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Leveling Up Learning: The Impact of Gamification on Learners' Motivation and Engagement

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Abstract— In the digital era, technology has transitioned from a privilege to a necessity, penetrating daily life and profoundly impacting education. Gaming, once solely utilized for recreational purposes, has evolved into a tool for engagement and motivation. The integration of gaming principles into learning, termed "gamification," has gained traction as a strategy to sustain student interest and foster enjoyment in educational contexts. Gamification leverages game mechanics to enhance user engagement, offering incentives and educational content to combat disengagement. Its applications span diverse sectors, including education, health, and entertainment. However, despite its promise, gamification's efficacy remains nuanced and context-dependent. While some studies advocate its potential to motivate learners and foster collaboration, others emphasize the need for further empirical investigation to substantiate its long-term benefits. The rapid adoption of online learning during the pandemic underscored the importance of innovative approaches to combat short attention spans, necessitating strategies like gamification to integrate technology seamlessly into education. Notably, gamification aligns with active learning principles, promoting participation and deep understanding through game-like interactions. Nevertheless, empirical evidence remains mixed, with studies highlighting variability in outcomes and the need for comprehensive guidelines to inform implementation strategies. This paper synthesizes existing research to caution against viewing gamification as a universal solution while advocating for interdisciplinary collaboration, evidence-based guidelines, and continued academic inquiry to elucidate its potential and limitations in educational contexts.

Keywords— education, gaming, gamification, motivation, engagement.

INTRODUCTION

In this digital age, gadgets make up everyday life to the point that it is not considered as a privilege anymore but rather, a need. From having the sole purpose of entertainment during its early days to becoming an integral part of everyday life, technology had evolved to be more important than it initially was. Even so, aside from being a tool for productivity, technology is still being used for entertainment and to unwind. One of the forms of entertainment that technology offers is gaming. According to Chen & Liang (2022), gaming is done by people to generate a delightful experience or in simple terms, to be happy and to relax. That being said, many found that integrating gaming with learning is a good idea because it helps keep students engaged and happy while still learning. As such, the idea of gamification was born. Referring to Seaborn and Fels, Chen & Liang stated that gamification refers to the functionality of systems that utilizes and takes advantage of the mechanics of game elements in order to engage users. Having such system also allows for intricate incentives that will surely keep users interested, and since the content is educational, will also keep them from slacking away.

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Today, gamification has reached far and wide. It is now being used for a lot of things including but not limited to educational endeavors, health endeavors, upskilling, and entertainment. BasuMallick (2022), in his article entitled "What is Gamification? Definition, Software, Examples, and Best Practices" stated that gamification is a loop of trigger-action-feedback into routine-based tasks that aim to improve the rate of adoption, success, as well as engagement of its users. Gamification allows for things deemed to be boring by humans to be discussed in a compelling and engaging setting. BasuMallick also stated that not because something is 'gamified', mean that it should be designed exactly like a usual game. Things such as the frequent flier program and hotel loyalty programs are all considered to have adapted gamification as a way to engage users to avail their services. In education, Dichev & Dicheva (2017) stated that gamification has been having mixed results. Nevertheless, it is ideally expected to be a great tool for productive learning, enforce collaboration, improve communication between and among students, and overall to alter the behavior and perspective of students to learning.

With the rapid development of technology and the rise of short-span video applications, students these days were found to have a shorter attention span compared to previous generations (Azmy, et al., 2022). Since they are exposed to gadgets all the time and are admittedly addicted to it, especially the mobile games they play, a sure-fire way to catch their attention span is through applying gaming principles on things that they are supposed to learn and would otherwise not give a second of their day if it was not designed to be as engaging as gadgets. That being said, the researcher found the concept of applying game principles to everyday life fascinating because it hits two birds with one stone: entertainment and education. This paper aims to delve deeper in the topic and find out if such strategy really is effective to level up the learning progress of students by indulging into an in-depth discussion of the concept.

REVIEW OF RELATED LITERATURES

Gamification, the integration of game-like elements into non-game contexts, has been increasingly recognized as a powerful tool for enhancing learners' motivation and engagement in educational settings. Numerous studies have explored the potential benefits of incorporating gamification strategies into the learning process, shedding light on how these techniques can positively influence learners' attitudes, behaviors, and academic outcomes.

