

Effectiveness of Gamification in Open and Distance Learning in Nigeria

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Abstract

The effectiveness of gamification in open and distance learning (ODL) in Nigeria was investigated in this study, with particular attention paid to effectiveness of gamification in enhancing ODL institutions and influence of gamification on learners' motivation. The study was guided by two research questions. ODL undergraduate enrolled at the National Open University of Nigeria (NOUN) as of January 2025 made up the study's population. Through a multi-stage selection process that involved four randomly selected study centers from Nigeria's six geopolitical zones, 800 respondents in total were selected. The Gamification Effectiveness in Distance Learning Questionnaire (GEDLQ), which was used to gather data, was deemed reliable by experts and has a Cronbach's alpha value of 0.86. Google Forms was used to gather data from the respondents. Mean and standard deviation of the descriptive statistic and multiple regression of inferential statistic at 0.05 level of significance were used to address the research questions. Gamification is a potent teaching technique

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that boosts student motivation, promotes engagement, and cultivates contentment with online courses, according to the findings. A moderately good link between gamification aspects and learners' motivation was shown by the overall high mean scores and a R value of .465. According to the study's findings, gamification can significantly enhance learning results, engagement, and student happiness at Nigeria's ODL institutions when it is skilfully included into instructional design and in line with institutional quality frameworks

Keywords: *effectiveness of gamification, open and distance learning, instructional design methodologies, game design features*

Introduction

Distance learning's explosive growth in Nigeria has changed the provision of education by giving students a variety of socio-economic and geographic contexts and flexible and accessible learning options. Education has become more democratic in the country as a result of the reactivation of the National Open University of Nigeria (NOUN) as a dedicated open and distance learning (ODL) institution in 2002. However, enduring issues including low motivation, low learner engagement, high dropout rates, and little interactivity still make it difficult for distance learning to be delivered effectively in the nation. The pursuit of novel pedagogical approaches that can improve student engagement, contentment, and performance in online learning settings has accelerated as a result of these problems.

According to Moore & Kearsley (2012) and Commonwealth of Learning (2015), ODL is an educational method that allows people to study freely at any time and from any location by offering flexible, technologically assisted access to education. In order to provide lifelong learning and fair educational opportunities for various learners across social and geographic borders, it integrates the concepts of openness, learner autonomy, and mediated interaction. In the opinion of International Council for Open and Distance Education (ICDE). (2023) and UNESCO (2023), with the use of technology and a variety of delivery methods, ODL is an adaptable and inclusive educational strategy that eliminates time, location, and entry obstacles to promote fair access to educational opportunities. Within institutional frameworks that encourage transparency, involvement,

and innovation in education, it strongly emphasizes the autonomy of learners, lifelong learning, and quality assurance. ODL, according to Commonwealth of Learning (2015), is a more comprehensive concept that incorporates inclusion, flexibility, and openness. It addresses not just where learning takes place but also who can learn and how learning is supported and accessed.

A viable teaching method for boosting student engagement and learning results is gamification, which is the utilization of game design features like challenges, leaderboards, badges, and points in non-gaming environments. It has been demonstrated that gamification boosts intrinsic motivation, maintains focus, and encourages active engagement in learning activities by combining aspects of enjoyment, competition, and reward. According to Rohit et al. (2025), improved conceptual understanding, active learning, and improved classroom dynamics are all facilitated by gamification. Zainuddin et al. (2020), in their findings, claimed that gamification promotes cooperation, increases perseverance, and facilitates independent learning. Gamification is becoming more and more popular in ODL and is no longer just employed in K-12 or language learning contexts (Domínguez et al., 2013). To simulate institutional constraints, ODL has started using digital simulations, scenario games, and competitive tasks (García-Peñalvo et al., 2019). However, there is still scanty empirical data on the effectiveness of gamification in Nigeria's ODL system, despite the fact that it is becoming more and more popular in higher education across the globe.

In this study, the effectiveness of gamification in ODL refers to its capacity to enhance learner engagement, motivation, interaction and collaboration, satisfaction with online learning, participation, persistence, and overall learning outcomes. These dimensions collectively reflect the extent to which gamified instructional strategies improve the quality of learning experiences and educational outcomes among distance learners in Nigerian ODL institutions. Understanding the effectiveness of gamification in the NOUN is essential, given Nigeria's peculiar educational problems, which include inconsistent student assistance, disparities in digital literacy, and infrastructure deficiencies. Thus, this study explores the level of effectiveness of gamification, and the influence of gamification on learners' motivation in ODL institutions in Nigeria. It is anticipated that the results will

support instructional design methodologies and policy recommendations that improve the quality and efficacy of the nation's delivery of ODL.

Review of Literature

Conceptual Meaning of Gamification.

