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Gamification and Reward Systems for Enhancing Student Involvement in Extracurricular Activities at Universities

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Abstract

Gamification is a recent trend that seeks to raise people's motivation, involvement, engagement, and loyalty. It began as a marketing tool but has now expanded to several fields where public participation is crucial. Inspired by the widespread usage of video games, gamification seeks to increase game-like engagement by leveraging the game's qualities in non-gaming situations. This study aims to highlight the research and knowledge regarding the use of gamification as a strategy to promote and enhance student engagement in higher education for extracurricular activities. The method used for this paper reviews general literature, which focuses on gamification and reward systems for enhancing student involvement in extracurricular activities. The conceptual findings suggest there is tremendous potential in gamification as a reward system for enhancing student involvement in extracurricular activities.

Keywords

Gamification, Reward System, Extracurricular activities, Student Engagement, Higher Education

Introduction

Gamification is the technique of incorporating game mechanics and strategies into various contexts that are not games. It can serve as a method to motivate individuals, foster relationships, or engage people in their work. Essentially, gamification involves using game design elements in a non-game context (Deterding et al., 2011). Today, universities worldwide are continually seeking new ways to enhance student participation and involvement in the rapidly changing landscape of higher education(Van't Land et al., 2021). This is particularly true for universities that focus on computers, geomatics, business studies, geospatial intelligence, and many more fields, where knowledge acquisition and skill development require active engagement in real-world activities. Given the necessity to inspire students to engage in both extracurricular and curricular activities actively, this study aims to highlight the use of gamification at higher education institutes to reward and promote student involvement. By implementing various gamification features, such as leaderboards for participant rankings and activity badges for task completion, points are awarded based on task achievements. Moreover, gamification can be useful for teaching and learning

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activities, as well as cultural or extracurricular activities, in a university because it can promote student engagement (Tah Jutin & Binti Maat, 2024).

An overview of the literature highlights the research and knowledge regarding gamification as a strategy to promote and enhance student engagement in higher education. This review examines the benefits, drawbacks, and implications of gamification in education and the advantages of participating in extracurricular activities. Additionally, it discusses why gamification was chosen as a reward system instead of a more traditional one. Gamification entails incorporating game elements into non-game contexts.

Extracurricular activities

Activities that students engage in outside of university hours are known as extracurricular activities. These include sports, games, and club events that enhance education and culture (Samuel, 2024). Participation in extracurricular activities has been shown to generally improve students' academic performance, test scores, and educational achievements. Their self-esteem is heightened, and they feel more integrated into the academic community. Their increased class attendance reduces absenteeism. Skills such as teamwork and leadership, along with positive youth development, are often cultivated in participants of extracurricular activities, assisting them in avoiding the risks of illegal drug use and other harmful behaviors(Anjum, 2021). This study aims to incorporate gamification elements into non-classroom activities at universities to boost student engagement for the benefit of both the administration and the students.

