APPLICATION OF GAMIFICATION STRATEGIES IN NIGERIAN UNIVERSITY LIBRARIES IN ENHANCING INFORMATION LITERACY AND STUDENT ENGAGEMENT

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Abstract

University libraries in Nigeria have both opportunities and challenges in the current academic climate. A revolutionary solution to these problems is provided by gamification, which is the deliberate use of game-design components like points, badges, and leaderboards to non-gaming environments. There is still a big gap in pupils' knowledge of information literacy, which is defined as the capacity to recognise, locate, assess, and use information effectively. Due to enduring information literacy gaps, a lack of understanding of the resources that are accessible, and conventional, frequently passive library practices, student engagement with libraries is still low despite the abundance of digital and print resources. This study looks at how gamification might improve information literacy, increase student engagement, and develop research skills in Nigerian university libraries. The paper illustrates how game mechanisms like points, badges, leader boards, quests, and challenges can motivate library use, promote skill acquisition, and support collaborative learning by drawing on empirical research from Nigeria, international best practices, and pedagogical theory. A staged, context-sensitive approach for the implementation of gamified library services is suggested by the analysis, which also tackles issues of infrastructure, human capacity, and inclusivity specific to the Nigerian environment. The paper concluded that gamification has the ability to promote lifelong learning, research productivity, and an academic engagement culture throughout Nigerian universities by redefining the library as an interactive, student-centred venue.

Keywords: *Gamification, Academic Libraries, Information Literacy, Student Engagement, Nigerian Universities, Library Innovation*

Introduction

Academic libraries play a fundamental role in university learning, research growth, and knowledge dissemination. These libraries serve as vital hubs in Nigeria where students can access books, journals, digital repositories, and specialised databases. However, research shows that a large number of Nigerian students underuse these resources, frequently depending more on readily available online sources than on carefully chosen, excellent library works (Ezeani & Igwe, 2021). According Okwu et al., (2025), this underutilisation highlights more general information literacy issues, which have important ramifications for academic achievement, the calibre of research, and lifelong learning. According to Adeyemi, Esan, and Aleem (2021), traditional library practices, such as one-time orientations and restricted education on electronic resources, often fail to engage students meaningfully, leaving them unprepared to traverse the increasingly complicated academic information landscape.

Globally, cutting-edge teaching techniques have surfaced to improve learning results and increase student engagement. Among these, gamification has drawn interest due to its capacity to turn routine work into engaging, inspiring, and fulfilling experiences. Points, badges, leaderboards, challenges, quests, and other aspects of game design are used in gamification to promote engagement, reward success, and create a feeling of advancement. Gamification may change the view of academic libraries from a static repository to a dynamic, student-centred setting where learning is fun, engaging, and collaborative. Gamification is still relatively new in Nigerian university libraries, but it is expanding. According to preliminary research, gamified interventions have a favourable effect on students' willingness to attend library teaching sessions, explore resources, and do critical research. According to preliminary research, gamified treatments have a favourable effect on students' motivation to attend library instruction sessions, explore resources,

and hone critical research abilities (Bello & Umar, 2023). First-year undergraduates, who frequently have little prior experience with structured information literacy programs, exhibit this response in particular. Librarians can promote resource utilisation and scaffold the development of critical research abilities by integrating gaming mechanics into library services. This will boost academic accomplishment and strengthen the research culture (Aminu & Shehu, 2025).

Gamification has been used in university libraries around the world to improve research skills, information literacy, and engagement. Gamified orientation programs greatly boosted first-year student participation and retention of library skills, according to a study conducted in U.S. colleges by Reeve et al. (2020). In a similar vein, Dicheva et al. (2017) discovered that gamification enhances learning outcomes, motivation, and engagement in a variety of educational settings, including higher education libraries. Scavenger hunts, online tests, accomplishment badges, progress tracking, and competitive leaderboards are examples of common gamified interventions that have been demonstrated to promote both intrinsic and extrinsic motivation.

Gamification has been used to improve particular information literacy skills beyond orienting. For example, gamified modules have been used in research project planning, citation management, database searching, and source evaluation. These interventions reinforce learning and encourage retention by giving students the chance to practise skills in a risk-free setting and get instant feedback. For long-term engagement, however, a balance between intrinsic and extrinsic motivators is essential. Narrative-driven missions have the potential to enhance intrinsic motivation by providing a feeling of purpose and meaningful context, whereas badges and points provide an initial boost. Additionally, gamification fosters a feeling of community in the library by having students participate in group challenges, exchange accomplishments, and mentor one another (Bello & Umar, 2023).

Research on gamification in academic libraries is beginning to appear in Nigeria. Students at a number of Nigerian colleges responded well to gamified library services, according to Bello and Umar (2023), who also noted more attendance at orientation programs, workshops, and research skills sessions. More than 70% of participants said that game features like challenges, badges, and points encouraged them to use library resources more thoroughly and participate in self-directed learning. Despite these encouraging results, adoption is still restricted because of low digital literacy among some student demographics, inadequate awareness among librarians, and infrastructure limitations. According to Olubiyo (2022), a large number of Nigerian undergraduates underuse library resources, frequently depending more on lecture materials or generic internet searches than carefully selected academic databases. Gamification has been suggested as a way to close this gap by developing rewarding, engaging, and organised experiences that encourage interaction with both digital and print collections. For instance, it has been demonstrated that straightforward interventions like online tests on database navigation, points-based reading challenges, and library scavenger hunts enhance students' acquaintance with library systems and promote the growth of fundamental information literacy abilities (Halder, 2025).

Information literacy is commonly regarded as an important predictor of academic performance and research competence. It requires the ability to discover, locate, assess, and ethically apply information to academic activities and problem-solving. In Nigeria, the integration of information literacy training into curricula is inconsistent, and students frequently struggle to develop these abilities independently (Rathod & Charate, 2025). Gamification facilitates learning by giving controlled, incremental challenges, immediate feedback, and rewards that promote skill and motivation. Empirical evidence demonstrates that gamified treatments not only improve library visits and resource consumption but also boost students' research confidence, ability to discover

academic sources, and competence in using information ethically and effectively. Gamification, which transforms library encounters into interesting, interactive experiences, improves sustained learning and helps to cultivate a research-oriented mentality (Suleiman, Yakubu, & Hamza, 2025). Therefore, this paper investigate application of gamification strategies in Nigerian University libraries in enhancing information literacy and student engagement.

Theoretical and Conceptual Framework

Gamification in academic libraries is based on motivational and learning theories, which describe how game mechanics affect engagement and skill acquisition. Deci and Ryan (2000) developed Self-Determination Theory (SDT), which holds that human motivation is maximised when individuals perceive autonomy, competence, and relatedness. In the library setting, autonomy can be facilitated by allowing students to choose challenges or quests that are relevant to their interests; competence can be reinforced through incremental achievements such as earning badges or accumulating points; and relatedness can be fostered by collaborative challenges that encourage peer interaction and mentorship.

Another applicable theory is Csikszentmihalyi's (1990) Flow Theory, which holds that humans experience profound engagement when tasks are suitably balanced in terms of difficulty and competence. Gamification allows librarians to create tasks that gradually rise in complexity, giving students a sense of mastery, motivation, and long-term engagement. Flow is especially important for information literacy tasks that require complicated procedures like evaluating sources, synthesising information, and incorporating evidence into academic writing. Gamifying these exercises allows librarians to create a disciplined yet fun environment that fosters repeat participation and skill reinforcement.

Gamification is conceptually consistent with current information literacy frameworks, such as the Association of College & Research Libraries' (ACRL) Framework (2016), which emphasises iterative skill development, metacognition, and active interaction with information. Using game mechanics in library training can help to put these principles into practice by transforming abstract skills into practical, engaging challenges that provide immediate feedback and quantitative progress. For example, students could receive points for successfully navigating a database search, completing a citation exercise, or adding a research suggestion to a collaborative scoreboard. Such interventions combine the cognitive, behavioural, and motivational dimensions of learning, encouraging not only competence but also confidence and curiosity in navigating complicated information environments.

Proposed Framework for Gamification in Nigerian Academic Libraries

Gamification in Nigerian university libraries demands a well-planned, phased strategy that takes into account local realities, student needs, and infrastructure constraints. A context-sensitive approach guarantees that initiatives are inclusive, sustainable, and educationally effective. The suggested framework includes four successive phases:

Phase 1: Low-Tech Initiatives

Low-cost, low-tech gamification treatments can serve as a foundation for more widespread application. These activities use current library resources and need little digital infrastructure. Examples include point systems for timely book borrowing and return, scavenger hunts in physical library locations, printed or online quizzes on catalogue and database usage, and reading challenges with tangible incentives such as certificates or notice board acknowledgement. To increase motivation and engagement, storytelling elements might be incorporated into these activities. For example, a scavenger hunt could be structured as an adventure titled 'Find the Lost

Thesis Scroll,' with participants following a narrative arc that includes research advice as clues. Even simple point accrual procedures, when combined with innovative tales, generate incentive and a sense of accomplishment, motivating students to investigate resources they might otherwise overlook.

Phase II: Digital Gamification Tools

Once low-tech alternatives have been successfully tested, libraries can gradually integrate digital gamification. Mobile or web-based applications can collect points, give badges, display leaderboards, and provide automatic feedback after completing challenges. Digital quizzes can be used to assess database navigation skills, citation exercises, and information evaluation tasks. Online leaderboards promote healthy competition while recognising individual and team accomplishments. Digital gamification improves scalability, can accommodate big student populations, and makes data collecting for monitoring and evaluation easier.

Phase 3: Integrating Curriculum and Research Activities

Gamified interventions should be integrated into course syllabi and research training programs to maximise their impact. Librarians, for example, might work with academics to develop discipline-specific quests, such as locating peer-reviewed material in engineering databases or identifying historical primary sources for humanities study. Gamification can also be used in research methods workshops, thesis writing help sessions, and other structured academic activities. By incorporating gamified elements into formal learning, libraries ensure that students not only interact with resources but also build crucial competences that directly support academic and research achievement.

Phase 4 includes monitoring, evaluation, and iterative improvement.

Sustainable gamification necessitates ongoing evaluations of both student outcomes and program efficacy. Libraries should collect quantitative and qualitative information about resource use, student engagement, and skill development. Surveys, focus group discussions, and usage analytics can all help influence iterative improvements, such as changing the complexity of challenges, adding new reward systems, and fine-tuning the architecture of digital platforms. Importantly, monitoring should include equality and inclusivity, ensuring that students with limited digital access can participate via low-tech or hybrid pathways.

Frameworks for illustration purposes

The gamification pyramid categorises library interventions into three tiers:

i.   At this level, students learn fundamental orienting skills, how to lend books, and how to use low-tech point systems.

ii.   The middle layer (intermediate engagement) includes interactive quizzes, scavenger hunts, and database tasks to stimulate active participation.

iii.   The top layer (advanced integration) includes coursework-specific quests, digital badges, and inquiry-based gamified tasks, all of which are connected with curriculum activities.

Gamification Cycle in Nigerian Libraries

This cycle illustrates the iterative nature of gamified interventions:

1. Design: Librarians identify learning objectives and select appropriate game mechanics.

2. Implementation: Activities are deployed in library spaces or online platforms.

3. Engagement: Students participate, earn rewards, and collaborate with peers.

4. Evaluation: Usage metrics, student feedback, and skill assessments are analyzed.

5. Iteration: Activities are refined based on findings, ensuring continuous improvement and sustainability.

These frameworks help institutions strategically plan, implement, and sustain gamification programs, providing a roadmap for both novice and experienced librarians (Adeyemi, Akanbi, & Issa, 2025).

Benefits and Opportunities of Application of Gamification Strategies

The integration of gamification into Nigerian academic libraries offers a range of benefits that extend beyond simple engagement metrics (Tomé, Salenave, & Hamari, 2023).

1. Enhanced Student Engagement: Gamification transforms library visits from passive activities into active, interactive experiences. By rewarding participation and offering structured challenges, students are motivated to explore library resources, attend training sessions, and engage in self-directed learning. Increased engagement can also cultivate a sense of ownership and belonging, enhancing students' connection to the library as a learning space.

2. Improved Information Literacy: Gamified tasks can scaffold the development of critical information skills. Challenges such as database navigation, source evaluation, citation practice, and research project completion provide incremental skill-building opportunities. Immediate feedback mechanisms reinforce learning, helping students internalize best practices in information literacy. Over time, this contributes to improved research quality, academic performance, and lifelong learning competencies.

3. Promotion of Collaborative Learning and Community: Many gamified interventions incorporate team-based challenges or peer-to-peer mentoring, fostering collaboration among

students. Leaderboards, collective quests, and group rewards encourage interaction and cooperation, promoting social learning and the exchange of research strategies. In contexts where students may feel isolated or intimidated by academic demands, gamification can create inclusive and supportive learning communities.

4. Strengthening Research Culture: Encouraging consistent library use and active engagement with scholarly resources, gamification helps cultivate a research-oriented mindset. Students gradually learn to appreciate the library as a critical partner in academic success, not merely a space for borrowing books. Over time, this can contribute to improved undergraduate research output, postgraduate research preparedness, and overall institutional research performance.

5. Flexibility and Adaptability: Gamification can be tailored to accommodate diverse student populations, learning preferences, and institutional capacities. Low-tech interventions ensure inclusion for students with limited digital access, while high-tech solutions can cater to larger, more technologically equipped campuses. This adaptability makes gamification a versatile strategy suitable for a wide range of Nigerian university contexts.

Challenges of Application of Gamification Strategies

Despite its promise, gamification faces several challenges that must be addressed for effective implementation in Nigeria.

1. Infrastructural Constraints: Many Nigerian universities experience inconsistent electricity, limited broadband access, and insufficient digital devices, which constrain the adoption of digital gamification tools. Libraries in such contexts may initially need to rely on low-tech interventions until infrastructural improvements are made.

2. Human Capacity and Training Gaps: A significant barrier is the limited awareness and expertise of librarians regarding gamification principles and digital tools. Studies indicate that

many academic librarians in Nigeria are unfamiliar with game-based pedagogy and may lack the technical skills to implement and maintain gamified interventions (Ezeani & Igwe, 2021). Capacity-building initiatives, including workshops and professional development programs, are essential to equip librarians with the necessary knowledge and confidence.

3. Inclusivity and Equity Issues: Ensuring equitable participation is critical. Without careful design, gamified programs could inadvertently exclude students with limited digital access, learning disabilities, or other constraints. Inclusive strategies, such as offering hybrid activities that combine low-tech and digital options, are essential to maximize participation and learning outcomes.

4. Sustainability and Institutional Support: Gamification initiatives require long-term institutional commitment, including budgetary allocations, policy integration, and ongoing technical support. Without these, programs risk being short-lived and failing to produce meaningful impacts. Universities must recognize gamification as a strategic, pedagogically valuable intervention rather than a novelty.

5. Monitoring and Evaluation Challenges: Effective gamification relies on data-driven insights to adjust challenges, rewards, and engagement strategies. In many Nigerian universities, systematic monitoring and evaluation mechanisms are underdeveloped, which could limit the ability to refine gamified interventions over time. Establishing robust evaluation frameworks is therefore critical.

Conclusion

Gamification represents a promising, innovative strategy to enhance student engagement, information literacy, and research competence in Nigerian academic libraries. By transforming libraries from passive repositories into interactive, student-centered learning environments,

gamification can bridge gaps in traditional instruction, motivate sustained resource use, and foster a culture of academic inquiry and research excellence. Empirical evidence, both globally and within Nigeria, demonstrates the effectiveness of gamified interventions in promoting engagement, collaboration, and skill acquisition. Effective implementation requires careful planning, phased adoption, capacity-building, inclusivity, and institutional commitment. Low-tech interventions provide a feasible starting point for resource-constrained institutions, while digital gamification tools can be introduced as infrastructure improves. With sustained support, monitoring, and iterative refinement, Nigerian university libraries can leverage gamification to create dynamic, interactive spaces that nurture lifelong learning, research productivity, and academic success.

Way-forward

To maximize the potential of gamification in Nigerian academic libraries, the following strategies are recommended:

1. Capacity Building: Train librarians in gamification design, digital tools, and pedagogical strategies to ensure effective implementation.

2. Phased Implementation: Begin with low-tech pilots to test feasibility and acceptability before introducing digital solutions.

3. Institutional Buy-in: Secure administrative support for gamification as a recognized library strategy, including funding, infrastructure, and policy integration.

4. Inclusive Design: Ensure hybrid approaches that allow all students to participate, regardless of digital access or other constraints.

5. Monitoring and Evaluation: Establish metrics for student engagement, information literacy outcomes, and research skills development to guide iterative program improvements.

6. Collaboration and Partnerships: Engage faculty, ICT units, student organizations, and other stakeholders in program design and implementation to ensure relevance, sustainability, and institutional alignment.

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