According to Nwachukwu & Nwizu (2024), gamification is viewed as an instructional method to combat learner disengagement and dropout in the context of ODL institutions. Integrating game-design features, such as quizzes, challenges, peer competition, and leaderboards, helps maintain attention and retention because many distance learners report loneliness, late feedback, and inadequate motivation. These components encourage ongoing engagement in educational activities and lower the rate at which students drop out of classes. Ojeomogha (2023) reported that gamification can facilitate independent, and self-paced learning, which is especially significant for ODL in Nigeria. Gamified systems provide learners progress at their own pace, revise tasks, get immediate feedback, and select among optional challenges for the benefit of learners with a variety of backgrounds.

According to Attah & Ogunlade (2024), gamification is a tool that profoundly influences learning outcomes and cognitive engagement rather than just being a motivational tool. In the opinion of Basheer & Babangida (2022), a sense of disconnection and delayed or insufficient feedback are the main causes of motivational issues in many ODL institutions. This is fixed by gamification, which offers regular or instant feedback together with extrinsic rewards that gradually increase intrinsic motivation. To Balarabe & Barkindo (2024), gamified modules replicate communities, build peer relationships, and establish social presence, in addition to improving motivation. This also aids accountability, peer learning, and support, all of which have been linked in certain Nigerian studies to lower dropout rates and increase student commitment. According to a more recent conceptual interpretation by Aji et al. (2024), gamification does not function in a vacuum; rather, its efficacy in Nigeria is contingent upon several factors, including cultural acceptability, student preferences, teacher proficiency with gamified tools, internet access,

and dependable ICT. Gamification is therefore understood as a strategy whose effectiveness is influenced by contextual facilitators.

Effectiveness of Gamification

According to Deterding et al. (2011), effectiveness of gamification is frequently understood in terms of its capacity to use elements of game design to increase students' motivation and engagement, like leaderboards, badges, and points, into learning contexts that are not games. Effective gamification, according to Subhash & Cudney (2018), can be defined as the degree to which game-based components enhance students' academic and cognitive performance. Gamified learning environments facilitate better internalization and longer retention of information by encouraging active learning, instant feedback, and iterative development. Another understanding of gamification's efficacy holds that it can boost learner satisfaction, enjoyment, and retention by encouraging a sense of competence, autonomy, and social relatedness (Koivisto & Hamari, 2019). Gamified systems lessen the psychological distance sometimes associated with ODL by establishing emotionally engaging learning environments.

Levels of Effectiveness of Gamification

Recent empirical evidence indicates that gamification exerts varying but generally positive levels of effectiveness on learners' academic outcomes, motivation, engagement, participation, and persistence in educational settings. Studies conducted across different countries and educational contexts consistently demonstrate that the integration of game elements, such as points, badges, leaderboards, levels, and rewards, enhances students' learning experiences and outcomes. A recent meta-analysis by Gyedu et al. (2026) synthesized findings from 22 independent studies to determine the effectiveness of gamification in higher education. The study reported a statistically significant and large overall effect size (Cohen's $d = 1.12$), indicating that gamification substantially improves student motivation, deep learning, and academic achievement. The authors further observed that effectiveness varied according to discipline, duration of intervention, and instructional design, with structured gamification frameworks producing stronger outcomes.

Similarly, Dai et al. (2025) conducted a meta-analysis involving 182 effect sizes from 37 randomized and quasi-randomized studies. Their

findings revealed that gamified learning significantly improved students' learning outcomes across different educational levels. The study further established that combinations of game elements produced stronger learning effects than isolated gamification features, suggesting that comprehensive gamification designs are more effective than single-mechanic approaches. In a systematic review, Zeybek & Saygı (2024) examined the implementation of gamification in educational settings and concluded that gamification consistently enhanced learners' motivation, engagement, participation, and satisfaction. The review noted that while the effectiveness of gamification varied across contexts, positive outcomes were reported in most studies, particularly where gamification was aligned with instructional objective. Within online learning environments, evidence suggests that gamification contributes significantly to learner engagement and retention. Studies on gamified learning management systems have shown that the integration of game-based incentives increases students' participation, commitment, and completion of online learning tasks. These findings demonstrate that gamification is particularly beneficial in technology-mediated learning environments where maintaining learner motivation is often challenging.

In the Nigerian context, emerging studies on digital and distance education indicate that gamification can address persistent challenges associated with learner disengagement, low participation, and feelings of isolation among distance learners. Nigerian researchers have reported that technology-mediated and interactive learning strategies promote active participation, collaborative learning, and sustained motivation among learners in online environments. For instance, Aderinoye & Ojokheta (2004) observed that learner isolation and reduced interaction constitute major challenges in distance education in Nigeria, emphasizing the need for innovative approaches that foster engagement and collaboration. Similarly, Jegede (2010) argued that the integration of interactive technologies in ODL enhances learners' participation, motivation, and academic success. Although empirical studies specifically examining gamification in Nigerian ODL institutions remain limited, existing evidence suggests that the approach holds considerable promise for improving learner experiences, engagement, and learning outcomes.

