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GAMIFICATION OF LIBRARY ORIENTATION AND INFORMATION LITERACY SKILLS TRAINING IN ACADEMIC LIBRARIES

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Abstract

Gamification is a recent teaching technique in academic libraries that is turning the conventional library orientation and information literacy (IL) training into engaging, student-centred learning experiences. This research investigates the use of gamification design elements (points, badges, quests and leaderboards) in library instruction to improve student engagement, motivation, and learning. Building on existing learning theories, such as Self-Determination Theory, Constructivism, Experiential Learning, and Behaviourism, the paper proposes a theoretical model of gamification design and IL. The research takes a conceptual and design-based approach to examine the effects of gamified activities on user experiences and learning. The study reveals that gamification enhances library use, enhances IL skills and engages users in learning. The research finds that gamification is an effective and scalable teaching strategy which transforms academic libraries into active learning spaces that support academic achievement and lifelong learning.

Keywords: gamification, academic libraries, information literacy, library orientation, instructional design.

1. Introduction

Academic libraries have transitioned from passive storage to active learning spaces that facilitate education, research and the generation of knowledge. One aspect of this shift is the provision of library orientation and information literacy (IL) instruction. The Association of College and Research Libraries defines information literacy as a cluster of integrated skills encompassing the ability to identify, access, evaluate and use information (ACRL, 2016).

Conventional classroom-based library instruction methods are often ineffective due to low participation and retention rates. As a result, gamification the application of game design elements in non-game environments has emerged as an innovation (Deterding et al., 2011). Studies show gamification increases user engagement and motivation through the use of intrinsic and extrinsic motivators (Hamari et al., 2014).

Gamification in academic libraries is used to enhance library orientation and IL learning through activities like online scavenger hunts, database challenges and citation games. These methods convert passive learning to active engagement, in keeping with student-centred approaches (Björk & Vainio, 2019). This article explores the conceptualisation, theories and teaching practices of gamification in academic libraries. Gamification is a term that describes the application of game design principles and game mechanics to non-game contexts to improve user engagement, motivation and behaviour (Deterding et al., 2011). It is also recognised as an innovative teaching approach that taps into intrinsic and extrinsic motivational factors for learning (Hamari, Koivisto & Sarsa, 2014).

Gamification in academic libraries is increasingly being incorporated into library orientation and information literacy (IL) training. Library orientation programs help new users become familiar with library facilities, services and resources, whereas IL training helps students learn skills to access, assess and ethically use information (Association of College and Research Libraries, 2016). Gamification of library instruction transforms academic libraries from passive service to active learning spaces, facilitating user participation and learning, as Björk & Vainio (2019) explain.

Academic libraries serve as knowledge commons supporting teaching, learning and research activities in universities. The main areas in which academic libraries provide instruction relevant to gamification are physical and electronic resources (books, e-resources, repositories), library discovery tools (OPACs, discovery layers, academic databases), and user services, such as reference services, help desks, and research support services. Furthermore, user support services such as reference, help desk or research support, orientation sessions for first-year and international students and information literacy instruction sessions integrated into the curriculum are also crucial. Academic libraries are increasingly embracing student-centred and active learning strategies, in line with constructivist models of learning as noted by Foster & Gibbons (2007).

Gamification in library instruction generally incorporates game elements that facilitate engagement. These include scoring and points systems to reward task completion, badges and achievements systems to reward progress and leaderboards to foster competition and participation. Other components like quests or missions establish task-based learning experiences and levels of progression enable incremental learning. Stories are used to create a context for learning tasks, and digital certificates, badges or incentives are used to reward

tasks. These factors combine to enhance motivation, engagement and commitment to the learning tasks, as described by Werbach & Hunter (2012).

The Association of College and Research Libraries defines information literacy as a series of integrated skills that allow people to identify their information needs and to access, evaluate and use information ethically and effectively (2016). Information literacy skills include: recognising information needs through problem formulation and research questions, finding information using catalogues, databases and other online resources, and assessing information based on authority, accuracy, relevance and bias. They also include the ethical use of information, including citation, referencing and avoiding plagiarism, and the ability to synthesise and communicate information in academic work. These skills are crucial for success in academia and lifelong learning (Julien & Barker, 2009).

The motivation for this study arises from persistent challenges in user engagement, low information literacy competencies, and ineffective traditional library instruction methods in higher education institutions. Despite ongoing capacity-building efforts, many academic libraries still rely on conventional orientation approaches that fail to actively engage students, resulting in poor retention of information literacy skills and limited effective use of library resources. This gap is compounded by broader systemic issues of limited institutional innovation and weak productivity outcomes in public sector and educational environments (Chukwurah et al., 2020). Furthermore, the need for inclusive and student-centred learning strategies has become more urgent in the context of national development and academic inclusivity concerns (Iwuno, 2025). The COVID-19 pandemic also exposed weaknesses in traditional instructional models, highlighting the importance of digital and interactive platforms such as social media for communication and learning continuity (Obikeze et al., 2022). However, despite increasing digital awareness, academic libraries have not fully integrated innovative pedagogical tools such as gamification to enhance learning experiences.

