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GAMIFICATION: AN EDUCATIONAL STRATEGY TO INCREASE STUDENTS' MOTIVATION AND ACADEMIC PERFORMANCE

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ABSTRACT

In the era of Artificial Intelligence (AI), the educational system requires transformation, particularly in enhancing students' critical thinking skills. Well-designed games can serve as an effective strategy for stimulating Higher-Order Thinking Skills (HOTS). In Nigerian universities, students often struggle with complex concepts, especially fresh undergraduates navigating their academic journey. However, most courses taught are designed in theories and practicals as the primary medium of instruction, there is a need for additional strategies to enhance students' learning experiences. This paper explores the definition, history, benefits, and challenges of gamification in academic settings. By incorporating elements such as points, leaderboards, and badges, educators can foster a more engaging and motivating learning environment. The study argues that gamification simplifies complex concepts, aids retention, and enhances student engagement. Through a literature review, this paper examines how gamification can help students grasp difficult and voluminous tasks, the significance of its application, and its practical implications in higher education. Additionally, it addresses the challenges lecturers face in implementing gamification in the classroom. The findings demonstrate that gamification has the potential to improve student's motivation, inspiration, engagement, and academic performance in university settings.

Keywords: Gamification, Higher-Order Thinking Skills (HOTS), Student Engagement, Digital Learning Strategies, Academic Performance

INTRODUCTION

Ever, since inception of education, teaching and learning has always being with combination of theoretical aspect, oral talk and practical hands-on, which is a phenomenon concept in Nigeria Ross (2021). All universities are well conversant with this trend, but statistics revealed that students get bored and also do not comprehend the major concepts being passed by the lecturer using these traditional pedagogies and methods. It is the duty of instructors to come up with engaging and appealing methods of instructing and inspiring their students. Based on earlier studies Harmer (2008), lecturers invest a great deal of effort in studying and comprehending the behavior and thought processes of their students.

Training and learning might be a little bit challenging due to students tending to get distracted easily, as oppose to when they are involve with any other physical or logical task. Students love to learn while having fun activities with it, so lecturers should select instructional strategies that are appropriate for each student's personality. One strategy that might be used to prevent tiredness in the educational setting is the usage of games. They play a unique part in studying every topic, bringing out the idea in another dimensional for students to grasp. Incorporating gaming during lectures will assist lecturers as well as the students. In addition, students might employ games to accomplish all of the learning objectives, particularly when presenting with difficult ideas.

Games play a significant role in education. Games like kahoot and *Quizlet* help students review for upcoming assessments. Digital edutainment games like *The Oregon Trail* and *Funbrain* help students learn and review related topics. Even NASA recently launched a free tabletop role-playing game, "*The Lost Universe*," to promote learning and applying science skills, considering what would happen if the Hubble Space Telescope disappeared (NASA (2024)).

For decades now, video and computer games has garnered attention in media outlets. Companies strive for high-end graphics, robust sound, and tight game controls. Monochrome pixels gave way to colorful images, and then to photorealism. Generally, creating games can cost millions of dollars and require large development teams. However, some games need not to be complex or graphically intense, with basic training in Hopscotch, Scratch, or other programming environments, all learners can develop games. Even board and role-playing games have seen a recent social renaissance and can provide formats for students to easily find their foot in coming up with one.

Gamification is when components that resemble games, including scoring platforms, prizes, and competition is employed as non-game contexts. Examples of this can be found in education or business environments (Saheed *et al.,* 2025). With gamification in place, students' motivation and engagement are improved upon translating to achievement of specific goals with in-built features for adequate check of behavioral and psychological effect. Attaching rewards and incentives to students in gamification also, can spur them to do more, creating an avenue for inspiration, thereby securing a higher order performance. Games, a reliable concept, which has proven to be effective over the years when applied in an educational environment with students, giving them reward when they earned any small wins in their journey of life. We can illustrate to them on an occasion of doing so well in their assignment by equalizing it to earning, with coins denotation. With this innovation on board, it will make the students to always look forward to attending to their work early with all eagerness and zeal, knowing that a reward will definitely follow.