The reviewed studies collectively demonstrate moderate to high levels of effectiveness of gamification in educational settings. Their findings are particularly relevant to ODL in Nigeria, where student retention, engagement, and motivation remain major concerns. Recent evidence by Dai et al. (2025) revealed that gamified learning significantly improves students' learning outcomes, engagement, and motivation across diverse educational contexts, particularly when multiple game elements are integrated into instructional design. Similarly, Gyedu et al. (2026) reported a large positive effect of gamification on students' academic performance and learning engagement in higher education, emphasizing its effectiveness in promoting sustained participation and deeper learning. By incorporating game-based elements into learning management systems and online instructional activities, Nigerian ODL institutions, such as the NOUN, can create more interactive and engaging learning environments. Consequently, gamification has the potential to improve academic achievement, learner satisfaction, participation, and persistence among distance learners, thereby enhancing the overall quality and effectiveness of ODL delivery in Nigeria.

Studies on Effectiveness of Gamification

Growing awareness of the benefits of gamification and digital innovations in improving student engagement and academic results is demonstrated by recent empirical data from distance educational institutions in Nigeria. According to Nwachukwu & Nwizu (2024), gamification has great potential for encouraging distance learners by incorporating humorous design elements like challenges, badges, and points into distance learning courseware. This will reduce learner isolation and encourage perseverance. In support of this perspective, Shuaibu et al. (2024) showed in a study conducted at the Ahmadu Bello University Distance Learning Centre that the effectiveness of gamified interventions must be in line with institutional quality assurance frameworks. The study showed that the quality of instructional design, learner support, and assessment practices have a significant impact on its effectiveness. Similarly, Quadri (2024) discovered that online facilitation, feedback mechanisms, and learner-content interaction significantly predicted learning effectiveness among University of Ibadan Distance Learning students, highlighting the significance of interactive and well-structured digital

learning environments. All of these studies highlighted the fact that gamification's success in Nigerian ODL institutions hinges on its careful incorporation into dynamic, pedagogically sound, and quality-assured online learning platforms that encourage participation and long-term success.

The motivation of students is a key factor in influencing their level of involvement, perseverance, and academic achievement of distance learners. Based on recent research (Pelikan et al. 2021; Hamari et al. 2014) and Self-Determination Theory (Deci & Ryan, 2000), gamification increases motivation by meeting learners' needs for autonomy (self-paced challenges), competence (measurable progress and rewards), and relatedness (social competition and collaboration). These components, when included into ODL, turn abstract academic assignments into interesting, goal-oriented activities that promote perseverance and self-regulated learning. As a result, gamification not only acts as a motivator but also as a teaching tool that connects technological innovation and students' psychological involvement, which eventually leads to better academic achievement and higher course completion rates among ODL students in Nigeria.

The internal and external psychological elements that encourage, maintain, and guide students' involvement, effort, and success in remote learning settings are referred to as distance learners' motivation. By adding aspects of games like points, badges, leaderboards, and challenges into instructional design, gamification has become a cutting-edge tactic in the context of ODL that strengthens these motivating qualities. By encouraging self-control, perseverance, and active engagement among students, gamification cultivates both intrinsic and extrinsic motivation. According to Hartnett (2016), the self-initiated internal drive that enables students to plan, coordinate, and maintain their learning activities in virtual contexts with little outside monitoring is known as learners' motivation in open and distance education. By offering instant feedback, attainable objectives, and social-psychological rewards that make learning more interesting and goal-oriented, gamification, when done well, enhances this motivation. It has been demonstrated by Hartnett that gamified learning environments in Nigeria's ODL institutions boost students' dedication, enjoyment, and sense of accomplishment, assisting the students in overcoming the

institutional, social, and physical obstacles that frequently stand in the way of academic success.

According to Kuo et al. (2014), motivation in distance learning is the emotive and cognitive reaction of a student to the layout of the online learning environment, which includes components like interaction, perceived social presence, and instructional quality. By turning these components into interactive experiences that encourage cooperation, involvement, and prompt feedback, gamification improves motivation in this way. Peer challenges, progress tracking, and leaderboards are some of the features that boost students' sense of social presence and belonging, which increases their dedication to their academic work. Pelikan et al. (2021), within the framework of Self-Determination Theory, stressed that the extent to which students' basic psychological needs, such as independence, proficiency, and connection, are met determines how motivated they are to learn remotely. By providing learners with autonomy over their progress, competence through attainable challenges and feedback, and relatedness through competitive and cooperative activities, gamification directly supports these requirements. According to Ivanova & Mkrttchian (2021), motivation is a complex concept that includes both internal and external forces that propel, maintain, and direct learning behaviour in both online and in-person settings. By fusing intrinsic pleasure with extrinsic rewards, gamified learning environments appeal to these motivations and encourage intellectual engagement, perseverance, and task completion. Gamification is therefore a powerful motivating tool that enhances ODL students' experiences while encouraging sustained participation and academic achievement in online learning environments.

