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Examining the effects of Gaming Integration on Student Motivation and Learning in Kenyan higher Education

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ABSTRACT

Globally, gamification integration in higher education has become vital to boosting student engagement and achieving better learning results. This study examines how gamification affects learning and student motivation in Kenyan higher education institutions. After providing a broad overview of the world, the study focuses on Africa, analyzing the Kenyan setting in particular. The study points to a significant void in the body of knowledge about the efficacy of gamification in Kenyan higher Education. The study aims to investigate how gamification affects academic achievement, learning engagement, and student motivation. The theoretical framework clarifies the psychological processes underpinning the effectiveness of gamification by drawing on the Self-Determination Theory (SDT) and Flow Theory. The methodology, which takes a qualitative approach, uses secondary data sources discovered thorough literature research. Results imply that gamification enhances learning outcomes and student motivation. However, issues like teacher preparedness and technology infrastructure need to be addressed. The study concludes by encouraging the incorporation of gamification in higher Education to improve student learning experiences. These recommendations are directed towards policy makers, researchers, and educators.

Keywords: learning outcomes, student motivation, higher Education, and gamification.

1.0 INTRODUCTION

To increase motivation and engagement, gamification that refers to use of game-design principles in non-gaming contexts, is increasingly used in various industries, including education (Deterding *et al.*, 2011; Hamari *et al.*, 2014; Seaborn & Fels, 2015). These components include leaderboards, badges, points, and other features that increase the appeal and satisfaction of the activity. Higher Education has used gamification techniques to change conventional teaching practices and create more dynamic and exciting learning environments (Subhash & Cudney, 2018; Landers, 2014; Caponetto *et al.*, 2014).

By introducing elements of games that pique students' attention and motivate them to study, these initiatives seek to make Education more engaging. Gamification has been demonstrated in studies to increase student engagement, motivation, and academic achievement dramatically (Domínguez *et al.*, 2013; Kapp, 2012; de-Marcos, Dominguez, Saenz-de-Navarrete, & Pag, 2014). For example, Dominguez *et al.* (2013) discovered that students in a gamified setting were more inclined to interact with the material, which improved their academic performance.

Though it is still in its infancy compared to developed nations, gamification in Education is growing throughout Africa (Mtebe & Raisamo, 2014; Hamari, 2017; Denden *et al.*, 2020). The continent's problems, like poor infrastructure, resource shortages, and restricted access to technology, have made it difficult for gamification to be widely adopted (Dube, 2020; Chigona *et al.*, 2010; Makoe, 2012). These obstacles include the exorbitant price of technology, erratic internet access, and a need for more gamification-related training programmes for educators. However, efforts to include cutting-edge teaching techniques and digital learning resources are progressively changing Africa's educational scene (Unwin *et al.*, 2010; Farrell & Isaacs, 2007;

Isaacs, 2007). Programmes like the African Virtual University and other e-learning platforms, for instance, are assisting in closing the gap by giving educators and students access to digital materials and training.

Higher education establishments in Kenya are progressively investigating how gamification might improve learning results and student engagement (Njuguna, 2019; Nyandara, 2012; Wambugu & Emeke, 2016). To raise the standard of Education, the government and other interested parties have realized how critical it is to use cutting-edge technology and instructional strategies (Murithi, 2020; Mwanda & Otieno, 2017; Owuor, 2020). Modernization efforts in Education include programmes like the Digital Literacy Programme and the incorporation of ICT into educational programmes. Despite the advancements, obstacles, including resource allocation, teacher readiness, and technology infrastructure, still need to improve the successful use of gamification in Kenyan higher Education (Kagundu & Marigia, 2017; Muriithi, 2013; Wanjala, 2016). Numerous establishments need more internet connectivity, hardware and software, and teacher training on gamification integration. Therefore, even though gamification has been shown to have potential benefits, practical obstacles must be removed to realize these benefits fully in the Kenyan educational context.