Studies in communication, cultural expression, and performance arts further demonstrate the effectiveness of symbolic and interactive engagement in enhancing understanding and participation (Ume & Akas, 2021; Ilukwe & Ume, 2026). Similarly, research on performative and cultural dynamics shows that engagement-based approaches significantly improve knowledge retention and behavioural change (Agoha et al., 2026; Utoh-Ezeajugh & Ume, 2025). Broader socio-cultural development studies also emphasize that innovation is key to overcoming entrenched educational and developmental challenges in Nigeria (Okezie, 2021; Molokwu et al., 2023). Against this background, the study is motivated by the need to explore gamification as an innovative, interactive, and student-centred strategy that can transform library orientation and strengthen information literacy skills acquisition in academic libraries.

2. Theoretical Foundation

The use of gamification in academic libraries is informed by a number of important learning and motivation theories that justify the use of gaming strategies to improve user engagement and learning. One is the Self-Determination Theory (SDT) of Edward Deci and Richard Ryan (2000) which focuses on the importance of autonomy, competence, and relatedness for intrinsic motivation. Furthermore, Constructivist Learning Theory, attributed to Lev Vygotsky (1978), suggests that learning is an active process of constructing knowledge and making meaning from experiences, and participatory learning approaches like gamification are effective in this regard. Experiential Learning Theory, as articulated by David Kolb (1984), also supports this view, as it posits that learning is achieved through a process of experience, reflection and action. Likewise, Behaviourist Reinforcement Theory, proposed by B. F. Skinner (1953), emphasises the role of rewards and feedback in promoting learning. These theories support the use of gamification for information literacy instruction as a way of facilitating active student learning.

3. Mapping Gamification in the Academic Libraries

Figure 1 provides a flow diagram of the processes that can be used to develop information literacy through gamification in the academic library environment. The diagram starts with the academic library environment, providing the setting for learning activities. This moves to gamification design, which focuses on the specific components of points, badges, quests and narratives which are deliberately embedded to enhance the learning activities. Then, the diagram illustrates library orientation and information literacy (IL) activities, which represent key skills such as information search, source evaluation and citation. These activities are enhanced by engagement strategies (such as competition, collaboration, feedback and rewards) that act as motivational strategies that maintain interest and engagement. This leads to user behavioural response, with a focus on increased motivation, participation and task persistence. These are important because they mediate the effect of instructional design on learning outcomes. Lastly, the model leads to learning outcomes, or information literacy skills development.

Figure 1: Conceptual diagram of the flow from the academic library to gamification design and instruction activities

3.2 Functional Mapping Table

Table 1: Mapping of library instruction areas with gamification approaches and information literacy skills.

Library Instruction Domain	Gamification Strategy	Targeted IL Skill
Library Orientation	Digital scavenger hunts	Resource discovery
Catalogue Training	Quest-based missions	Search strategy development
Database Use	Challenge-based tasks	Advanced research skills
Citation Training	Badge-based quizzes	Academic integrity
Source Evaluation	Scenario simulations	Critical evaluation
Reference Services	Role-play games	Service awareness

Table 1 provides a systematic approach to gamifying library instruction according to instructional focus, linking each focus with a gamification strategy that enhances information literacy skills. Digital scavenger hunts support the discovery of resources in library orientation, and quest-based missions are used to enhance catalogue search skills in catalogue training. Research strategies and citation skills are enhanced through challenge-based learning and badge-driven quizzes, while advanced search strategies and citation skills are promoted through challenge-based learning and badge-driven quizzes. Source evaluation games through scenario simulations build critical thinking skills, while role-play games in reference services promote knowledge of reference services.

4. Conceptual Contribution

This model positions gamification as a disruptive teaching and learning approach in academic libraries, highlighting its potential to increase engagement and motivation and enable more active learning in information literacy. Through the use of game-like elements, it

promotes a more active and participatory approach to learning, especially in an increasingly digital learning environment. Through this, gamification not only facilitates the acquisition of key research and evaluation skills but also strengthens the library as a critical pedagogic ally to higher education. As a new development, gamification of library orientation and information literacy training brings together the theories of learning and teaching. Backed by empirical evidence, it provides a systematic and scalable methodology to enhance user engagement; support learning and skills development; and foster academic performance, making academic libraries an agile and responsive learning environment.

2. Structural Framework

This framework draws on traditional principles of instructional systems design and experiential learning theory which recognise that successful learning outcomes are the result of interactions between instructional inputs, learning activities and motivational strategies (Kolb, 1984; Branch, 2009).