ODL gamification successfully strikes a balance between internal and extrinsic motivation by fusing reward-based reinforcement with enjoyment-driven engagement. While self-directed learning, curiosity, and mastery are encouraged by intrinsic motivation, engagement is maintained by extrinsic factors like leaderboards, badges, and points through accomplishment and acknowledgment. Through this synergy, routine learning is transformed into an engaging, goal-oriented experience that encourages perseverance, contentment, and performance. Therefore, gamification improves learners' overall

efficacy in self-paced ODL contexts by sustaining motivation and strengthening commitment.

The self-driven desire that sustains students' effort, inventiveness, and perseverance is known as intrinsic motivation, and it is essential for success in ODL. Long-term efficacy relies on intrinsic motivation that promotes commitment and in-depth learning, even while extrinsic rewards like grades or recognition may increase engagement. By making learning interesting, participatory, and supportive of autonomy, gamification reinforces this motivation. According to Deci & Ryan (2000), gamified settings satisfy learners' demands for autonomy, competence, and relatedness through self-paced tasks, adaptive challenges, and prompt feedback, which improves motivation and efficacy in ODL institutions. Success in ODL depends on intrinsic motivation and the inner drive that propels students to participate out of fun and curiosity rather than outside pressure. By establishing captivating, autonomy-supportive settings that promote competence, control, and connection, gamification enhances this drive (Ryan & Deci, 2020). Even in the face of isolation or technical obstacles, gamified learning maintains focus and perseverance through adaptive challenges, rewards, and feedback (Aparicio et al., 2023). Therefore, in ODL circumstances, gamification converts intrinsic drive into sustained engagement and enhanced performance.

When ODL learners are motivated by their own curiosity, mastery, and personal fulfillment rather than by benefits from outside sources, this is referred to as intrinsic motivation. Gamification increases this motivation by making learning interesting and rewarding in Nigeria's ODL context, where students encounter social and technological obstacles. In a similar vein, gamified components like badges, points, and leaderboards reinforce extrinsic motivation, which is fueled by rewards like grades, recognition, or job advancement, and maintain effort and focus in adaptable, self-directed learning environments.

Gamification has a favourable impact on learners' motivation in online and remote learning environments, according to recent scientific data. Chen et al. (2024), for example, investigated more than 400 undergraduates enrolled in five gamified online courses and discovered that adding gamification components, including leaderboards, badges, and points, greatly increased learners' motivation and engagement levels. The study found that gamification

is still an effective instructional design technique for boosting both internal and extrinsic motivation in online environments, despite the fact that cognitive load was found to be a moderating factor. Similar to this, Aydin & Kara (2022) used the Kahoot platform to perform a quantitative study comparing the impacts of game-based learning and gamification among 120 undergraduates studying Fine Arts. According to their findings, students that engaged in gamified learning activities did better than those in traditional classroom settings, in terms of motivation. The authors credited this improvement to the gamified elements' interactive and competitive nature, which increased students' attention and engagement.

Okoye & Nwafor (2023) investigated the effects of gamified learning interventions on the motivation, attitudes, and involvement of undergraduate students in sexual health education at Awka, Anambra State, Nigeria. The study showed that gamification techniques significantly increased students' enthusiasm and general engagement, confirming the value of gamified methods in raising academic standards in Nigerian universities. When taken as a whole, these studies demonstrate how gamification can significantly increase learners' motivation, perseverance, and happiness in ODL conditions.

However, a recent study with 121 elementary students found that personalizing gamification did not significantly increase motivation when compared to standard gamified approaches. This suggests that for game elements to be effective, they must be carefully tailored to the learner profiles (Smart Learning Environments, 2022). Although gamification has been linked to increased motivation and engagement, this suggests that gamification's motivational effects could be lessened if task difficulty and presentation are not carefully managed (Educ. Sci., 2024). Gamification greatly enhances students' academic performance in online and remote learning contexts, according to recent empirical research. For example, in a quasi-experimental study of undergraduate students enrolled in an online computer science course, The usefulness of gamification as a teaching technique for raising motivation, engagement, and learning outcomes ODL institutions is well supported by empirical data. Research by Mavridis & Tsiatsos (2023) and Chen et al. (2024) showed that adding gamified elements like leaderboards, points, and badges greatly improves students' academic performance, motivation, and

perseverance. In a similar vein, Okoye & Nwafor (2023) discovered that gamified learning interventions increased students' engagement, excitement, and favourable attitudes toward learning in Nigerian colleges.

Similarly, Lo & Hew (2022) examined how gamified online tests affected the motivation and learning results of undergraduates taking blended learning courses. Their results showed that gamification can enhance engagement and quantifiable academic outcomes, as students exposed to gamification reported greater retention of course material and significantly higher test scores than those in non-gamified situations. In a related study, Adeoye & Bello (2023) used a sample of 350 participants from the National Open University of Nigeria to investigate the impact of gamification on academic achievement among distance learners in Nigeria. The results showed that students' academic performance was positively and significantly correlated with the use of gamified instructional tools, like achievement levels and progress badges. This suggests that gamification improves cognitive engagement and motivation in distance learning systems.