1.1 Problem Statement

Although gamification has been extensively researched and applied in many educational settings worldwide, more is needed to know how it affects higher Education in Kenya. Research shows that gamification can significantly improve academic performance, motivation, and student involvement (Hamari *et al.*, 2014; Deterding *et al.*, 2011; Kapp, 2012). Research has demonstrated that incorporating game components, including points, badges, and leaderboards, into educational settings can lead to more engaging and dynamic learning environments in developed regions (Subhash & Cudney, 2018; Dominguez *et al.*, 2013). These studies demonstrate how gamification has the power to change conventional teaching strategies and enhance student learning.

Gamification adoption in Africa, notably Kenya, is still in its infancy and is beset by several particular difficulties. These consist of resource limitations, insufficient infrastructure, and restricted access to technology (Mtebe & Raisamo, 2014; Denden *et al.*, 2020; Chigona *et al.*, 2010). Notwithstanding these obstacles, there is a rising understanding of how crucial it is to use cutting-edge teaching techniques and digital learning technologies in order to improve the calibre of Education (Farrell & Isaacs, 2007; Isaacs, 2007). Nonetheless, little empirical research has looked specifically at how gamification affects learning outcomes and student motivation in Kenyan higher education.

A diversified student body and differing degrees of technology infrastructure define Kenya's higher education system (Njuguna, 2019; Muriithi, 2013; Wanjala, 2016). While some educational institutions have made significant progress in implementing technology-enhanced learning, others continue to face challenges related to inadequate infrastructure and resource constraints. It is necessary to look into how gamification affects student motivation and learning outcomes because of this discrepancy, which creates a unique setting. Furthermore, analyzing the opportunities and difficulties unique to the area is necessary to comprehend how gamification might be applied in this context (Njuguna, 2019; Nyandara, 2012; Wambugu & Emeke, 2016).

This study fills this knowledge vacuum by examining the incorporation of gamification in Kenyan higher Education and its impact on student motivation and learning. In order to provide light on

the possible advantages and difficulties of implementing gamification as a teaching approach in Kenyan colleges, this research examines the effects of gamification on student engagement, involvement, and academic performance. These kinds of insights are essential for educators, legislators, and other stakeholders to make well-informed decisions on integrating gamification into educational practices to improve learning outcomes.

1.2 Research Objectives

- i. To investigate how gamification affects students' motivation in Kenyan higher education institutions.
- ii. To evaluate how gamification affects students' involvement with their studies at Kenyan institutions.
- iii. To assess how gamification affects academic achievement in Kenya's higher education establishments.

1.3 Research Questions

- i. What effect does gamification have on Kenyan higher education institutions' student motivation?
- ii. How does gamification affect Kenyan higher education institutions' students' engagement with their studies?
- iii. What impact does gamification have on students' academic achievement in Kenyan higher education institutions?

1.4 Justification of the study

This study is justified by the urgent need to improve Kenyan Education through creative teaching methods like gamification. Many Kenyan higher education institutions still use outdated teaching techniques that frequently fall short of meeting students' different learning demands or engaging them to the fullest extent possible (Njuguna, 2019; Muriithi, 2013). This research attempts to offer insightful information that can assist in transforming these conventional approaches into more engaging and productive learning environments by investigating the effects of gamification on student motivation and learning results.

Comprehending how gamification affects academic performance and student engagement is essential to inform the creation of practices and policies that use technology to enhance learning outcomes (Hamari *et al.*, 2014). Policymakers can use the results of this study to develop plans that facilitate the incorporation of gamification into the educational system while resolving issues with resource allocation and technology infrastructure.

Teachers can use the knowledge gathered from this study to design gamified learning activities that meet the unique needs of their students, which will increase engagement and motivation (Subhash & Cudney, 2018). Furthermore, stakeholders including digital companies and educational institutions can work together to create and supply the resources and instruction required for successful gamification in the classroom (Denden *et al.*, 2020). The ultimate goal of this research is to add to the body of information regarding innovative teaching practices in Kenya, cultivate an atmosphere that supports the growth of technology-enhanced learning approaches, and raise standards of instruction generally.

1.5 Significance of the study

The results of this study add considerably to the corpus of knowledge in instructional design and educational technology by offering insightful information about the efficacy of gamification in Kenyan higher Education. Investigating cutting-edge teaching techniques that satisfy students' various requirements and enhance learning outcomes is becoming increasingly important as the educational landscape changes. Gamification is a promising way to address these issues since it can make traditional teaching techniques more dynamic and engaging.