Related Concepts

Considering digital games in this era, with me, growing up was a bit challenging. I never liked mathematics as a subject in school, but I later found solace in using some Mathematics websites and game apps online like cool Math and others. Due to this, it lead to a developed pretty good interest while using these apps and then, Mathematics became very enjoyable for me and to the friends around me. This presented itself to me by making the difficult concept an enjoyable one as oppose to the traditional learning style engaged in my classroom by my lecturers. Creative absorption time became the order of the day for me, I started assisting other learners by engaging these problem solving skills and with quite inspiration to drive the teaching. The previous researchers has demonstrated the merits of gamification in educational contexts (Gbemisola *et al*., (2025). A rising amount of data indicates that gaming is now generally acknowledged as a useful strategy for enhancing academic results across a wide range of educational and training domains, Harmer Jones (2008).

Of recent, the role of AI in gamification has also come to stay, this could provoke competition amongst the students and an AI generated account that would occasionally get questions wrong to enable them do their best. Usernames would be generated randomly, rather than having real names generated or the date of birth to ensure security of personal data and all other fields to be filled. In addition, AI could generate a real version of different game that would involve countless questions and infinite levels so that students as one of the key players would never get bored or develop monotonous attitude towards the game (Ohaka et al., 2025). However, one of the demerit of AI gamification is that there are countless abilities of AI that we may be unaware of. It's much needed and beneficial to ensure that face to face interactions amongst lecturers and students is encouraged to severe the social intelligence aspect especially while intently considering their development and communication skills.

Additionally, games of instruction might result in excessive stimulation and even addiction in some cases (Lyzanets and Savonin (2022)). Students may often prioritize completing a particular level in a game over all other school work. They might as well forget the reason why they are playing the game in the first place which can have negative impacts on their overall academic performance. Game levels might range from easy to medium then to hard. For easier levels, multiple choice answers would be offered but for hard levels, it would be a black space to type your own answers into. If the students lose the game then they would have to restart or completely starting afresh. Some of the benefits of gamification are highlighted below:

Increased Student Engagement and Motivation

Making learning more interesting is one of the main objectives of gaming. A common topic in articles revolves around game aspects like leader boards, logos, points for it, and challenges can increase student motivation and participation.

Improved Learning Outcomes

Studies explore whether gamification strategies actually lead to better academic performance. This involves measuring factors like test scores, knowledge retention, and skill development.

Application in Various Disciplines

Research examines how gamification can be applied across different university subjects, from language learning to systems design.

Technological Integration

Many gamification strategies rely on technology, including learning management systems (LMS), mobile apps, and online platforms.

Reviewing and Meta-Analysis

Numerous articles examine the condition of gaming in universities nowadays. This enables a comprehensive assessment of the strategy's efficacy. Tom Mulegi (2022), for examples, In "Using Roblox to explore natural selection", learners leveraged pre-existing games within Roblox to explore principles of natural selection and others.

Relatedness and Community

Culturally responsive gamification fosters relatedness by reflecting community values. Culturally aligned games increased social connectedness by 13% in 2024. This strengthens engagement in diverse classrooms.

Motivation and Autonomy

Gamification fosters motivation through autonomy via game elements like quests. Gamified tasks increased intrinsic motivation by 17% in 2023(Saheed *et al*., 2025). Responsive designs enhance relevance. Gamified feedback loops boosted engagement by 15% in rural schools in 2024. Autonomy-supportive tasks empower underserved students, fostering self-directed learning.

Participation and Inclusion

Gamification enhances participation by fostering belonging in underserved communities. According to table 1 displayed below, relevant themes, like local narratives, create inclusive environments made the whole learning easy. Gamified platforms with collaborative tasks increased engagement among minority students, reducing exclusion. Responsive gamification promotes equitable participation by addressing barriers like language and socioeconomic disparities. Multicultural inclusion improved by 14% in 2020, supporting equitable participation

Table 1: Engagement Mechanisms in Gamified Learning

Mechanism	Function	Classroom Application	Outcome
Reward-Based Tasks	Motivate through tangible achievements	Earning badges for tasks	Sustained student effort
Collaborative Games	Foster teamwork and peer support	Team-based science quests	Enhanced peer relationships
Choice-Driven Paths	Allow students to select tasks	Customizable history challenges	Increased sense of autonomy
Progress Tracking	Show advancement through visual cues	Progress bars in reading apps	Improved motivation

Mental Health Benefits

Table 2 below outlines the mental health benefits of gamified learning, their purposes, classroom examples, and effects (Ibrahim *et al.,* 2025) while considering the higher institution students' well-being.