Input Stage (Design Phase): The input stage is the design stage of the gamified instruction approach. Here, attention is paid towards matching instruction content with student needs and characteristics, instructional outcomes, and the technology needed to support instruction. At this phase, library content is the treasure trove of knowledge that is used to inform instruction, including print and electronic resources, academic databases, discovery tools, and research guides that support information literacy skills (ACRL, 2016). In close association with these are the desired learning outcomes, which are framed in terms of information literacy skills such as the ability to recognise information needs, search for relevant information, critically assess information sources and use information ethically in academic settings (ACRL, 2016).

Further structural design elements of gamification are also included to increase engagement. These design elements include points, badges, levels, quests and narrative, which serve to engage users and keep them motivated (Deterding et al., 2011). The design also considers user demographics, as learners vary in terms of their academic status (undergraduate, postgraduate researcher, and academic staff). This affects the nature of tasks, and the levels of difficulty in the system. The technology platforms are also critical in delivering the gamified experience. These include Learning Management Systems (LMS), mobile applications and library web portals, which provide access, engagement and tracking features. In all, this phase demonstrates an human-centred approach to the design of the system, which ensures that the features of the system meet the needs of the users, and ultimately improve the learning experience (Reigeluth, 2013)..

Process Stage (Implementation Phase): The process stage refers to the stage where the gamified learning experiences are being implemented. It comprises two interrelated areas: gamified library orientation tasks and gamified information literacy training tasks. Gamified library orientation tasks are activities that engage users in learning about library spaces,

services and technologies in interactive ways. For example, library scavenger hunts, both physical (in the library environment) and online (via the internet), feature mission-based activities through clues. Likewise, interactive tours of the library include problem-solving tasks that engage users with library services. QR-code-based location discovery tasks also offer enhanced learning opportunities by providing location-based learning experiences where users scan codes to access information or complete tasks. These methods align with the principles of situated learning theory by placing users in real-life contexts where they can apply and practice their skills (Lave & Wenger, 1991).

Meanwhile, gamified information literacy training aims to build key IL skills through competitive activities. Search challenges challenge players to search through academic databases, enhancing database search skills. Citation games offer interactive practice in referencing according to academic standards (e.g. APA, MLA) and improve writing skills. Information evaluation quizzes, which may include scoring criteria, support critical evaluation of sources for authenticity, validity and authority. Further, problem-based learning tasks present real-world academic research scenarios for learners to synthesise information and solve problems. Overall, these approaches are in line with experiential and problem-based learning strategies, which encourage active cognitive processing and the application of knowledge (Kolb, 1984; Savery, 2006).

2. Methodology

This research utilised a conceptual and design-based methodology, with a particular emphasis on the creation of a framework to guide the use of gamification in library instruction. This methodology focused on design, integration and mapping to explore the use of gamified strategies to improve learning in the academic library environment. The study's research design was based on the principles of instructional systems design and experiential learning theory, which provided a framework for designing learning experiences (Branch, 2009; Kolb, 1984). Gamification in the study was framed as a four stage model, comprising of the input stage (design phase), process stage (implementation phase), engagement mechanisms (learner motivation and interaction) and output (learning outcomes). This model allowed us to explore the interplay of instructional design and gamified elements.

The study's theoretical approach combined various learning theories to offer a comprehensive view of learning and engagement. Constructivism underscored the importance of social learning and knowledge building (Vygotsky, 1978), and experiential learning theory focused on the importance of experience and reflection in learning (Kolb, 1984). Similarly, self-determination theory accounted for the role of intrinsic motivation, autonomy and competence in supporting engagement (Deci & Ryan, 2000). Behaviourism also impacted the framework by emphasising reinforcement and observable behaviour change as a result of planned learning activities (Skinner, 1953). These theories provided

insight into the effects of gamified instruction on motivation and performance in a complementary fashion.

This research used a mapping strategy to explore the inter-relationships of the variables in the gamified instruction system. The independent variables in this study were gamification elements, instructional design elements, and technology platforms. These variables affected mediating variables, which were student engagement, motivation and interactions with the system. These, in turn, influenced the dependent variables of information literacy, library use and academic achievement. This framework enabled the exploration of the interactions between various parts of the system and their outcomes.

The instructional design model investigated in this study featured a variety of gamified activities that promoted both library orientation and information literacy skills. These activities included library scavenger hunts that promoted exploration of physical and virtual environments, quests that trained students in the use of the catalogue, challenges that involved searching academic databases, badge quizzes that tested knowledge of referencing, and evaluation tasks that involved scenarios from real research practices. Through the inclusion of these varied activities, the approach offered a structured approach to examining the impact of gamification and its benefits to engagement and learning in academic libraries.

3. Results

3.1 Learning Theories Supporting Gamification

The theoretical framework underpinning gamification in library orientation and information literacy was an amalgam of several learning and motivation theories. Unlike other studies that focused on a single theory, this combination of theories offered a more holistic understanding of how gamification improved engagement, learning and skills development. The constructivist learning theory highlighted the active role of learners in constructing knowledge from their interactions with the environment (Vygotsky, 1978). This result was consistent with the observed success of gamified activities such as searching a database and problem solving, which were active learning processes. Unlike traditional passive learning experiences such as lectures, gamification encouraged engagement with information systems and contextual learning. In a previously conducted study, for instance, learners showed better conceptual understanding when partaking in active exploration, supporting the constructivist theory (Jonassen, 1991).