This study provides empirical data on the usefulness of gamification in the Kenyan higher education context by analyzing how it affects student motivation, engagement, and academic performance. These kinds of insights are essential for guiding the development and application of educational interventions that use technology to make learning environments more engaging and productive. The results point out any potential obstacles to the effective integration of gamification and assist in pinpointing the precise gamification components that are most advantageous for student learning.

The study's recommendations have the potential to provide educational institutions wishing to use gamification techniques with a helpful manual. The study assists educational institutions in creating and implementing gamified learning activities that improve student motivation and engagement by delineating best practices and offering evidence-based recommendations. These suggestions are helpful for educators and administrators looking to boost academic achievement through cutting-edge teaching strategies.

Furthermore, by deepening the knowledge of the various educational situations in which gamification can be successfully used, the study advances educational technology as a whole. It encourages the investigation of novel approaches to incorporating game-based components into instructional design and lays the groundwork for future research on gamification in Education. The results are also used by policymakers to create frameworks that encourage gamification in higher Education and to allocate funds wisely.

2.0 LITERATURE REVIEW

2.1 Effect of gamification's on student motivation

Gamification has dramatically increased student motivation by introducing game design features like points, badges, and leaderboards into educational activities (Deterding *et al.*, 2011; Hamari *et al.*, 2014; Kapp, 2012). These components, often referred to as "game mechanics," are meant to boost student engagement and give them a sense of accomplishment. Points give students instant feedback and acknowledgement for their efforts; badges are concrete representations of accomplishment; and leaderboards add a competitive aspect that can spur students to raise their game.

Based on psychological demands for relatedness, competence, and autonomy, gamification has been shown to boost intrinsic motivation (Ryan & Deci, 2000; Rigby & Ryan, 2011; Sheldon & Filak, 2008). Self-determination theory (SDT) states that human motivation is based on these psychological demands. Competence is the desire to feel effective and capable, relatedness is the need to have a sense of connection to other people, and autonomy is the need for people to feel in control of their choices and actions. These needs are met by gamification, which offers students

greater control over their education, chances to showcase their abilities, and cooperative or competitive activities that promote social interaction.

Gamification has been demonstrated to enhance student motivation and engagement in higher Education, resulting in improved learning outcomes (Dominguez *et al.*, 2013; Subhash & Cudney, 2018; Seaborn & Fels, 2015). Dominguez *et al.* (2013) carried out a study that included gamified components in an academic course. When compared to students in a standard course, they discovered that students in the gamified course showed better levels of engagement and participation. Students were encouraged to put more effort into their studies because the gamified components made learning more pleasurable and rewarding.

In addition, Subhash and Cudney (2018) thoroughly analyzed gamification's effects on higher education student learning and engagement. According to their research, gamification increases motivation while promoting persistence, a good attitude towards learning, and improved academic success. Students stated that more dynamic and engaging learning occurred due to gamified exercises, which kept them motivated and interested in the material throughout the course.

In their evaluation of empirical research, Seaborn and Fels (2015) also emphasized the motivational advantages of gamification. They pointed out that features like instant feedback, goal-setting, and reward systems are frequently found in gamified systems, and these features all support long-term motivation and engagement. The competitive and social elements of gamification, such as leaderboards and multiplayer games, have been found to further boost motivation through the development of a sense of community and healthy competition among students.

By offering prizes and recognition from outside sources, gamification can have a favourable effect on extrinsic motivation in addition to intrinsic drive (Hamari *et al.*, 2014). Extrinsic motivation is impacted by outside variables like prizes, grades, or recognition, but intrinsic motivation is motivated by a person's interest in and enjoyment of the work at hand. Points, badges, and certificates are examples of gamified components that act as external incentives to encourage students to finish assignments and meet objectives. Extrinsic and intrinsic motivators should be balanced, though, to make sure that students are staying interested for the proper reasons. A viable strategy for raising student motivation and engagement in higher Education is the incorporation of gamification. Teachers can design more engaging, entertaining, and productive learning environments by utilizing game mechanics that satisfy psychological requirements and offer outside rewards. Research on gamification's potential will probably lead to more advancements in teaching and learning methodologies as its use in Education grows.