Table 2: Mental Health Benefits

Mental Health Benefit	Purpose	Classroom Example	Effect
Anxiety Reduction	Lower stress through engaging tasks	Relaxation-focused game levels	Calmer classroom environment
Confidence Building	Boost self-esteem via achievements	Badges for social studies tasks	Increased self-worth
Social Support	Strengthen peer connections	Team-based art projects	Enhanced community bonds
Emotional Balance	Support coping through feedback	Guided emotional reflection games	Improved emotional stability

MATERIALS AND METHODS

Creating Gamified Learning Programs

In order to prototype and verify their ideas in a methodical play-test-and-learn approach, lecturers and students should begin with the curriculum and the stated goals. By adding gaming components, the original education should be improved and students should be more motivated and engaged in both comprehending and enjoying the process. However, yet creating an interactive expertise, the syllabus is the most important consideration. Testing, commenting, events, goals, and material ought to be linked individually to significant learning objectives. Every element of the lesson needs to be educationally relevant and ought to be created with active understanding of concepts in mind (Kenwright (2023), Dimitriadou and Lanitis (2023) and Kamalov *et al.,* (2023)). When lecturers start incorporating gaming into the material, they would need to properly explain what they hope to accomplish using game components that are clearly aligned with the intended results. In order to replicate the reactions of students from all ages and backgrounds when the game components are present, the design process takes into account, the unique traits of the students (Gaskins (2022), Ali and Kazim (2022) and Hu. A (2024)). Design methodologies ranging from organizing lower-level elements, such as rules and mechanics, to describe how players interact with particular tools and mechanism affordances, then to organizing of the whole system constructions (Ohaka et al, (2025)), such as functional patterns and frameworks of other players involved. We can create substantial game components and educational material that will support the intended learning goals using various game design (Uwazie *et al.,* 2020).

Let's explore this game theories; SDT: Self-determination theory underpins responsive gamification as shown in figure 1 below by emphazing autonomy competence and similarities.

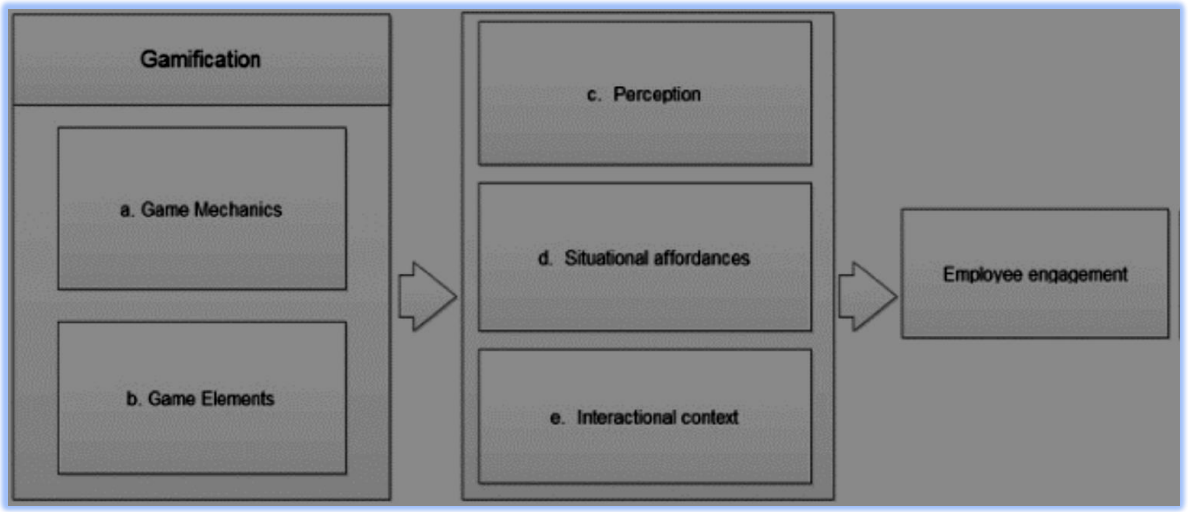

Figure 1: The motivational flow in gamified learning aligned with SDT. Figure 1 (adapted from Sarangi and Shah, 2015, as reviewed by van Roy & Zaman, 2024) presents a conceptual model of gamification elements driving engagement through psychological needs (Saheed *et al*., 2025)

Gamified tasks satisfying these needs increased motivation by 16% in 2020. SDT supports engagement in diverse classrooms. Gamification aligning with SDT principles enhanced student satisfaction by 14%. Responsive designs ensure relevance, fostering relatedness, and guide effective gamification in underserved settings (Saheed et al., 2025).