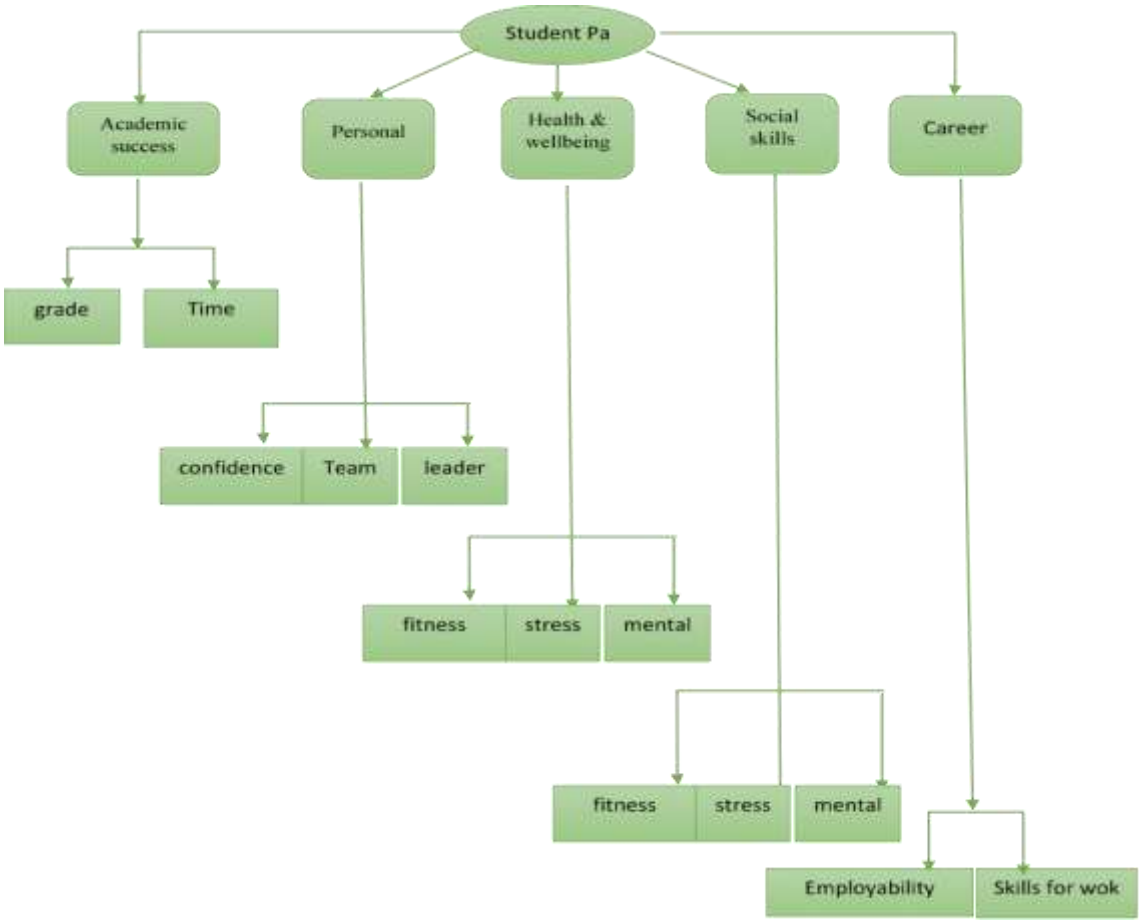

Figure 1: Diagram of benefits of student participation

According to Winstone (2020), Students' engagement in extra-curricular activities can play a significant role in the development of student identity, as well as leading to a greater sense of belonging and well-being. However, individual characteristics such as sociability may influence the likelihood of students engaging in extra-curricular activities.

The positive effects of students participating in extracurricular activities are illustrated in Figure 1. Essentially, it shows that involvement occurs outside the classroom. It reveals how students develop intellectually, as indicated by their improved grades and time management skills. It highlights how cultivating leadership abilities and self-confidence can lead to personal growth. Additionally, it underscores the health and wellness benefits that come from reducing stress and encouraging physical activity. The graphic also emphasizes the importance of acquiring essential social skills such as networking and effective communication. Ultimately, it points out the long-term advantages of career advancement, demonstrating how extracurricular activities can help cultivate skills that enhance employability and professional success. In summary, the diagram depicts the broad benefits of participating in extracurricular activities, fostering well-rounded individuals prepared for success in various areas of life.

Rewarding Traditionally

Traditionally, the context of extracurricular activities pertains to established methods of honoring and motivating student performance beyond the regular academic curriculum. To encourage and show appreciation for students' engagement in these activities, conventional approaches often involve tangible awards or recognitions, such as certificates, medals, or trophies. This strategy offers a structured and formal way to acknowledge and celebrate students' extracurricular achievements, enhancing their morale and sense of accomplishment (Soo & Lee, 2022).

The benefits of traditional methods of encouraging student involvement provide several clear benefits. These conventional approaches—certificates, prizes, and public recognition—are easy to put into practice and are well-known to staff, instructors, and students. The validity and tradition they possess serve to emphasize how important it is for students to participate in extracurricular activities (Shatson Fasco et al., 2024). These kinds of incentives may be quite effective at piquing kids' interest and giving them a sense of success. Furthermore, these material forms of acknowledgment, such as plaques and awards, function as enduring markers of accomplishment that students may flaunt, boosting their sense of self-worth and community inside universities(Gray & Diloreto, 2016).

However, the disadvantage is that this method has been used for so long that students may perceive traditional rewards as a one-time acknowledgment, which could diminish their motivation to continue participating or improving in extracurricular activities beyond that specific event (Phungphai & Boonmoh, 2021). The focus is on past achievements rather than ongoing engagement. Additionally, the accumulation of student achievement points is done manually, which can cost time for both students and staff or organizers. It was seen that students were not motivated or engaged when these traditional methods of monitoring and rewarding participation in extracurricular activities were being used(Ma, 2023). Therefore, the purpose of this study is to investigate gamification approaches to increase student interest and engagement in extracurricular activities. These more modern methods aim to improve general involvement in extracurricular activities and yield better outcomes.

Methodology

This study employs a systematic literature review to analyze gamification’s role in extracurricular engagement. Peer-reviewed articles, books, and conference papers from 2011 to 2024 were selected using keywords like "gamification," "reward systems," and "student engagement." Data were synthesized to identify trends, benefits, and challenges.

Results and Discussion

Gamification

The term "gamification" first appeared online in the context of computer software in 2008. Gamification did not gain popularity until 2010. Even before the term came into use, other fields borrowing elements from video games were common; for example, some work in learning

disabilities and scientific visualization adapted elements from video games (Chen, 2022; Nacke, 2017).