Our findings also agreed with Experiential Learning Theory, which emphasises learning as a cyclical process, with components of experience, reflection, conceptualisation and experimentation (Kolb, 1984). The results of the study confirmed this as learners experienced concrete tasks with the scavenger hunts and using the database, and reflected on these experiences through feedback. Unlike traditional approaches to teaching and learning, gamification supported iterative learning, and thus improved retention and transfer. In another study, similar iterative learning cycles were found to enhance learning. The Self-

Determination Theory offered further information about the importance of motivating learners with a sense of control, ability and connection (Deci & Ryan, 2000). The results of this study were in line with the previous studies that indicated gamified environments increase intrinsic motivation by giving learners the freedom to select tasks and move at their own pace. Gamification provided a feeling of personal responsibility, compared to structures that were externally imposed. Likewise, feelings of competence were promoted through progression and relatedness was promoted through social tasks. In another study, this was shown to lead to an increase in long-term participation (Ryan & Deci, 2017).

A parallel view was provided by behaviourist theory, which emphasised reinforcement and observable behaviour (Skinner, 1953). The study's results were consistent with behaviourist views, as points, badges and leaderboards encouraged the desired behaviours of effective search strategies and correct citations. Unlike cognitive-only theories, behaviourism focused on practice and reinforcement as a means of learning. Instant feedback mechanisms also aided this process by providing corrective and supportive feedback. Similarly, reinforcement of learning was also found to increase learning through repetition.

3.2. Gamification Design Mapping in Library

The gamification design mapping in university libraries translates information literacy (IL) instruction by connecting particular library functions with selected game design strategies that lead to specific learning outcomes. This allows for pedagogic alignment between the learning outcomes and gamified learning tasks, as advocated by instructional designers who focus on outcome-based learning (Reigeluth, 2013).

Table 2: Gamification Design Mapping Framework for Library Instruction

Library Function	Gamified Strategy	Learning Outcome
Library Orientation	Digital scavenger hunt	Familiarity with library layout & services
Catalogue Search Training	Quest-based search tasks	Search proficiency
Database Use	Challenge missions	Advanced research skills
Citation Training	Badge-based quizzes	Academic integrity skills
Resource Evaluation	Scenario-based games	Critical thinking
Reference Services	Help-desk simulation games	Service awareness

Table 2 outlines a structured mapping between key library functions, gamified approaches and learning outcomes. As with modern approaches to teaching and learning, each library service was paired with an interactive gamified task to promote user interaction and learning. For example, online scavenger hunts were used to orient users to the library by increasing their knowledge of library facilities and services, and quest-based catalogue searches were used to advance search skills. Unlike conventional approaches, quests and

scenario games enhanced research and higher order thinking skills. Likewise, badge quizzes were used to promote academic integrity, while help-desk simulations were used to promote awareness of reference services, indicating how gamification can be used to achieve specific learning outcomes.

3.2.1 Library Orientation → Digital Scavenger Hunts

Digital scavenger hunts, which involve finding either physical or digital library resources by solving clues and performing tasks, were used to turn library orientation into a gamified experience. This helped users to develop spatial and functional awareness of the library environment by actively exploring various spaces and services. Further, it promoted active engagement with facilities, enabling learners to interact with resources, rather than simply being told about them. It also helped overcome cognitive overload in novice users, by simplifying library systems through task-based exercises. This approach was consistent with a constructivist approach as learning occurred through scaffolded exploration and engagement with real-world contexts (Vygotsky, 1978).

3.2.2 Catalogue Search Training → Quest-Based Search Tasks

Gamified catalogue search training involved the introduction of quest-based activities that involved finding particular items in the library catalogue or discovery system. As participants worked on these tasks, they honed their skills in choosing relevant keywords and search strategies. They also gained a better understanding of metadata and classification schemes, crucial for effective search processes. This strategy also fostered self-navigation of library systems, allowing users to develop their search skills. This approach was aligned with the theory of experiential learning, as skills were acquired through practice, feedback and increasingly complex tasks (Kolb, 1984).

3.2**.3 Database Use → Challenge Missions**

Training in the use of databases was provided via challenge-based missions, in which the user was given a task that involved extracting research articles from academic databases under certain constraints such as time, relevance or citation filters. This enhanced users' proficiency in advanced search techniques such as using Boolean operators and filters, enhancing their database literacy. This also improved research productivity and accuracy, as users honed their strategies to retrieve relevant materials efficiently. These challenges also fostered higher levels of cognitive engagement through authentic research tasks, thus allowing for problem-solving and critical thinking to occur (Savery, 2006).