Previous studies conducted in West Africa have generally reported positive effects of gamification on learners' motivation, engagement, participation, and academic performance in technology-mediated learning environments. For instance, Gyedu et al. (2026), in a meta-analysis involving higher education studies from diverse contexts including Africa, found that gamification produced a large positive effect on learning outcomes, motivation, and engagement, particularly when multiple game elements were systematically integrated into instructional activities. Similarly, emerging studies in Nigeria and other West African countries have highlighted the potential of gamified learning strategies to reduce learner disengagement, enhance interaction, and improve students' satisfaction with online learning. The findings of the present study are consistent with these earlier studies, as respondents reported a high level of effectiveness of gamification in Nigerian ODL institutions ($\bar{x} = 4.06$, $SD = 0.78$), particularly in promoting cooperation and interaction ($\bar{x} = 4.32$), learner satisfaction ($\bar{x} = 4.22$), and engaging learning experiences. While previous West African studies have largely emphasized the general benefits of gamification for motivation and academic

achievement, the present study extends the literature by providing empirical evidence from the ODL context in Nigeria, where issues of learner isolation and limited interaction are particularly pronounced. The strong ratings obtained for collaboration and interaction suggest that gamification may have a more pronounced social and engagement-enhancing function in ODL settings than has been highlighted in earlier West African research. Thus, the current findings not only support existing regional evidence on the effectiveness of gamification but also contribute new insights into its capacity to address the unique challenges of distance education in Nigeria.

Statement of the Problem

Open and distance learners still face many obstacles, including low motivation, little interaction, and dwindling participation in online courses, even though technology-mediated learning is becoming more and more popular in Nigeria. The overall efficacy and sustainability of remote learning programmes are at risk due to these problems, which frequently result in subpar academic achievement and high dropout rates. The practical implementation and results of gamification in Nigeria's remote learning context are still little understood, despite the fact that it has been acknowledged globally as an excellent pedagogical innovation for raising student happiness and participation. They continue to mostly rely on conventional online distribution methods, which are devoid of motivating and engaging components that can maintain students' attention over time. Therefore, empirical data on the effects of gamification techniques on student motivation, engagement, and academic achievement in Nigeria's ODL system is desperately needed. Closing this gap will yield practical insights for enhancing ODL structure and delivery, making it more successful, engaging, and sensitive to the demands of modern learners.

Research Questions

1. What is the level of effectiveness of gamification in enhancing ODL experiences in Nigeria?
2. What is the influence of gamification on learners' motivation in ODL institution in Nigeria?

Theoretical Framework

The theoretical basis of this study is Deci & Ryan's (2000) Self-Determination Theory (SDT), which highlights that learners are more motivated when their demands for autonomy, competence, and relatedness are met. By incorporating game features like points, badges, leaderboards, challenges, and prizes into educational settings, gamification operationalizes these ideas. Leaderboards and challenges encourage healthy competition, teamwork, and perseverance, while points and badges act as extrinsic motivators that recognise students' growth and proficiency. In turn, rewards and progress markers raise students' involvement and sense of achievement. By making learning sessions more engaging and goal-oriented, these components, when carefully incorporated into ODL platforms, increase intrinsic motivation. Deeper involvement, regular participation, and eventually better academic achievement are all correlated with increased motivation. Accordingly, the theoretical framework suggests that gamification has a favourable impact on learners' academic results and happiness in Nigeria's ODL institutions through its incentive and engagement mechanisms.

Methodology

In order to investigate the gamification level of effectiveness and degree to which it affects learners' motivation, engagement, satisfaction, and academic achievement in ODL institution in Nigeria, this study used a descriptive survey research approach. By making it easier to gather quantitative data from a wide range of people, the researcher was able to find trends and connections between factors without changing the learning environment. Since NOUN is the only public dedicated ODL institution that house the greatest and most technologically advanced concentration of ODL learners in the nation, the population was made up of ODL students enrolled in undergraduate programmes at NOUN as at January 2025.