Gamification first gained widespread usage in 2010, in a more specific sense referring to the incorporation of social/reward aspects of games into software. The technique captured the attention of venture capitalists, one of whom said he considered gamification the most promising area in gaming. Another observed that half of all companies seeking funding for consumer software applications mentioned game design in their presentations (Schrape, 2014).

Although still relatively new, gamification has a long history. Researchers have formulated several definitions for gamification. Here are the most adopted ones. Gamification was first defined by (Christians, 2018) as "Applying game-like accelerated user interface design to make electronic transactions both enjoyable and fast." (Kovácsné Pusztai, 2021) Its definition and meaning have undergone many significant developments, with different meanings being introduced into public consciousness.

The most common definition nowadays comes from (Deterding et al., 2011), which says:" Gamification is the use of game design elements in non-game contexts". (Gabe Zichermann, 2011) expanded their interpretation defining gamification as" the process of game-thinking and game mechanics to engage users and solve problems". Besides, as (da Paixão & Dias E Cordeiro, 2021) remark, gamification can be seen as "a means to design systems that motivate people to do things" (p. 31). Also, (Manuel De Azevedo & Simões, 2015a) point out that the purpose of gamification "is to motivate desired user behavior" and as motivation and behavior are studied in psychology, an understanding of psychology theories is vital and inevitable in the design of gamified systems.

Additionally,(Schrape, 2014) stresses the differences between games and gamification, arguing that "gamification is not about creating games at all," and (Kapp, 2016) states that "gamification uses parts of games but is not a game". Also, (Hsin-Yuan Huang & Soman, 2013)point out that "if it is already a game, it is not a form of gamification". Hence, gamification is not a game (Ciuchita et al., 2023) nor an attempt to simply make an application look like a game (Manuel De Azevedo & Simões, 2015b) and not about building full-fledged games, like serious games (Deterding et al., 2011). Based on their definition gamification is applying game elements into a nongame context and game-based is far different from gamification.

Gamification Elements

In a range of settings, from marketing and user experience design to education and staff training, gamification is an effective technique for raising motivation, engagement, and learning. The fundamental components of gamification, which fall into three different but connected categories: game mechanics, game design, and game tactics, are crucial to its efficacy(Robson et al., 2015). These categories cover a broad range of tactics and elements that are purposefully used to turn routine experiences and chores into thrilling, goal-oriented endeavors. We will examine each of these categories in detail in this investigation, clarifying and identifying the essential components that make them up and revealing how they work together to make gamification

projects successful. Understanding these elements is crucial for seeking to harness the potential of gamification to motivate, engage, and entertain their target audience.

Furthermore, (Ngadengon et al., 2021)after research by reviewing the previous research on implementing gamification elements in education, the results show the most common game elements used in gamification are rewards, feedback, challenge, quest/mission/goal, level/stage, point/score, avatars/players, task, character, time-limit, narrative/dialogue, leaderboards, progress bars, and badges. Most of the research on gamification in education reports positive impacts of introducing gamification in education. In this case, implementing game elements in the gamifying educational environment, precisely in the extracurricular area, is a good method to create a good adjustment in participants' behavior and assertiveness in the activities process, it can develop engagement and motivation of the participants. According to (F Durin et al., 2019), here is the graph that illustrates the impact of gamification in education generally.

Game Design Components

The specific components of a game help illustrate the dynamics and mechanics that are planned. Common components like points, badges, and leaderboards may be among them. The dynamics and mechanics of the game are said to be constructed around the components. To guarantee that they may be utilized to "run" specific mechanics or dynamics, you may consider game elements as resources or tools (actual or virtual) you possess or have selected. However, the components employed in this research include leaderboards, badges, and points.

Game Mechanics

While there are many definitions of game mechanics in game studies, they can be summarized as the processes that "make a game an exciting and engaging one". By depending only on game components, user engagement would not last long. The MDA Framework by (Hunicke et al., 2004) described game mechanics as the various actions, behaviors, and control mechanisms afforded to the player within a game context. In this sense, the most popular game mechanics are competition, challenge, and win-state. Based on that, the most popular game mechanics are competition, challenge, and win-state. In the context of education, Arnab et al., (2015) have done extensive work in mapping learning mechanics and game mechanics in what they called as LM-GM Model. It shows the linkages between game mechanics to the "processes and activities" that occur in teaching and learning.

Game Dynamic

It is ultimately the fundamental elements of a game's dynamics that drive consumers or players to keep playing. It's an expansive viewpoint. When playing a given game, various participants will have different goals, and a good game will govern these goals by using the appropriate dynamics. Game dynamics establish the basic patterns of how the players and the game will evolve. The most well-liked game dynamics include advancement, relationship, and narrative (a strong and captivating plot).