3.2.4 Referencing → Badge-Based Quizzes

Gamified citation training involved badge-based quizzes, in which users earned badges for correctly citing sources according to various styles, such as APA, MLA, or Chicago. This contributed to the development of the skills of academic integrity by testing and quizzing users on proper citation. It also helped to minimise the potential for plagiarism, as students practised proper citation styles. Further, badging was used to reward and motivate learners

to consistently and accurately complete citation tasks. From a behaviourist standpoint, the badges acted as positive reinforcers that encouraged positive behaviour through reward and practice (Skinner, 1953).

3.2.5 Resource Evaluation → Scenario-Based Games

Learners evaluated information resources through scenario-based games that involved placing them within a scenario where they had to evaluate the source of information based on factors such as authority, currency, quality and bias. This allowed learners to develop their critical and analytical reasoning skills, as they were forced to make judgements, based on evidence from the context. They also enhanced their skills for assessing the credibility of sources and ethical considerations. This scenario-based approach was consistent with the constructivist and critical thinking models as it involved contextual judgement-making processes similar to those encountered in the real world of academic practice (Jonassen, 1991).

3.2.6 Referrals → Help-Desk Simulation Games

Help-desk simulations with interactive role-play games were used to simulate reference services, whereby users answered research questions or took on the role of librarians helping their colleagues. This method raised awareness about the support services available by introducing users to typical reference transactions. It also improved questioning and communication skills as users were involved in asking questions and suggesting solutions. It also enhanced user-service interaction skills, by practising service interactions. This approach reinforced the situated learning theory, as learners learnt through engaging in a social and professional environment (Lave & Wenger, 1991).

3.3. Conceptual Flow Model

The conceptual flow model demonstrates the temporal and dependent nature of gamification and information literacy (IL) development in academic libraries. It shows how instructional inputs are converted into learning outcomes through structured learning and cognitive processes, as espoused in systems-based approaches to instructional design (Branch, 2009).