One key aspect of gamification's impact on learning is its ability to tap into intrinsic motivation. Researchers have highlighted the way game-like elements, such as points, badges, leaderboards, and challenges, can trigger intrinsic motivational factors like a sense of achievement, competence, and autonomy (Deterding et al., 2011; Hamari et al., 2014).

When learners are intrinsically motivated, they are more likely to engage actively with the learning material, persist in the face of challenges, and find the learning process inherently enjoyable (Deci & Ryan, 2000). In addition to intrinsic motivation, gamification has also been shown to enhance learners' engagement and attention. The gamification of learning environments often involves the incorporation of immediate feedback, clear goals, and opportunities for progress tracking, all of which can contribute to a heightened sense of engagement and investment in the learning process (Muntean, 2011).

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Numerous studies have explored the impact of gamification on learners' motivation and engagement across various educational contexts, from K-12 classrooms to higher education settings and professional training programs. For instance, a study by Alsawaier (2018) examined the implementation of a gamified learning platform in a university-level computer science course.

The findings revealed that students who experienced the gamified platform exhibited higher levels of motivation, engagement, and course satisfaction compared to those in the traditional, non-gamified course. Similarly, a meta-analysis by Clark, Tanner-Smith, and Killingsworth (2016) synthesized the results of multiple studies on the effects of gamification in education, concluding that the integration of game-like elements had a positive and significant impact on learners' motivation and engagement.

While the existing research on the impact of gamification on learning is largely positive, it is important to note that the effectiveness of gamification can be context-dependent and may depend on factors such as the specific game elements used, the target audience, and the integration of gamification within the broader learning environment (Seaborn & Fels, 2015).

As the field of educational gamification continues to evolve, further research is needed to explore the nuances of its impact and the factors that contribute to its success. Nevertheless, the growing body of evidence suggests that the strategic application of gamification in learning contexts holds the potential to enhance learners' motivation, engagement, and ultimately, their academic success.

The impact of gamification on learning has far-reaching implications for education. As educators continue to seek innovative methods to enhance students' motivation and engagement, the integration of game-like elements into non-game contexts presents an exciting opportunity. Research has consistently shown that gamification strategies not only tap into intrinsic motivation but also enhance learners' engagement and attention through immediate feedback, clear goals, and progress tracking (Deterding et al., 2011; Hamari et al., 2014).

Furthermore, the positive outcomes of implementing gamified learning platforms have been documented across various educational settings. For instance, a study by Alsawaier (2018) demonstrated higher levels of motivation, engagement, and course satisfaction among students in a university-level computer science course with a gamified platform compared to those in a traditional, non-gamified course. Additionally, a meta-analysis by Clark et al. (2016) concluded that the integration of game-like elements significantly impacted learners' motivation and engagement in education.

However, it is important to acknowledge that the effectiveness of gamification can be influenced by contextual factors such as the specific game elements used, the target audience, and the broader learning environment (Seaborn & Fels, 2015). As the field of educational gamification continues to advance, further research is necessary to explore the nuances of its impact and the contributing factors to its success.

Despite the need for further exploration, the existing body of evidence unequivocally suggests that strategic application of gamification in learning contexts holds the potential to significantly improve learners' motivation, engagement, and ultimately, their academic success.

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DISCUSSION

Technology has proved to be an essential and crucial part of everyday life during the coronavirus pandemic. Since the virus was highly contagious, safety precautions had to be taken in order to have less calamities. Unfortunately, the virus was found to be airborne and may also be transmitted through droplets. That being said, social distancing and other safety precautions had to be taken which resulted into a nationwide lockdown and a quarantine (World Health Organization, 2020). Under this unfortunate circumstance, almost every aspect of society was forced to shut down as well or switch to another mode of communication, the education sector included. Since calls for implementing an academic freeze fell on deaf ears, the Department of Education decided to switch to online classes (Department of Education, 2020). While conducting online classes is a good idea on paper, implementing it is another story. Hinerman (2023) stated that as screen time increases, the attention span of an individual decreases, and it is only logical for people attending online classes to have their screentime increased. Also, the teachers that Hinerman interviewed stated that taking away the phones of students during class time only increases students' distraction because all they can think about is the possible missed call, text, update, and when they can get their hands on their phone again. Thus, teachers came up with a way that does not restrict cellphones but rather integrates it with learning which is gamification.