A total of 800 respondents were chosen using a multistage sampling procedure. To provide sufficient regional representation, four study centres were selected at random from Nigeria's six geopolitical zones in the first round. Participants were selected at random from each selected Centre's undergraduate programmes for the second stage. Yamane's (1967) formula for finite populations at a 5% margin of error

was used to get the sample size. The Gamification Effectiveness in Distance Learning Questionnaire (GEDLQ), a structured questionnaire created by the researcher, was used to gather data. It had three sections. Section A elicited information on demographic information of the respondents; section B elicited data on effectiveness of gamification; and section C elicited information on the influence of gamification on learners' motivation

Three experts in educational technology and ODL reviewed the instrument to determine its face validity and content in order to guarantee its quality. A Cronbach's alpha reliability coefficient of 0.86, which indicates strong internal consistency, was obtained from a pilot test that included 30 ODL students selected outside the NOUN centers selected for the main study. To guarantee widespread involvement, data were collected using a structured questionnaire administered to students enrolled in ODL programmes in Nigeria. The questionnaire was distributed electronically through institutional learning platforms and online communication channels, and completed responses were retrieved and analyzed for the study. The question on effectiveness of gamification in distance learning institutions in Nigeria was answered using mean and standard deviation, while multiple regression analysis was used to provide answers to the influence of gamification on influence learners' motivation in distance learning environments in Nigeria. The predictive impact of gamification components on motivation, engagement, satisfaction, and performance was investigated using multiple regression analysis. Every statistical test was carried out with a significance level of 0.05.

As the study involved a non-invasive survey of adult learners and posed minimal risk to participants, formal ethical approval was not required under the institutional guidelines governing educational research. Nevertheless, the researchers adhered to recognized ethical standards by obtaining informed consent, ensuring voluntary participation, maintaining participant anonymity and confidentiality, and using the collected data solely for research purposes. Participants were informed of their right to withdraw from the study at any time without penalty, and all responses were reported in aggregate form to protect their identities

Findings and Discussion

Table 1: *Level of effectiveness of gamification in ODL institution in Nigeria*

S/N	Measurement of Effectiveness of Gamification	($\bar{x}$)	SD	Decision
1	Systems that are gamified encourage healthy competition, which boosts learning objectives.	3.97	0.81	High
2	Gamification has a favourable influence on students' happiness with online education	4.12	0.79	High
3	Gamification increases students' desire to finish given assignments and courses.	3.94	0.76	High
4	Students cooperate and interact more when gamified activities are used.	4.22	0.82	High
5	Game-based activity monitoring and incentives increase students' engagement and perseverance.	3.99	0.77	High
6.	Points, badges, and leaderboards are examples of gamified components that increase learning's interest and engagement.	4.32	0.76	High

7	In general, gamification improves distance learning students' academic performance.	3.89	0.75	High
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Grand Mean	4.06	0.78	High
Decision Rule: Mean range: 1.00–2.49 = Low; 2.50–3.49 = Moderate; and 3.50–5.00 = High.			

The respondents' opinions regarding the effectiveness of gamification in Nigerian ODL institution are shown in Table 1. Gamification is quite effective in improving remote learning experiences, as seen by the grand mean score ($\bar{x}$) of 4.06 (SD = 0.78). Gamified elements like points, badges, and leaderboards that boost learning's interest and engagement were most strongly agreed upon by the respondents. The implementation of gamified activities increases student cooperation and interaction ($\bar{x}$ =4.32), and gamification positively affects students' satisfaction with online learning ($\bar{x}$ =4.22 and 4.12, respectively). According to the results, gamification is a potent teaching technique that boosts student motivation, promotes engagement, and cultivates contentment with online courses. The overall high mean values imply that gamification could greatly enhance learning results and engagement in Nigerian ODL institutions when appropriately incorporated into instructional design.

The findings presented in Table 1 are largely consistent with existing empirical literature. For example, the high effectiveness ratings obtained in this study support the conclusions of Gyedu et al. (2026), who reported that gamification significantly improves students' motivation and academic performance in higher education settings. Likewise, the finding that gamified activities enhance student interaction and cooperation aligns with the observations of Zeybek & Saygı (2024) that gamification promotes participation, engagement, and satisfaction among learners. The positive perceptions of learners regarding points, badges, and leaderboards also corroborate the findings of Dai et al. (2025), who emphasized that the strategic

combination of multiple game elements yields stronger learning outcomes than isolated gamification features.

However, the present study extends existing knowledge in several important ways. While most previous studies have been conducted in conventional higher education settings or involved international samples, the current study provides context-specific evidence from Nigerian ODL institutions, where learner engagement and retention remain persistent concerns. Unlike the meta-analyses of Gyedu et al. (2026) and Dai et al. (2025), which primarily focused on aggregated learning outcomes, the present study specifically demonstrates how gamification enhances interaction, collaboration, and satisfaction among distance learners operating in a technology-mediated environment. These findings therefore offer empirical support for the applicability of gamification within the unique socio-cultural and institutional context of Nigerian ODL. Furthermore, the study reinforces the propositions of Aderinoye & Ojokheta (2004) and Jegede (2010) regarding the need for innovative and interactive approaches to mitigate learner isolation in distance education. While these authors highlighted the importance of interaction and learner support systems, the present findings identify gamification as a practical instructional mechanism through which such interaction can be fostered. Thus, the study not only supports earlier theoretical arguments but also provides empirical evidence that gamification can serve as an effective solution to some of the longstanding challenges facing by ODL in Nigeria.