2.2 Gamification's Effect on Students' Engagement in Learning

Research has repeatedly shown that gamification improves student learning engagement by converting conventional learning settings into dynamic and engaging experiences (Landers, 2014; Caponetto *et al.*, 2014; Deterding, 2012). To inspire students and encourage active engagement, gamification entails incorporating game features like points, badges, levels, and leaderboards into educational activities (Kapp, 2012; Hamari, 2017). By focusing on intrinsic motivators like achievement and advancement, these components increase students' enjoyment and engagement with the material.

Gamified learning experiences have been found to support active engagement and sustained attention in educational settings worldwide. These two factors are critical for successful learning

outcomes (de-Marcos *et al.*, 2014; Kapp, 2012; Hamari, 2017). Gamification helps students stay engaged and motivated throughout their learning journey by offering opportunities for mastery, clear goals, and instant feedback. This kind of involvement is beneficial in higher Education when complex material and protracted study sessions may challenge students' motivation.

Gamification has demonstrated promise in breaking down obstacles related to technology infrastructure and resource restrictions in African educational contexts, including Kenya (Mtebe & Raisamo, 2014; Dube, 2020; Njuguna, 2019). Gamification provides a low-cost way to engage pupils by creatively using the tools, even when access to technology and internet connectivity is restricted. For example, gamified learning experiences are increasingly being delivered through mobile devices to pupils in remote places where traditional educational materials may be limited. According to research by Mtebe and Raisamo (2014), gamification can potentially improve learning motivation and engagement among students from various socioeconomic backgrounds in higher Education in Africa. Even in settings with limited resources, the interactive elements of gamification promote peer engagement and collaborative learning, creating a welcoming learning community (Dube, 2020). Collaboration is essential for students to develop their critical thinking and problem-solving skills through interactive challenges and group activities supported by gamified platforms. Additionally, Njuguna (2019) addresses how gamification may address linguistic and cultural diversity in Kenyan classrooms by offering personalized learning experiences that meet the needs of each student. Instructors can construct inclusive and culturally appropriate learning environments that connect with students' experiences and backgrounds by customizing game mechanics to suit local circumstances and cultural values.

Gamification's Impact on Academic Achievement

Numerous studies have examined the effect of gamification on academic achievement, producing a range of conclusions and understandings (Dominguez *et al.*, 2013; Hanus & Fox, 2015; Nah *et al.*, 2014). While some research shows that gamified learning interventions significantly improve academic performance, other studies warn of potential drawbacks that necessitate careful consideration in design and execution (Hamari *et al.*, 2014; Subhash & Cudney, 2018; Caponetto *et al.*, 2014).

Gamification proponents contend that incorporating game elements into instructional activities can boost motivation and engagement in students, which will improve academic performance. For example, Dominguez *et al.* (2013) discovered that students who participated in a gamified course performed better and exhibited higher levels of participation than students in traditional learning environments. Gamification's structured feedback and instant rewards can encourage students to actively engage in lessons and persevere in grasping challenging ideas (Nah *et al.*, 2014).

Nonetheless, detractors contend that how gamification is used significantly impacts its ability to enhance academic achievement. Students' attention may unintentionally be diverted from intrinsic motivation to the pursuit of rewards when extrinsic rewards like points and badges are overemphasized (Hamari *et al.*, 2014; Subhash & Cudney, 2018). Without encouraging the deep comprehension or critical thinking abilities needed for academic achievement, this may result in surface-level involvement. According to Caponetto *et al.* (2014), gamification tactics that need to be well-designed may not be able to sufficiently challenge students to acquire higher-order cognitive skills or correspond with educational aims.

Empirical research on gamification's effect on academic performance still needs to be explored in Kenyan educational institutions, where these new teaching techniques are being explored more

and more (Nyandara, 2012; Wambugu & Emeke, 2016; Muriithi, 2013) Research carried out in other settings might not encompass the distinct obstacles and prospects found in Kenya, including heterogeneous student populations, varying degrees of technology infrastructure, and cultural factors (Wambugu & Emeke, 2016).