In the study entitled "Active learning: Game-changer to short attention span in Gen Z" written by Azmy et al. (2022), the average attention span of humans is 8.5 seconds. Unfortunate as it may be, the researchers found that the active learning method should be utilized in order to combat such short attention spans. As per the article entitled "What are Active Learning Techniques?" released by Indeed last 2022, the active learning method involves students in the learning process through participation so that they may get firsthand experience and understand concepts more deeply. Examples of active learning include but are not limited to role playing and experimentation. These methods are also present in games. Therefore, gamification, so long as it incorporates these elements and other principles not mentioned, may be considered as a method for active learning.

In education, gamification is one of the approaches and techniques that increase motivation and engagement of learners as per the study of Kiryakova et al. (n.d.). The aforementioned authors also stated that modern pedagogical paradigms and trends in education are being actively reinforced through the utilization of Information, Communication, and Technology (ICT), with gamification being one of said trends. To be even more specific from the definition of gamification as a program that applies gaming principles, the distinctive features of a game include users being participants, having various challenges, being able to collect points, passing levels, earning badges, and having a ranking system. Essentially, gamification incorporates game elements and ideas in an educational context in hopes of increasing motivation and commitment as well as to influence user behavior for the better. Kiryakova et al. explained further that incorporating gamification is only logical because it perfectly captures the essence of education which is having a goal (in education, called a learning objective) and having to perform specific tasks and interacting with the topic in order to reach said goal which in education usually signifies exams, activites, homeworks, final papers, research, and the like. Also, by using gamification in learning, there is a certain level of competition, but it highlights collaboration and teamwork more since it helps students care more about the performance of their team or group rather than their performance as individuals. However, it must be

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noted that gamification does not necessarily mean that knowledge and skills are suddenly more likely to be absorbed – it is just that by implementing gamification, students are more engaged in learning which would increase their chances of absorbing the material but it should not be treated as a sure-fire way.

Kiryakova et al. also detailed the process of gamification. According to them, gamification first involves determining learners' characteristics so that the program to be designed will be suitableto their demographic. Second, the learning objectives must be defined in an unambiguous manner so that the program will be designed in a way that would surely achieve the said objectives. Another process is the creation of the educational content and activities itself which would involve multiple performance, increasing difficulty level, and multiple paths. It is important that during this step, the things to be implemented are feasible. The last step on the process of gamification is adding game elements and mechanisms such as sound effects, game aesthetics, and colorful engaging designs. As per the study of Kiryakova et al., gamification is suitable, easy, and efficient as a tool for active learning especially during the time of the rise of e-learning. The findings of the study of Dichev and Dicheva (2017) contradicts the findings of Kiryakova et al., in a way, though.

As per Dichev and Dicheva, the empirical evidence on gamification shows mixed results. Since gamification is still growing, according to their study, it is too early to determine its efficiency due to the fact that (i) there is insufficient evidence to support the long-term benefits of gamification in an educational context, (ii) gamifying learning has outpaced researchers' understanding of its mechanisms and methods, and (iii) the knowledge of how to gamify in the educational context is still limited. Also pointed out by Dichev and Dicheva is the fact that gamification is still too young to have consistent effects that would have proven to have long-term benefits. Citing the study of Gartner published last 2013, Dichev and Dicheva stated that an emerging technology, which in this case is gamification, first has the 'peak of inflated expectations' and then a strong fall down into the 'trough of disillusionment', and then finally reaching the 'slop of enlightenment.' Simply said, there is not enough empirical evidence for researchers to confidently say that gamification indeed levels up learning and increases student motivation and engagement when it comes to academic learning. In a span of one year, only 51 papers were found by the authors to have empirical evidence but comparing this quantity to the number of papers released every year about gamification, it simply is not enough.