Challenges and Considerations

One of the main initiatives in gamification of programs in institutions of higher learning is disagreement about what defines instructionally appropriate gaming in education, despite the fact that many tactics have been used to try to improve and boost the results of these endeavors (Rachel *et al.,* (2023)). The educational system has nonetheless embraced and used these approaches without hesitation. In order to create a more stimulating atmosphere for learning, several institutions have included methods of gamification into their curriculum. Adding engaging video game features to a university course may boost student engagement and eliminate the negative perception that often surrounds education (Mulegi *et al.,* (2023). The use of these concepts results in more engaging and dynamic courses, since gaming

has the potential to engage students and encourage substantial student participation. Implementing such a solution might be challenging, however, for a number of reasons, including changing perspectives on education, knowledge related to age technology, institution size, budgetary considerations, and governmental regulations (Bulhan and Seezi (2023))

Implementation of Gamification Strategies

The app Kahoot is an excellent example of interactive game design with instructional materials. Lecturers may use this system to create surveys, in-game interactions, and quizzes. The instructor administers the test using the online gaming interface that is shown in front of other students, as well as learners accessed it via computers, mobile phones, or tablets (Baillifard *et al*, (2023), Chen and Chien (2022)). Additionally, Class Dojo for schools is an app designed to encourage students' involvement and teamwork in the classroom. In actual fact, Class Dojo may be regarded as a platform for acquiring information that yields valuable insights for creating in-depth feedback for educational research. In a more relaxed atmosphere, the application uses underlying data to highlight the contributions, giving the students a stronger sense of identification. Other programs use alternative approaches, such as different timelines, which allow students to see the sequence of events and relate them to various subjects of study. Chen. Z. (2022). The use of gaming in the educational process demonstrates increasing promise, according to research. In recent years, a number of institutions have included game-design components into their doctoral and university-level courses and have begun using similar tactics. To assist instructors and tutors in incorporating gamification into their classes and curriculum units, a number of gamified devices and applications have been developed (Uwazie *et al.,* 2020, Francis et al. 2025). These platforms were created with various technologies and components that allow us to apply entertainment to individuals with certain traits (Karpouzis *et al.,* (2024) and Kshirsagar *et al.,* (2022))

Ensuring Equity and Inclusivity

Having this mindset that all students can learn, in various capability, in their pace creates possibility that students are going to be included in the process. Utilizing these gaming tools which provide course information, Sailer and Homner (2020), test students and equally display feedback in succession give lecturers chance to address interpersonal and institutional injustices (Robson *et al,* 2015, Lee *et al*, 2011). The term "gamification," used here, is deep and encompasses all the usage of videogames and game practices. Regarding the latter, it has been observed that a large number of people having access to businesses games, created for amusement purposes, fail to adhere to Divers Equity and Inclusivity (DEI) principles and are often male-centric and extremely violent and aggressive (Brigham (2015), Dicheva *et al*, 2015). Higher education institutions throughout the globe have made significant progress in the last 20 years in integrating equity concepts into their courses and encouraging diverse access and participation. However, despite these initiatives, societal concerns about fairness still exist and are pertinent to higher degrees. It is feared that if resources are not directed toward the creation of innovative digital technologies for higher learning, the already-existing digital disparities may continue to get widen, Wood and Reiners (2015).

RESULTS AND DISCUSSION

Cultural alignment in gamified learning is challenging, as generic designs often fail to reflect diverse identities. Misaligned gamification reduced engagement by 18% in diverse classrooms in 2023. Co-designing gamified tasks with community input increased engagement by 20% in 2023. Culturally aligned designs improved participation by 14% in rural schools. Teacher-community partnerships in gamified content design improved success by 12% in 2020.

CONCLUSION

Gamification is a constantly changing cutting-edge method of instruction and acquisition of in higher education. Lecturers could significantly boost learning outcomes and students' engagement by incorporating game-design aspects into instructional environments. The empirical findings highlights how gamification may improve learning's effectiveness, interactivity, and enjoyment. But putting gamification into practice involves carefully assessing a number of obstacles, such as reluctance to transform and the requirement for diversity. Future studies should concentrate on creating solid conceptual structures and useful recommendations to optimize the advantages of humor for learning as the area develops. Lecturers may establish a more stimulating and productive learning environment that encourages students' inspiration and achievement by adopting these concepts.

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