Nyandara (2012) emphasizes the need for localized research to determine the best ways to incorporate gamification into higher Education in Kenya to improve student performance. Scholars can offer valuable perspectives on optimal approaches and tactics customized for the Kenyan educational context by examining the particular contextual aspects that impact the results of gamified learning interventions. Furthermore, Wambugu and Emeke (2016) highlight how gamification can improve learning outcomes and alleviate educational gaps in Kenya's various regions. They contend that gamification can engage students from a variety of backgrounds and assist their academic performance by fostering inclusive, dynamic learning environments.

2.3 Theoretical Framework

The Flow Theory and Self-Determination Theory (SDT), as presented, serve as the foundation for this research.

2.3.1 Self-Determination Theory (SDT)

According to Ryan and Deci's (2000) Self-Determination Theory (SDT), human motivation is primarily motivated by the need for relatedness, competence, and autonomy. Gamification is a potent method for meeting these psychological needs in educational settings, which increases students' intrinsic motivation. The urge for people to feel in charge of their choices and behaviours is called autonomy. By giving students choice and control over their learning path? For example, can we let them choose assignments or pathways within gamified modules? Gamification fosters autonomy (Rigby & Ryan, 2011). Students with this sense of autonomy may find studying more exciting and meaningful.

The need to feel capable and effective is related to competence. Gamification fosters competence by providing precise objectives, quick feedback, and chances for skill improvement (Sheldon & Filak, 2008). Gamified systems use points, badges, and levels to represent accomplishment and development, encouraging students to take on challenging assignments and advance their abilities. Gamification improves students' perceived competence, creating a sense of success and increasing learning motivation by matching learning objectives with manageable difficulties (Ryan & Deci, 2000).

The yearning to feel a part of a group and linked to others is known as relatedness. By encouraging social interactions through team tasks, leaderboards, and collaborative activities, gamification promotes relatedness (Rigby & Ryan, 2011). Students can engage, share accomplishments, and work together on assignments in a supportive learning environment created by these social components. Gamification increases students' enthusiasm to actively participate in educational activities by creating a sense of community (Sheldon & Filak, 2008). SDT offers a theoretical foundation for comprehending how gamification improves intrinsic motivation in Education. Gamification makes learning more exciting and rewarding for students by attending to their basic psychological requirements of relatedness, competence, and autonomy.

2.3.2 Flow Theory

Csikszentmihalyi (1990) established Flow Theory, which characterizes the optimal experience state in which people are absorbed and intensely concentrated on a task. Achieving flow requires striking a balance between the task's degree of difficulty and the person's level of expertise. By designing learning experiences that are both difficult and achievable for students, gamification can help to create flow and encourage sustained attention and deep engagement (Csikszentmihalyi, 1997). Clear objectives and fast feedback are essential to flow and are key gamification elements. Gamified educational approaches furnish learners with well-defined goals, including finishing missions or reaching specific benchmarks that function as instantaneous assessments of their advancement (Hamari & Koivisto, 2014). This methodical feedback loop lessens distractions and improves concentration, assisting students in maintaining their attention and engagement in the learning process.

Furthermore, gamification provides chances for mastery and skill improvement, another essential component of reaching flow. Gamification promotes skill development and ongoing improvement by giving students more challenging assignments and letting them progress through levels or receive incentives based on their performance (Nakamura & Csikszentmihalyi, 2009). This development inspires students to push themselves, learn more deeply, and feel successful as they overcome obstacles.

The captivating quality of gamification also adds to the excitement and absorption that define flow experiences. Gamification engages students and keeps them interested for extended periods with engaging and interactive activities (Hamari & Koivisto, 2014). Students are naturally driven to explore, learn, and thrive in an immersive learning environment fostered by this ongoing involvement. Flow Theory offers insights into how gamification might enhance learning by encouraging focused attention and deep involvement. Gamification increases the possibility of reaching flow states by matching task difficulties to students' skill levels and offering instant feedback. This maximizes learning results and student pleasure in educational environments.

3.0 RESEARCH METHODOLOGY

3.1 Research Design

A thorough literature analysis gathered secondary data sources for this study, which used a qualitative research methodology. Examining the intricate phenomenon of gamification and its effects on student motivation and learning was a good fit for the qualitative method.