Add that to the fact that among the 51 papers with empirical evidence on the efficiency of gamification, only 26% had positive results, 10% negative, and the majority (64%) had mixed results, thus rendering the current body of work surrounded by the academia as insufficient evidence in regard to the positive effect of gamification. The authors, however, are not denying the potential of gamification to create enhanced learning environments but the truth remains that there is still insufficient evidence that it produces reliable, valid, and long-lasting educational outcomes and that it produces reliable, valid, and long-lasting educational outcomes better than traditional educational models.

On another note, the study of Smiderle et al. (2020) stated that the gamification of education can, indeed, enhance the level of student engagement. Therefore, gamification will be able to serve as a tool for students to improve their skills and optimize learning. To investigate this claim in a more in-depth manner, Smiderle et al. investigated

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the effects of gamification on students' learning, behavior, and engagement based on their personality traits. The results of the study showed that the effect of gamification largely depends on the characteristics of users. Also, since there were two controlled groups (participants randomly being assigned to do either a gamified or non-gamified program), it was found that those assigned to do the gamified program had a higher number of logins, badges, and points as compared to the non-gamified group. The gap between the participants who were assigned to the gamified program and those who were assigned to the non-gamified program, however, was not that large to constitute significant results that would render the gamified program as being more engaging. On another note, the results showed that while there is no significant difference in engagement, gamification was found to have changed student behavior. The participants of the gamified group had significant improvement in the quality of their work and accuracy. As for the difference on participants' characteristics, introverted participants were more engaged, garnering more points, medals, and logins than those who were extroverted. On the contrary, the study entitled "Assessing the effects of gamification in the classroom: A longitudinal study on intrinsic motivation, social comparison, satisfaction, effort, and academic performance" (Hanus & Fox, 2018) found that a gamified course negatively affected final exam grades and that overtime, gamified students were less motivated, empowered, and satisfied. Lastly, gamified systems featuring a strong rewards system was found to also have the possibility of causing negative effects to an individual.

CONCLUSIONS

Taking into account all the things that have been discussed regarding gamification, the researcher, therefore concludes the following:

1. Despite its increasing popularity in educational contexts, gamification does not offer a fail-safe method for engaging and motivating students. While it holds promise as a strategy to enhance learning experiences, its effectiveness in practice may vary. The application of gamification in education does not guarantee universal success in improving student engagement or learning outcomes. Therefore, educators should exercise caution in relying solely on gamification as a definitive solution for optimizing educational experiences.
2. The concept of gamification is not universally applicable to all individuals within educational settings. Its effectiveness is contingent upon specific characteristics and preferences of learners. While gamification strategies may resonate with certain student demographics or learning styles, they may not be equally effective for others. As such, educators should refrain from viewing gamification as a one-size-fits-all remedy for the diverse challenges encountered in education. Rather, its implementation should be contextualized and tailored to the unique needs and characteristics of student populations.
3. Gamification represents a novel and promising technological approach within educational research; however, its long-term benefits and potential consequences remain understudied. Despite the growing interest in gamification, a comprehensive understanding of its sustained impact on learning outcomes and student engagement is lacking. Consequently, researchers should exercise prudence and avoid over-reliance on gamification as a standalone solution in educational practices. Further exploration and empirical investigation are essential to ascertain the enduring efficacy and implications of gamification within educational frameworks.

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RECOMMENDATIONS

Based from the conclusions, the following recommendations are drawn:

1. Educational systems should be designed to encourage interdisciplinary collaboration among researchers, educators, and technologists to leverage diverse perspectives in investigating gamification's potential in education. Collaboration across disciplines such as psychology, education, computer science, and game design can enrich understanding and innovation in gamification strategies tailored to educational contexts.
2. Synthesize research findings into evidence-based guidelines for educators and policymakers to guide the thoughtful integration of gamification in educational practices. These guidelines should highlight best practices, considerations for implementation, and strategies for evaluating the impact of gamification on learning outcomes.
3. More academics should divulge into research on gamification and contribute to the growing body of knowledge in this field. Doing so will foster a culture of empirical inquiry and critical discourse to address existing gaps in understanding. By expanding research efforts and sharing findings, academics can provide clarity and insights into the effectiveness and limitations of gamification within educational settings.
4. Future researchers can utilize this research to identify existing gaps that they can address, thereby producing a more comprehensive and in-depth discussion that will significantly contribute to the body of knowledge on the topic of gamification.

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