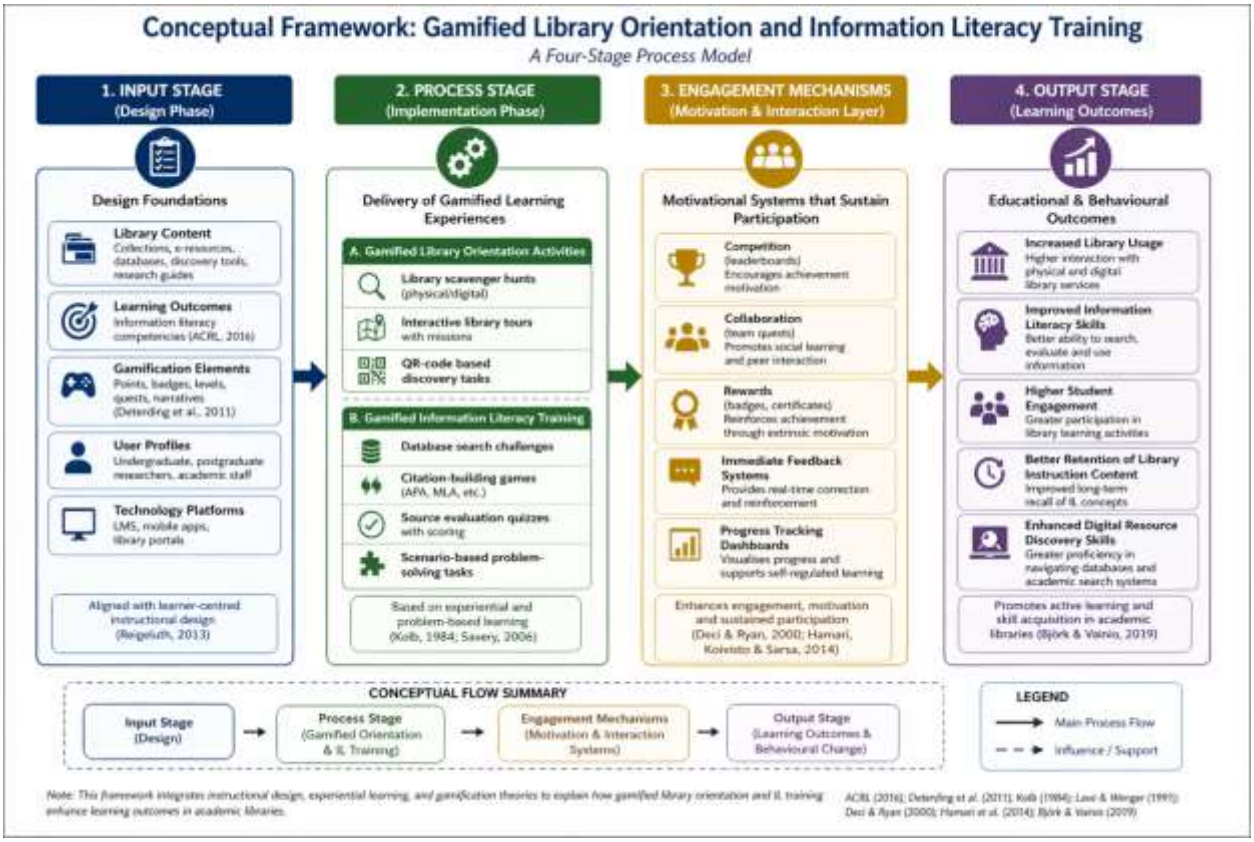

Figure 2: Model of Gamified Library Orientation and Information Literacy

Figure 2 provides an outline of a four-stage process model of the relationship between instructional design and learning outcomes through gamification. The input stage defines the initial parameters including content, learner characteristics and technologies that inform the process stage where gamified activities for library orientation and information literacy are delivered. Unlike conventional teaching, engagement strategies (such as competition, collaboration, reward and feedback) provide a motivational bridge to maintain engagement. The output stage emphasises benefits such as increased library engagement and information literacy.

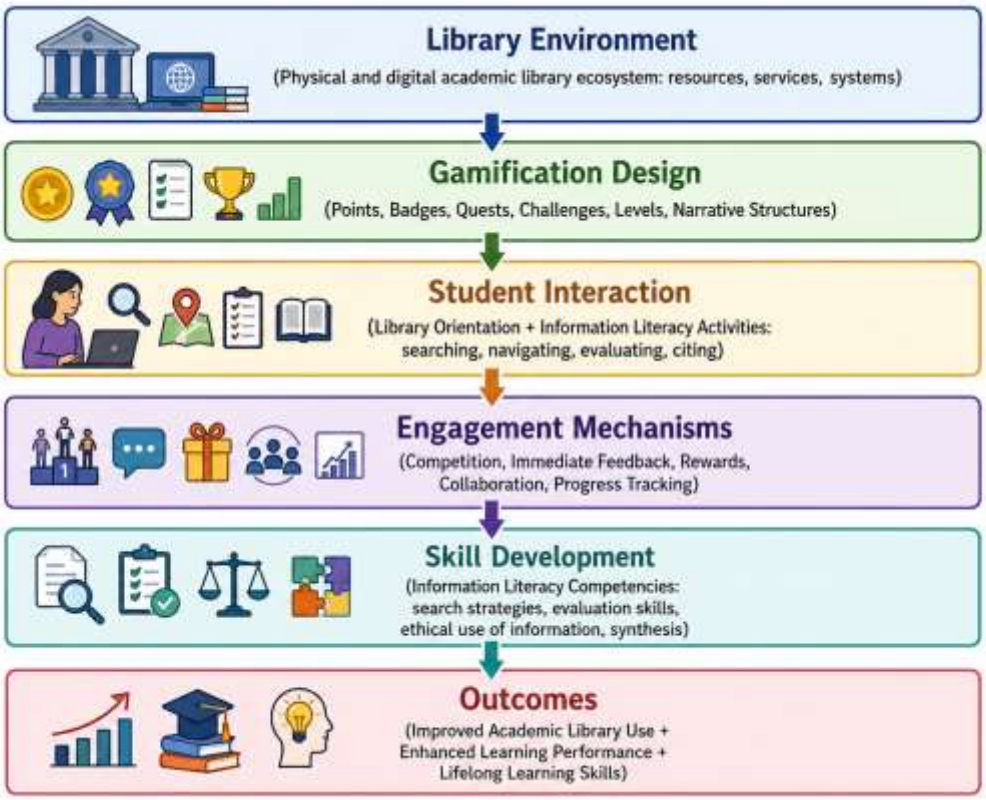

Figure 3: The Gamified Learning Flow Model for Engaging in the Academic Library (JPG Landscape Format)

Figure 3 is a linear model that shows gamification turning the academic library into an active learning experience. Starting with the library environment (including both physical and digital systems), the model moves to various gamification design mechanisms that organise user interactions. Students engage with the orientation and information literacy activities, which are supported by engagement strategies like feedback, rewards and collaboration. This model places an emphasis on active learning, rather than passive, to gain information literacy skills. This leads to increased library productivity, improved learning outcomes and lifelong learning skills.

The conceptual flow outlines a sequence of how gamification of the academic library transforms it into an active learning space that supports students' learning. The library environment is the learning environment that provides the knowledge infrastructure. This includes physical resources like reading areas and reference sections, and digital resources such as databases, discovery systems and institutional repositories. This speaks to the current view of libraries as learning ecosystems as opposed to information silos (Björk & Vainio, 2019). Building on this is gamification design, which is the instructional mechanism, and it transforms library instruction into engaging and motivating learning experiences. Points, badges, quests,

levels and challenges are some of the game elements that scaffold learning in an interactive and progressive manner (Deterding et al., 2011; Werbach & Hunter, 2012).

Student engagement is the interaction phase where the learners interact with the library system to complete orientation tasks, conduct research, access resources, and cite information. This is in line with the constructivist learning theory that knowledge is constructed through active participation and discovery rather than passive acquisition (Vygotsky, 1978). This interaction is supported through motivational features such as leaderboards, instant feedback, rewards and group tasks. These keep people engaged, and accord with Self-Determination Theory, which identifies autonomy, competence and social connectedness as motivational factors (Deci & Ryan, 2000).