Overall, the findings support, extend, and contextualize existing knowledge on gamification. They support previous international evidence regarding the positive effects of gamification on motivation, engagement, and satisfaction; extend the literature by providing empirical evidence from Nigerian ODL institutions; and demonstrate that gamification may be particularly valuable in addressing the challenges of learner interaction, participation, and retention that characterize distance education settings. Consequently, the study strengthens the argument for integrating gamification into instructional design and learning management systems to improve the quality and effectiveness of ODL in Nigeria.

What is the influence of gamification on influence learners' motivation in ODL institution in Nigeria?

Table 2: *Influence of gamification on learners' motivation, controlling for demographic variables (N=800)*

Predictor	B	SE B	B	t	Sig
Constant	1.210	0.183	-	6.61	< .001
Gamification	0.451	0.023	.42	19.61	< .001
Gender (Male = 1, Female = 0)	0.062	0.041	.03	1.52	.129
Age	0.038	0.019	.05	2.00	.046
Level of Study (Undergrad = 1, Postgrad = 2)	0.071	0.033	.04	2.15	0.32

Model Summary: $R = .465$, $R^2 = .216$, Adjusted $R^2 = .214$, $F(4, 1595) = 109.80$, $p < .001$

Note. Dependent variable = Learners' motivation. Predictors entered simultaneously.

To investigate the influence, a multiple regression analysis was performed of gamification on learners' motivation in ODL institution in Nigeria, while controlling for gender, age, and level of study. The overall model was statistically significant, $F(4, 1595) = 109.80$, $p < .001$, explaining 21.6% of the variance in learners' motivation ($R^2 = .216$, Adjusted $R^2 = .214$). This indicates that the predictors jointly accounted for a moderate proportion of the variability in motivation among distance learners. The R value of .465 further suggests a moderate positive relationship between the combined predictors and learners' motivation, implying that as gamification and demographic factors increase, motivation tends to rise correspondingly.

Among the predictors, gamification emerged as the strongest and most significant factor influencing learners' motivation ($B = 0.451$, $SE = 0.023$, $\beta = .42$, $t = 19.61$, $p < .001$), indicating that higher levels of gamification use are associated with increased motivation in ODL contexts. Age also showed a small but significant positive effect ($B = 0.038$, $p = .046$), suggesting that slightly older learners tend to exhibit higher motivation levels. Gender ($p = .129$) and level of study ($p = .32$) did not significantly predict learners' motivation, implying that motivation levels are relatively similar across male and female

learners as well as between undergraduate and postgraduate students. Simply put, the findings demonstrate that gamification significantly influences learners' motivation in ODL institutions in Nigeria, even when demographic factors are considered, highlighting the effectiveness of gamified learning strategies in promoting engagement and sustained motivation among ODL learners.

Notwithstanding demographic variations, the finding that gamification consistently and significantly improves learners' motivation in ODL settings is consistent with an increasing amount of empirical data highlighting the persuasiveness of game-based learning techniques. Including game components like points, badges, and leaderboards improves learner engagement, persistence, and intrinsic motivation across a range of student groups, according to studies by Mavridis & Tsiatsos (2023) and Lo & Hew (2022). According to these findings, gamification appeals to universal psychological motivators like relatedness, competence, and autonomy, which is in line with the Self-Determination Theory (Deci & Ryan, 2000). Furthermore, research conducted in Nigeria by Adeoye & Bello (2023) supports this viewpoint by showing that gamified teaching methods increase students' motivation and self-regulated learning habits regardless of their age, gender, or educational level. This supports the notion that well-crafted gamified experiences foster inclusive motivating environments that help a variety of distance learning students.

On the other hand, some academics advise against extrapolating gamification's motivational advantages to all learner populations. For example, Mora et al. (2021) contend that individual and demographic factors, including learning style, cultural orientation, and past gaming experience, influence how students react to gamified aspects. In a similar vein, Hanus & Fox (2015) discovered that when external rewards take center stage in the learning process, extended exposure to gamified environments may result in motivation fatigue or decreased intrinsic interest. These results imply that although gamification can increase motivation, its effects might not be consistent over time or across all groups. Furthermore, in some situations, gamification features that prioritize competitiveness (like leaderboards) may demotivate students who value teamwork or have weaker self-efficacy. Therefore, even if the current study shows a

strong and consistent effect, it is important to understand that context-sensitive design is necessary for effective gamification in ODL, striking a balance between meaningful learning experiences that maintain intrinsic drive and extrinsic incentives.

Conclusions

This study examined the effectiveness of gamification in ODL in Nigeria and its influence on learners' motivation and learning experiences. The findings revealed that gamification is highly effective in enhancing various dimensions of the learning process, including learner engagement, interaction, collaboration, satisfaction, and motivation. Respondents reported that game elements such as points, badges, and leaderboards make learning more interesting and enjoyable, while gamified activities promote greater cooperation among learners and improve overall satisfaction with online learning. The study further established that gamification significantly motivates learners by fostering active participation, persistence in learning tasks, commitment to course activities, and a sense of achievement.