3.2 Data Collection

Data about gamification in Education was gathered from various scholarly sources, journals, publications, and papers. To offer a thorough grasp of the research topic, the literature evaluation concentrated on studies carried out internationally, in Africa, and particularly in Kenya.

3.3 Data Analysis

A thematic analysis of the gathered data revealed essential themes and trends regarding the influence of gamification on student motivation, learning engagement, and academic achievement. The study's theoretical framework and research objectives guided the analysis.

4.0 RESULTS AND DISCUSSIONS

4.1 Gamification's Effect on Student Motivation

Gamification is a powerful strategy for raising student motivation by meeting psychological requirements and increasing intrinsic motivation (Deterding *et al.*, 2011; Hamari *et al.*, 2014; Kapp, 2012). This technique leverages intrinsic motivators such as performance, competence, and autonomy by incorporating game components like challenges, points, and rewards into educational activities. These components encourage students to actively participate in and perform well on learning tasks by giving them prompt feedback and acknowledging their efforts (Hamari *et al.*, 2014).

Gamified learning interventions have shown promise in raising student motivation in Kenya, but issues still need to be resolved, like inadequate technology access and internet connectivity (Njuguna, 2019; Muriithi, 2013; Wanjala, 2016). Notwithstanding these difficulties, gamification is a viable strategy for raising student engagement through more participatory, entertaining, and profoundly personal learning. Njuguna (2019), for example, addresses how gamification techniques customized for regional settings can raise student motivation and engagement in Kenyan higher education settings. Gamification can encourage students to feel relevant and autonomous, leading to continuous participation and enthusiasm to study. This is achieved by matching educational content with students' interests and cultural backgrounds.

Gamification's Effect on Students' Engagement in Learning

By converting conventional learning settings into dynamic, immersive learning experiences, gamification has demonstrated great promise to improve student learning engagement (Landers, 2014; Caponetto *et al.*, 2014; Deterding, 2012). Students are encouraged to actively participate and concentrate on learning activities when game components like quests, simulations, and competitive challenges are incorporated (Deterding, 2012). In order to keep students' attention and promote profound learning experiences, these components offer clear objectives, quick feedback, and chances for skill growth (Caponetto *et al.*, 2014).

Gamification has been linked to enhanced student participation and maintained attention at Kenyan higher education institutions, where educational gaps and resource restrictions are common (Mtebe & Raisamo, 2014; Dube, 2020; Njuguna, 2019). For instance, Mtebe and Raisamo (2014) show how gamified learning platforms can enable peer interaction and collaborative learning, which creates a welcoming learning environment that raises student engagement. Gamification motivates students to investigate complex subjects and engagingly hone their critical thinking abilities by offering interactive learning experiences that are rewarding and demanding.

4.2 Gamification's Impact on Academic Achievement

The literature has yielded inconsistent results regarding the effects of gamification on academic performance, which can be attributed to differences in the design and execution of gamified learning activities (DomIniguez *et al.*, 2013; Hanus & Fox, 2015; Nah *et al.*, 2014). Some research indicates that gamification can boost motivation and engagement, improving academic performance (Hanus & Fox, 2015). However, other studies raise concerns about possible adverse effects, such as an excessive dependence on extrinsic rewards and the requirement for careful instructional design (Subhash & Cudney, 2018; Caponetto *et al.*, 2014).

Only a few studies have been conducted in Kenya on the impact of gamification on academic achievement, suggesting that more studies are necessary to determine whether gamification might enhance educational outcomes (Nyandara, 2012; Wambugu & Emeke, 2016; Muriithi, 2013). It is imperative to comprehend the impact of gamification on academic achievement within the Kenyan setting to formulate evidence-based solutions that optimize learning outcomes and tackle educational obstacles. For example, Wambugu and Emeke (2016) highlight how gamification might improve academic performance and learning experiences for students from various socioeconomic backgrounds in Kenya. Future studies can shed light on successful teaching strategies that use gamification to enhance academic achievement by analyzing the effects of gamified interventions on variables, including retention rates, exam performance, and student satisfaction.

5.0 CONCLUSIONS

Gamification has positively affected student motivation by boosting intrinsic motivation and meeting psychological demands, including relatedness, autonomy, and competence. Gamification incorporates features of games, such as leaderboards, badges, and points, into educational activities, giving students a chance to make decisions, practise skills, and connect with others in a social learning environment. Gamification solutions have demonstrated the potential to surmount obstacles concerning technical infrastructure and resource accessibility in Kenya, augmenting student motivation. Even though some places have restricted access to technology, gamification provides a flexible way to engage students with techniques that can be adjusted for various learning settings. By integrating low-tech gamified activities or utilizing mobile technology, educators can improve student motivation by ensuring that learning experiences align with students' cultural and contextual backgrounds.

By converting conventional learning settings into dynamic, immersive learning experiences, gamification dramatically improves student learning engagement. Gamification encourages students to actively engage in learning activities and pay attention for extended periods by including game features like quests, simulations, and cooperative challenges. Adopting gamification techniques has been linked to improved student engagement and sustained attention in online and classroom learning settings in Kenyan higher education institutions. These techniques not only make interactive learning experiences more accessible, but they also inspire students to investigate complex ideas, hone their critical thinking abilities, and meaningfully engage with classmates.

There are conflicting findings on the effects of gamification on academic performance, which highlight the significance of meticulous planning and execution in learning environments. While some research indicates that gamification can improve motivation and engagement, which can improve academic achievements, other studies warn against potential adverse effects, such as the risk of placing too much emphasis on extrinsic rewards at the expense of real learning opportunities. More research is required to fully understand the usefulness and ramifications of gamification in Kenyan higher Education, as the field's understanding of how it affects academic achievement is still developing. Future research offers important insights into how gamification might be customized to improve academic success in various educational environments across Kenya by looking at variables including exam performance, retention rates, and overall learning outcomes.

In summary, gamification presents encouraging prospects for raising student motivation, engagement with the learning process, and even academic achievement in Kenyan higher Education; however, successful application of gamification necessitates considering regional contexts, available technology, and instructional objectives. To ensure that gamification tactics effectively enhance student success in Kenya's changing higher education scene, further study and assessment are necessary.

5.1 RECOMMENDATIONS

Regarding Policymakers

The facilitation of the integration of gamification into higher Education is primarily the responsibility of policymakers. First and foremost, funding for developing technology infrastructure that facilitates the adoption of gamified learning environments is imperative. It is imperative to guarantee that gamification tools and applications are accessible through dependable internet connectivity, suitable hardware, including PCs and tablets, and software platforms. Policymakers may ensure that all students, regardless of location or socioeconomic status, have equal access to gamified educational experiences by prioritizing infrastructure development.

Second, legislators ought to create rules that promote and incentivize the inclusion of gamification in the curriculum. This can entail offering scholarships or other financial possibilities to educational institutions experimenting with gamified learning strategies. National educational standards that include gamification principles can also give teachers clarity and direction on how to successfully incorporate gamification while adhering to learning objectives and outcomes.

Regarding Teachers

Educators are leading the way when it comes to using gamification techniques to increase student motivation and engagement. Teachers should use gamification as a strategic tool to enhance the learning process rather than just as a new fad. This entails incorporating gaming components into their instructional strategies, such as leaderboards, points, badges, and interactive challenges. By doing this, teachers may build engaging and dynamic learning environments that pique students' curiosity and encourage active engagement in class activities.

In addition, it is imperative to furnish educators with continuous assistance and training to guarantee the successful execution of gamified educational initiatives. Enhancing educators' digital literacy, instructional design abilities, and gamification tool usage should be the main goals of professional development programmes. To address their students' changing demands, educators can exchange best practices, solve problems, and keep refining their gamification techniques through workshops, seminars, and peer learning groups.

For Researchers

Researchers have a vital role in advancing the understanding of gamification and its impact on academic performance and educational outcomes. Additional empirical research is required to investigate the long-term impacts of gamification on student learning and performance. Research should look into variables like retention rates, exam scores, and overall academic success to offer thorough insights into how gamification affects educational outcomes over time.

Furthermore, scholars ought to investigate the possible obstacles and remedies to implementing gamification in various educational contexts, such as those with restricted technology resources or

distinct cultural factors. Understanding these problems can inform the creation of adaptable gamification solutions that are inclusive and effective across varied environments.

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