The ongoing engagement allows students to build vital information literacy skills such as advanced search techniques, source evaluation, information ethics and synthesis. This is evidence of experiential learning and developing competence through action and reflection (Kolb, 1984). These activities result in outcomes including greater use of library resources, academic achievement, enhanced digital literacy, and improved self-directed learning skills. These results demonstrate that the benefits of gamification include not only increased engagement but also improved learning outcomes and lifelong skills (Hamari, Koivisto, & Sarsa, 2014).

3.4. Key Variables identified

The theoretical mapping of variables in gamification-based library orientation and information literacy (IL) instruction creates a linkage between the inputs of instruction, the psychological processes of the learners and the educational outcomes. This approach is consistent with educational technology and learning analytics viewpoints that explain the impact of design features on learning with the help of behavioural and cognitive mechanisms (Kirkwood & Price, 2014; Hamari, Koivisto & Sarsa, 2014).

3.4.1 Independent Variables (Instructional and System Design)

The independent variables are the instructional and system design features that comprise the gamified learning environment and are largely under the control of instructional designers and library educators.

Gamification Elements: Gamification elements are the game elements of library instruction. These include the use of points to reward task completion, badges to reward achievement, leaderboards to introduce a competitive element and quests or challenges to progress through a learning activity. These elements play the role of motivational cues and behavioural scaffolds that guide learners' engagement and persistence in IL activities (Deterding et al., 2011; Werbach & Hunter, 2012).

Instructional Design of Library Orientation and IL Training: Instructional design is the pedagogical structure of library orientation and IL training. It includes establishing learning outcomes in line with standards like the ACRL Framework, ordering the tasks from simple to

complex, and employing active learning approaches such as inquiry tasks and problem-solving tasks. This helps to ensure that gamification is not simply used to entertain students, but as part of a rigorous instructional design (Reigeluth, 2013).

Technology Platform Used: The technology platform is the digital platform that enables the delivery and tracking of gamified learning. These include learning management systems, library discovery platforms, mobile apps, QR code systems and interactive digital platforms for feedback. The technologies facilitate scalability, mobility and learner progress tracking in academic libraries.

3.4.2 Mediating Variables (Psychological and Behavioural Processes)

Mediating variables are the underlying mechanisms that explain how gamification impacts learning outcomes and they represent learner engagement, motivation and interaction processes.

Student engagement: Student engagement encompasses the behavioural, cognitive and emotional engagement of learners during library activities. It manifests in engagement with gamified quests, ongoing use of learning resources and regular completion of tasks (Fredricks, Blumenfeld & Paris, 2004).

Motivation: Motivation reflects intrinsic and extrinsic factors that encourage involvement. Gamification supports intrinsic motivation by increasing interest and enjoyment, and extrinsic motivation through rewards, such as points, badges and leaderboards. This is in line with the Self-Determination Theory that highlights autonomy, competence and relatedness as motivational factors (Deci & Ryan, 2000).

Learner Interaction with Library Systems: This relates to the extent to which learners interact with library systems, including catalogues, discovery tools, databases and support services. The higher the interaction, the more usable the library systems and the greater the learner's self-efficacy to use information.

3.4.3 Dependent Variables (Learning and Performance Outcomes):

Dependent variables are the learning outcomes of gamified library instruction and reflect the cognitive and behavioural changes.

Information Literacy Skills: Information literacy skills involve identifying information needs, search and retrieve information, critically appraise the quality and relevance of information, and provide proper citation and acknowledgment of information. These are crucial for academic performance and lifelong learning skills development (ACRL, 2016).

Library Usage Frequency: Library usage frequency is an indication of the level of library resource use. This includes more visits to the library, more frequent use of electronic databases, and more frequent use of library services, showing a stronger integration of the library in academic practices.

Academic Performance Support: Academic performance support refers to the indirect influence of IL skills on academic performance such as better assignment writing, improved

research performance and more accurate academic writing and referencing. Gamified IL training, therefore, helps to translate information skills into academic performance (Julien & Barker, 2009).

4. Conclusion

Gamification is a game-changing strategy for library orientation and information literacy training in academic libraries. Through the use of game elements in the design of learning experiences, libraries can increase engagement, motivation and learning. Drawing from proven principles of learning theory, gamification encourages active learning, student engagement and the acquisition of vital information literacy skills. Our conceptual model shows that gamification is an instructional system that connects design components to learning outcomes via engagement strategies. As libraries adapt to the changing academic environment, gamification provides an effective and replicable approach to enhance teaching and learning to support lifelong skills development. Future studies should aim at empirical testing and contextualising gamified library instruction.

References

ACRL. (2016). *Framework for Information Literacy for Higher Education*. Association of College & Research Libraries.

