
Role of Gamification in Improving User Engagement and Interaction Within Libraries

Pooja Bagewadi

Guest Faculty, Dept. of Library & Infor. Science
Rani Channamma University, Belagavi - 591156,
Email: poojabagewadi22@gmail.com

Kempegouda Parameshwar Shivling

Librarian
Christ Academy Institute of Law, Bengaluru 560083
Email: goudaparameshwar@gmail.com

Kiran Ranavagol S.

Guest Faculty, Dept. of Library & Inform. Science
Rani Channamma University, Belagavi - 591156,
Email: ranavagolkiran@gmail.com

Somanagouda Shankargouda Patil

Assistant Librarian
Alliance University, Bengaluru - 562106, India
Email: somanagoudapatil.sp5@gmail.com

Mohanakumara C B

Librarian, Christ Academy Institute of Law, Bengaluru
560083, Email: mohanackbl@gmail.com

Abstract

Gamification has the potential to transform routine operations of libraries into interactive and rewarding activities that foster participation and exploration, specifically among the current generation who increasingly engage in digital platforms. This study assesses the role of gamification in library activities, focusing on its ability to foster user participation and learning outcomes, and to enhance library services. Adopting a literature review approach, this research synthesised studies published between 2015 and 2025, extracting data on the integration of digital games into library operations. The study discusses the application of gamification across various sections of the library and acknowledges difficulties faced by libraries, including staff resistance, limited resources, lack of funds, and the complexities of designing relevant games.

Keywords

Gamification, Library Automation, ICT-enabled Library Services, Digital Library, ICT in Libraries

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1. Introduction

Currently, the integration of gaming techniques in numerous sectors has gained wide attention and the library system is also part of this. Gamification refers to the application of gamified elements to routine work and services across fields that engage patrons and encourage specific behaviours. In case of libraries, this technology offers unique opportunity to generate a close network between library and readers by transforming to dynamic and interactive sections rather than traditional environment. Integration of points, badges, and leaderboard-like gamified elements in libraries enhances reading, learning, and community engagement efficiently. Libraries have been regarded as centres of knowledge historically by offering access to scholarly information, cultural resources and education (Reed & Miller, 2020). However, traditional libraries are failing to attract and retain patrons especially Generation Z due to increased use of digital platforms and online content (Patil et al., 2025). The concept of gamification provides potential solution to these problems by making library services more engaging and serving relevant data to the users. The implementation of digital games in programs of libraries promotes participation, exploring behavior and achievement and transforming day-to-day operations like borrowing books and research in rewarding environment (Colasanti et al., 2020).

Gamification in libraries gives rise to considerable academic benefits as well as entertainment to the scholars. By adopting game-oriented learning methods, libraries could enhance critical thinking, support skill development and information literacy too. Through gamified quizzes, tasks, and interactive scavenger hunts, library users could engage in self-directed learning while enjoying the platforms (Adeyemi et al., 2021). It is evident from studies that as patrons tend to stay much engaged with information content when available in interactive game format, it enhances comprehension and retention. Gamification develops a vision of community and social involvement among readers in addition to promoting individual learning (Khademi Zare et al., 2024). Communication and teamwork are encouraged by team-based activities and collaborative games by empowering the networks among library users (Ranavagol et al., 2024). Libraries are perceived as quiet places but can turn into vibrant spaces of social interaction through initiatives of gamification that come up with multiple benefits. This transition not only advance total user

experience but attract more diverse user population too, motivating involvement of people of different generations and disciplines in library programs (Zhou & