzahrani and Alhalafawy (2023) argue that gamification can create a culture of competition that may not be conducive to collaborative learning and may discourage some students from participating.

Through this narrative literature review, I will academically discuss a range of challenges for higher education, as well as conclude with implications that (hopefully) expose gaps in the literature, stimulate research ideas, and finally, advance the discussion about gamified learning in higher education. Furthermore, the review examines the nuances of gamification implementation, critically analyzes its impact on student engagement and collaboration, and assesses its alignment with educational goals. By doing so, this research aims to clarify the potential drawbacks of gamified learning, ultimately contributing to a more nuanced understanding of its role in modern education.

2. A Narrative Literature Review

Literature reviews can be broadly classified as either systematic or narrative. Each type serves distinct purposes within the realm of research synthesis (Snyder, 2019). Narrative reviews are characterized by their holistic and interpretive

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approach to summarizing existing literature on a particular topic (Baethge et al., 2019; Grant & Booth, 2009). Unlike systematic reviews, which follow a rigorous and predefined protocol to gather, assess, and synthesize evidence, narrative reviews offer a more flexible and subjective exploration of the literature (Baethge et al., 2019). In a narrative review, the researcher typically identifies key studies, discusses their findings, and provides an overarching narrative that synthesizes the existing knowledge (Paré et al., 2015). This approach allows for a deeper exploration of the topic's nuances and a more comprehensive understanding of its historical and conceptual development (Snyder, 2019).

Narrative reviews are particularly valuable when a researcher seeks to provide context by establishing the evolution of a research area (Baethge et al., 2019). Moreover, narrative reviews can help bridge the gap between research and practice by offering practical insights, implications, or recommendations based on the collective wisdom of existing studies (Baethge et al., 2019). In narrative reviews, a format akin to empirical research articles is often used, featuring an introductory section to set the stage and a concluding summary to consolidate insights (Baethge et al., 2019; Grant & Booth, 2009). Notably, narrative reviews grant authors the flexibility to incorporate headings as needed, enhancing readability and organization (Baethge et al., 2019; Grant & Booth, 2009).

3. Gamification and Its Challenges

The concept of gamification involves incorporating game elements, mechanics, and design into non-game contexts, such as education (Zourmpakis et al., 2022). However, I support Sailer and Homner's (2020) argument that the mere inclusion of game elements in an educational context may not be sufficient to create an effective learning experience. Here, the problem with gamification is that it can be superficial if the game elements are not supported by a strong and relevant underlying learning experience (Rapp et al., 2019). In other words, if the game elements are not aligned with the learning objectives, they may not lead to meaningful learning outcomes.

A quiz, for example, could be gamified by giving students points for answering questions correctly. While this may add an element of competition and excitement to the quiz, it does not necessarily enhance the learning experience (Bicen & Kocakoyun, 2018). Moreover, if the quiz questions are not relevant or challenging, students may simply memorize the answers to earn points rather than engage in deep learning. This is supported by Kruse et al. (2022) who state that "students mistakenly equate learning with memorization". In this case, the game elements are superficial and may not lead to meaningful learning outcomes (Magana et al., 2022).

The term "higher education" is tertiary education leading to the award of an academic degree (Altbach, 1999). This category of education predominantly encompasses universities, colleges, and specialized institutions, all of which provide diverse academic programs and degrees, as also noted by Altbach (1999). While this article primarily centers its discussion on higher education, it is important to clarify that the case studies and examples presented herein are geared toward undergraduate degrees. This distinction is essential as undergraduate programs possess significantly different characteristics compared to graduate studies (Fuchs, 2022a). This context ensures a clear understanding of the article's focus.

3.1. Superficial outcomes

While badges can be an effective motivator for some students, they can also be seen as superficial if they are not aligned with the learning objectives (Qiao et al., 2022). If the badges are not meaningful or relevant, students may not value them and may not be motivated to earn them (Qiao et al., 2022). This can lead to a lack of engagement and participation in the gamified learning experience (Xiao & Hew, 2024). Other examples include Alsawaier (2018) who argued that gamification positively impacts college students' engagement and Chapman and Rich (2018) who noted that gamified classes are far more motivating for students.

Similarly, Hope et al. (2023) argue that gamified learning improves learning outcomes. However, all of the aforementioned empirical studies also address the limitations imposed upon their findings. These studies used gamification in a very specific context and applied it to a very narrow branch of educating students instead of formal education at large. Therefore, the old saying "one-size-fits-all" does not carry weight and excludes gamification as a means to innovate education holistically (Zhao et al., 2020). Most certainly, the growing body of knowledge with the associated empirical data shows promising results, but these results are only valid within a predefined classroom environment.

Gamification can be a powerful tool to increase motivation and engagement in education, but it can also be superficial if the game elements are not aligned with the learning objectives (Fuchs, 2022b). To avoid superficiality in gamification, educators must ensure that the game elements are meaningful and relevant to the learning experience (Maskeliūnas et al., 2023). By doing so, institutions and educators can create a more effective and engaging learning experience for students. Furthermore, this approach not only fosters a dynamic educational environment but also equips students with the essential skills and knowledge necessary to navigate and excel in the complex challenges of the future.

3.2. Extrinsic motivation

Another drawback of gamification includes the potential for extrinsic motivation (Alt, 2023). Extrinsic motivation is when a person is motivated to do something for the external rewards or consequences that come from it, rather than for the internal satisfaction of doing the activity itself (Kifle Mekonen & Adarkwah, 2022). These findings from Alt's (2023) research primarily suggest that the utilization of gamification alone may not inherently inspire students to engage actively in the learning process unless it is grounded in a well-founded pedagogical rationale. In gamification, extrinsic motivation is often used to incentivize students to participate and achieve specific learning objectives (Dichev et al., 2020).

This can be done through the use of points, badges, and leaderboards, among other game mechanics (Zourmpakis et al., 2022). I contend and argue that extrinsic motivation can be effective in the short term, but it can lead to problems in the long run (Ratinho & Martins, 2023). Evidently, when students are motivated primarily by external rewards, they may not develop a true passion for the subject or the desire to learn for its own sake (Ng, 2019). This can lead to a lack of deep learning and retention of the material, as students may forget the information as soon as the reward is no longer available (Ratinho & Martins, 2023).

Additionally, extrinsic motivation can create a competitive and individualistic learning environment, which may not foster collaboration or teamwork among students (Fakhri Alamdari & Ghani, 2022). Students may become solely focused on earning points or badges for themselves, rather than working together to achieve a common goal or solve a problem (Xiao & Hew, 2024). This can hinder the development of important social skills and problem-solving abilities that are critical for success in the real

world (Grabner-Hagen & Kingsley, 2023). To avoid the potential negative effects of extrinsic motivation in gamification, educators must balance the use of game mechanics with the intrinsic value of learning (Grey & Gordon, 2022).

Grey and Gordon (2022) suggest creating a learning experience that is both fun and engaging, while also emphasizing the importance of learning for its own sake (Grey & Gordon, 2022). By doing so, course instructors can help students develop a true passion for the subject and a desire to learn that will stay with them long after the game is over. Additionally, fostering this intrinsic motivation can lead to more enduring and meaningful educational outcomes, as students who are genuinely passionate about the subject matter are more likely to exhibit sustained dedication and a heightened ability to apply their knowledge in real-world contexts (Areepattamannil et al., 2023).

3.3. Competitive culture

Furthermore, gamification can reinforce a culture of competition, which may not be conducive to collaborative learning and may discourage some students from participating (Zhang et al., 2021). Leaderboards and other competitive game elements are often used in gamification to incentivize and motivate students to achieve specific learning objectives (Gironella, 2023). While these game mechanics can be effective in driving student participation and engagement, they can also create a culture of competition that may be detrimental to the learning environment. In a competitive culture, students may feel pressure to outperform their peers, which can create feelings of anxiety and stress that can hinder learning (Ahmad et al., 2022).

Additionally, some students may feel discouraged or disengaged if they are not performing as well as their peers, leading to a potential decrease in participation (Ahmad et al., 2022). Furthermore, competition may not always foster a collaborative learning environment (Bada & Jita, 2022). As a consequence, when students are solely focused on achieving individual success, they may not be as willing to share knowledge and help their peers (Bada & Jita, 2022). This can limit the potential for group learning and teamwork, which are critical skills for success in the real world. By creating a competitive learning environment, educators may inadvertently reinforce a culture of individualism (Abramova & Shishmolina, 2020).

Abramova and Shishmolina (2020) note that a competitive learning environment may not be ideal for promoting collaborative and interdisciplinary learning. To avoid reinforcing a culture of competition in gamification, educators should design game elements that promote collaboration and teamwork (Ariffin et al., 2022). For example, collaborative games, where students must work together to achieve a common goal, can help students develop important social skills while also promoting learning outcomes (Erdoğan, 2019). Additionally, instead of ranking students on a leaderboard, educators can use team-based rankings or non-competitive metrics to motivate and incentivize students (Aibinu et al., 2021).

Non-competitive metrics to motivate and incentivize students can encourage students to work together toward a common goal rather than focusing solely on individual success (Aibinu et al., 2021). Lastly, while gamification can be an effective tool for promoting engagement and motivation in education, it is important to consider the potential negative effects, such as the reinforcement of a culture of competition (Krishnamurthy et al., 2022). To mitigate these negative effects, teachers should design game mechanics that promote collaboration and teamwork and prioritize non-competitive metrics that incentivize students to work toward common goals (Aibinu et al., 2021; Contreras-Espinosa & Eguia-Gomez, 2022).

3.4. Learning styles

Moreover, gamification may not be effective for all learning styles (Tan et al., 2023). Some students may not enjoy gaming or may have different learning preferences, which could make gamification less effective for them (Papadakis et al., 2023). For example, some students may prefer more structured and linear learning environments, while gamification often involves open-ended and exploratory gameplay (Tan et al., 2023). Additionally, some students may be less motivated by game elements, such as points, badges, and leaderboards, and may prefer other forms of motivation such as personal interest or a desire to master a subject. Moreover, students with certain learning disabilities or cognitive differences may also find gamification less effective (Lämsä et al., 2018).

Students with attention deficit hyperactivity disorder, for example, might find it difficult to focus on game elements and may become overwhelmed by the visual and auditory stimuli in games (Jansen et al., 2010). Similarly, students with dyslexia or other reading disabilities may struggle with text-heavy game elements, which could limit their ability to fully engage with the learning experience. To address these concerns, educators should consider a range of teaching methods and strategies that cater to different learning styles and preferences. This may involve incorporating a variety of instructional approaches, such as lectures, discussions, and hands-on activities, in addition to gamification.

Educators can also provide multiple pathways to learning, allowing students to choose from different types of activities or assignments that align with their learning preferences. Moreover, educators can use gamification in a way that is more flexible and adaptable to different learning styles (Safapour et al., 2019). This could involve providing students with different options for game elements, such as offering choices between different types of badges or leaderboards. Although gamification can be influential for student engagement (Duggal et al., 2021), it may not be effective for all learning styles. Therefore, gamification should be used in combination with a range of teaching methods and strategies that cater to different learning preferences.

4. Theoretical and Practical Implications

The theoretical advances and practical implications stemming from the discussion on gamification in higher education are significant and multifaceted. The exploration of gamification's complexities in higher education has unveiled several theoretical advances that contribute to the understanding of its potential impacts on student learning and engagement. One of the key theoretical insights is the necessity for alignment between game elements and learning objectives (Dimitriadou et al., 2021). It has been established that the mere integration of game mechanics is insufficient; they must be intentionally designed to support and enhance the learning experience. This insight emphasizes the importance of crafting a seamless fusion between gamified elements and the curriculum's learning outcomes.

Future research should delve deeper into instructional design strategies that ensure the meaningful integration of game elements within educational contexts. The exploration of extrinsic motivation in gamified learning highlights the need to strike a balance between external rewards and the intrinsic value of learning. While extrinsic motivators like badges and points can drive short-term engagement, fostering an enduring passion for the subject requires cultivating intrinsic motivation. This insight invites further examination into instructional techniques that cultivate a genuine desire to learn for the sake of knowledge

acquisition itself, thereby promoting deep and lasting understanding. Moreover, the consideration of learning styles and individual preferences underscores the significance of personalized learning experiences (Grassini, 2023).

Recognizing that gamification might not suit all students equally, educators should strive to offer adaptable and inclusive gamified learning opportunities. This insight calls for further exploration of how TEL methods, including gamification, can be tailored to accommodate diverse learning styles and cognitive abilities. Furthermore, there are several practical recommendations emerging for educators, institutions, and policymakers seeking to integrate gamified learning effectively into higher education. For example, educators should prioritize the alignment of gamified elements with learning objectives. Game mechanics must be seamlessly integrated into the curriculum, enhancing rather than distracting from the educational experience (Brown & Powers, 2023).

Moreover, educators should use extrinsic rewards judiciously, focusing on the development of intrinsic motivation as the ultimate driver of sustained engagement (Alt, 2023; Ratinho & Martins, 2023). Institutions should invest in professional development opportunities for educators to enhance their understanding of gamification's nuances. Educators should be equipped with the skills to design, implement, and adapt gamified learning experiences effectively. Another aspect is that educators and institutions should engage in ongoing assessment of the effectiveness of gamified learning strategies (Wulantari et al., 2023). Regular feedback from students can guide iterative improvements, ensuring that gamification remains a dynamic and responsive educational approach.

5. Conclusion and Future Research

Gamification can be an effective way to engage students and enhance learning outcomes when implemented thoughtfully and aligned with learning goals, although it is not a one-size-fits-all solution. However, it is important to consider the potential drawbacks and limitations of gamification (such as achieving superficial learning outcomes, fostering a competitive learning culture, and relying on students' extrinsic motivation). Gamification can be superficial and fail to drive meaningful learning outcomes if the underlying learning experience is not engaging or relevant. It can also be expensive and time-consuming to develop effective game elements, and it may not be effective for all learning styles.

Therefore, educators should carefully consider the benefits and drawbacks of gamification before incorporating it into their teaching practice to ensure that it aligns with their pedagogical objectives and the diverse needs of their students. By conducting thorough research and evaluation, educators can determine whether gamification is a suitable approach for enhancing student engagement, motivation, and learning outcomes in their specific educational context. Generally, the most effective game-based educational activities and mechanisms for fostering social changes in behaviors in higher education will depend on the specific learning goals and needs of the students. It is important to choose activities and mechanisms that are engaging, relevant, and aligned with the curriculum.

Future research needs to explore strategies to customize gamified experiences to cater to diverse learning styles, cognitive abilities, and even individual preferences. Investigating adaptive gamification mechanisms can enhance inclusivity and engagement. By embracing the challenge of crafting gamified approaches that resonate deeply with each student, researchers can unravel novel ways to amplify engagement, learning, and satisfaction among a wide array of learners. Additionally, in-depth studies are needed to understand the long-term effects of gamification on student motivation and learning outcomes. Examining how the intrinsic motivation cultivated through gamification translates into continued academic engagement is a valuable avenue for exploration (e.g., an in-depth study dedicated to tracing the trajectory of this intrinsic motivation).

Conflicts of Interest

The author declares that he has no conflicts of interest to this work.

Data Availability Statement

Data sharing is not applicable to this article as no new data were created or analyzed in this study.

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