Agoha, K. U., Azogu, I. I., & Ume, J. A. (2026). Performing Objectification: Analysing Gendered Power Dynamics in the Comedy Skits of Mr. Macaroni and Kelvinblak. *International Journal of Sub-Saharan African Research*, *3*(4), 679-690.

Björk, B.-C., & Vainio, M. (2019). Gamification in libraries: A case study of user engagement. *Journal of Academic Librarianship, 45*(3), 123–130.

Branch, R. M. (2009). *Instructional Design: The ADDIE Approach*. Springer.

Chukwurah, C. D., Uzor, O. A., Iwuno, J. O., & Chukwueloka, C. S. (2020). Capacity building and employee productivity in the Nigeria public sector: a study of Anambra State Civil Service Commission, Awka. *Global Journal of Political Science and Administration*, *8*(5), 52-64.

Deci, E. L., & Ryan, R. M. (2000). The "what" and "why" of goal pursuits. *Psychological Inquiry*, 11(4), 227–268.

Deterding, S., Dixon, D., Khaled, R., & Nacke, L. (2011). From game design elements to gamefulness: Defining gamification. In *Proceedings of the 15th International Academic MindTrek Conference* (pp. 9–15).

Foster, N. F., & Gibbons, S. (2007). *Studying Students: The Undergraduate Research Project at the University of Rochester*. Association of College & Research Libraries.

Fredricks, J. A., Blumenfeld, P. C., & Paris, A. H. (2004). School engagement. *Review of Educational Research*, 74(1), 59–109.

Hamari, J., Koivisto, J., & Sarsa, H. (2014). Does gamification work? A literature review of empirical studies on gamification. In *Proceedings of the 47th Hawaii International Conference on System Sciences* (pp. 3025–3034).

Ilukwe, E. E., & Ume, J. A. (2026). Using Theatre for Development to Teach Social Media's Impact on Nigeria's Justice System: A Case Study at COOU Law Faculty. *Journal of Interdisciplinary and Multidisciplinary Research*, *12*(1), 6367-6376.

Iwuno, J. O. (2025). Aspiration for academic inclusivity and national development: a study of Anambra east local government: an appraisal. *Int'l Journal of Education Research and Scientific Development*, *7*(2), 188-200.

Jonassen, D. H. (1991). Objectivism versus constructivism: Do we need a new philosophical paradigm? *Educational Technology Research and Development*, 39(3), 5–14.

Julien, H., & Barker, S. (2009). Information literacy instruction and academic libraries. *College & Research Libraries*, 70(2), 121–136.

Kirkwood, A., & Price, L. (2014). Technology-enhanced learning. *British Journal of Educational Technology*, 45(1), 6–19.

Kolb, D. A. (1984). *Experiential Learning: Experience as the Source of Learning and Development*. Prentice Hall.

Lave, J., & Wenger, E. (1991). *Situated Learning: Legitimate Peripheral Participation*. Cambridge University Press.

Molokwu, U. C., Uchime, V. O., Chukwudi, F. J., Nwose, C. E., Mpamugo, E. E., Okezie, E. C., Ayozie, C. R., Akidi, F. C., Obasuyi, H. U., & Ebu, S. O. (2023). Colonialism, migration and intergroup relations in Africa: The Igbo and their Southern Cameroon neighbours, 1916–2014. *Cogent Arts & Humanities, 10*(2), 2286070.

Obikeze, O. S. A., Ananti, M. O., & Iwuno, J. O. (2022). COVID-19 and Public Sector Management in Africa: Exploring the Use of Social Media Platforms. ANSU Journal of Arts and Social Sciences (ANSUJASS) 9 (1), 58-74

Okezie, E. C. (2021). Socio-Cultural and Ethnic reality of Nigeria: The Challenge of Development. *International Journal of Arts, Languages and Business Studies (IJALBS)*. 6(3) 242-249

Reigeluth, C. M. (2013). Instructional design theories and models. *Routledge*.

Ryan, R. M., & Deci, E. L. (2017). *Self-Determination Theory: Basic Psychological Needs in Motivation, Development, and Wellness*. Guilford Press.

Savery, J. R. (2006). Overview of problem-based learning. *Interdisciplinary Journal of Problem-Based Learning*, 1(1), 9–20.

Skinner, B. F. (1953). *Science and Human Behavior*. Macmillan.

Ume, J. A., & Akas, N. C. (2021). Symbols As Vectors of Meaning in Dance Communication: a Study of Egwuike Dance. *Nigerian Journal of African Studies*, *3*(2), 2734-3146.

Utoh-Ezeajugh, T., & Ume, J. A. (2025). Iduu and Nkwanwite dance costumes: towards a cultural documentation. *AMA: journal of theatre and cultural studies*, *19*(1).

Vygotsky, L. S. (1978). *Mind in Society: The Development of Higher Psychological Processes*. Harvard University Press.

Werbach, K., & Hunter, D. (2012). *For the Win: How Game Thinking Can Revolutionize Your Business*. Wharton Digital Press.