Game as Engagement

da Paixão & Dias E Cordeiro (2021) argue that gamification is about engagement and a way to design systems that motivate people to do things. Games are highly engaging activities and with gamification, the engagement found in games can be moved to non-game contexts to create the same engaging experiences. These experiences can then motivate behaviors. Engaging means participating or becoming involved in an activity or establishing a meaningful contact or connection with something. As (Steele et al., 2017) mention, A task is engaging when it continues to produce intrinsic motivation for the task performer. As engagement assists in creating intrinsic motivation, and intrinsic motivation is a key component of flow, the discussion of engagement is particularly meaningful to the understanding of flow in games. Besides, the perception of this study is to motivate and engage the student in non-classroom activities and make sense of their participation.

Gamification in High Education

The Horizon Report 2014 Higher Education Edition (Johnson, 2014) identifies video games together with gamification as one of the emerging technologies to impact. Gamification Fundamentals 71 on higher education in a horizon of two to three years. Not only restricted to higher education but considering all levels of education, the education and training area has been one of the areas identified with a high potential for the application of gamification (Lee & Hammer, 2011). The education system somehow already incorporates game elements when students get points for completing assignments or when they level up to the next grade. For students, gamification serves the purpose of minimizing negative emotions that they usually encounter in traditional forms of education. These authors also state that gamification can be a powerful strategy when implemented properly, as it can enhance an education program, and achieve learning objectives by influencing the behavior of students.

Gamification In Extracurricular Activities

Extracurricular activities play a crucial role in the holistic development of students, offering them opportunities to explore their interests, enhance their skills, and foster a sense of camaraderie. However, engaging students in these activities can sometimes be a challenge, especially in an era where digital distractions abound. To address this issue and make extracurricular activities more appealing and effective, educators and organizers have turned to the concept of gamification. As Deterding et al., 2011; Nacke, 2017 said, gamification involves applying game design principles and elements to non-game contexts to increase engagement, motivation, and participation, so when it is integrated into extracurricular activities, it can revolutionize the way students perceive and interact with these experiences.

Choosing gamification as a method to reward students' participation in university activities is a strategic decision rooted in its ability to foster deep engagement, motivation, and a sense of accomplishment. Unlike traditional reward systems, gamification leverages game-like elements,

such as points, badges, leaderboards, and rewards, to transform participation into an exciting and interactive experience. This approach taps into students' intrinsic motivation, aligning with principles from Self-Determination Theory (SDT), which emphasizes autonomy and competence as drivers of human behavior. Gamification offers students a clear and tangible way to track their progress, reinforcing their sense of achievement and direction.

Based on the information from several articles above and when comparing traditional awarding with rewarding through gamification in universities' extracurricular activities, there are a few important things to take into account. Firstly, engagement and motivation are critical. Gamification often excels in boosting participant engagement through game-like elements like points and leaderboards, while traditional rewards may rely on external incentives, which can be less motivating in the long term. Secondly, consider learning and skill development. Gamification can be designed to integrate educational components, promoting active learning and skill acquisition, whereas traditional rewards may not inherently support these outcomes.
Customization and adaptability are essential for tailoring rewards to individual preferences and abilities. Gamification allows for personalized challenges, while traditional rewards tend to be one-size-fits-all.

Furthermore, feedback and progress tracking are crucial for participant growth. Gamified systems typically provide real-time feedback, aiding participants in understanding their performance, whereas traditional rewards may offer limited feedback. Inclusivity and accessibility should also be a focus. Gamification can be designed to accommodate various abilities and needs, enhancing inclusivity compared to traditional rewards. Cost and resources are practical considerations. Gamification may require initial investments in technology and design, whereas traditional rewards are often simpler and cost-effective to implement. Effectiveness and ROI (Return on investment) must be assessed. Measure how well each approach achieves desired outcomes and the return on investment for both traditional and gamified methods.

Long-term sustainability is vital for maintaining engagement. Traditional rewards may require less ongoing maintenance than gamification, which may need constant updates to remain effective.

Lastly, gathering feedback from participants is invaluable for ongoing improvement. Continuous input from participants can help refine the chosen rewarding approach and enhance the overall extracurricular experience.

Conclusion

To conclude, the decision to use gamification for rewards instead of traditional methods signifies a significant change in the way to engage and inspire students. Conventional rewards provide incentives and outward recognition, which can be useful but frequently lack durability over the long run. Gamification, on the other hand, makes use of intrinsic motivation to provide students with a dynamic, competitive experience, progress monitoring, and autonomy. The main difference is that gamification makes participation intrinsically fun and meaningful, which encourages long-term involvement and personal development. While conventional approaches

have their place, gamification is a progressive strategy that keeps up with contemporary educational trends, continually adjusts to the requirements of students, and promotes a stronger feeling of community and accomplishment.

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