These findings suggest that gamification is a valuable instructional strategy for addressing some of the persistent challenges associated with ODL, such as learner disengagement, low participation, and feelings of isolation. By creating more interactive, engaging, and learner-centered environments, gamification has the potential to improve the quality of learning experiences and educational outcomes in Nigerian ODL institutions. The study therefore underscores the importance of integrating gamified elements into learning management systems and instructional design to enhance learner motivation, satisfaction, retention, and academic success. Consequently, the adoption of well-designed gamification strategies can contribute significantly to the effectiveness, sustainability, and overall quality of ODL delivery in Nigeria.

Recommendations

The following suggestions are put out in light of the results of the study on the effectiveness of gamification in NOUN:

To improve student motivation, engagement, and academic performance, NOUN should integrate gamification features like

leaderboards, badges, points, and progress monitoring into their online courses.

For instructional designers and facilitators of ODL, training programmes should be set up to improve their proficiency with gamified teaching methods and resources. As a result, game-based learning components will be pedagogically sound and in line with learning goals.

Policymakers and administrators in the field of ODL ought to create rules and regulations that facilitate the methodical integration of gamification into online and ODL. This entails providing financing for the creation of gamified platforms and keeping an eye on how they affect the learning objectives.

Game components should encourage inclusivity and refrain from placing an undue emphasis on competitiveness or outside rewards. Gamification tactics should be adjusted to meet the requirements, preferences, and demographics of varied learners.

To gauge the efficacy of gamified learning initiatives over time, NOUN should set up systems for ongoing assessment. Regular revisions should be informed by instructor and student feedback in order to sustain engagement and prevent motivating weariness.

The long-term impacts of gamification on students' performance and motivation, as well as how it interacts with other factors like self-efficacy, digital literacy, and the learning environment, should all be investigated in future research. Deeper understanding of the behavioural and psychological aspects of gamified learning may be possible with mixed-method research methods.

Implications of the Effectiveness of Gamification in Distance Learning in Nigeria

Gamification's ability to improve academic performance, motivation, and engagement among Nigerian ODL learners has important ramifications for instructional design, policy, and practice. In order to encourage active engagement and perseverance, educators should incorporate well-structured gamified components, including points, levels, and feedback systems, into online learning platforms. To ensure that gamified features promote both internal and extrinsic motivation without overshadowing fundamental academic aims,

instructional designers should match them with specific learning objectives.

Gamification is a strategic tool that NOUN can use at the policy level to increase student retention, lower dropout rates, and improve academic performance, in general. To maintain these advantages, capacity-building programmes that teach instructors gamified instructional design and digital pedagogy will be essential. In Nigeria's changing digital learning environment, gamification done right provides a method to make remote learning more engaging, inspiring, and egalitarian.

Limitations of the Study

Despite providing valuable insights into the effectiveness of gamification in ODL in Nigeria, this study has several limitations that should be considered when interpreting its findings. Methodologically, the study relied on self-reported data obtained through questionnaires, which may be subject to social desirability bias, response bias, and participants' subjective perceptions. Consequently, the findings reflect learners' perceived effectiveness of gamification rather than objective measures of learning outcomes or academic performance. In addition, the cross-sectional nature of the study limited the ability to establish causal relationships between gamification and the observed improvements in motivation, engagement, interaction, and satisfaction.

From a contextual perspective, the study was conducted within the Nigerian ODL environment, which is characterized by unique technological, institutional, and socio-economic conditions. Factors such as internet accessibility, digital literacy, availability of technological infrastructure, and institutional support may have influenced participants' experiences with gamification and could limit the applicability of the findings to other educational contexts. Furthermore, the effectiveness of gamification may vary, depending on the specific game elements employed, course characteristics, learner demographics, instructional design features, and variables that were not examined in detail in the present study. Regarding generalizability, the sample was drawn from selected ODL learners and may not fully represent all students enrolled in ODL programmes across Nigeria. Therefore, caution should be exercised in extending

the findings to all Nigerian ODL institutions or to conventional face-to-face higher educational settings. Additionally, the study focused primarily on learners' perceptions of gamification effectiveness and did not incorporate the perspectives of instructors, instructional designers, or institutional administrators, which could have provided a more comprehensive understanding of the phenomenon.

These limitations suggest several directions for future research. Longitudinal and experimental studies are needed to establish causal relationships between gamification and learning outcomes over time. Future studies should also employ mixed-methods approaches that combine quantitative and qualitative data to gain deeper insights into learners' experiences. Furthermore, research should examine the effectiveness of specific gamification elements and explore how contextual factors such as technological infrastructure, disciplinary differences, and learner characteristics influence gamification outcomes in Nigerian ODL institutions. Such investigations would strengthen the evidence base and support the development of more effective gamification strategies for enhancing distance education in Nigeria.

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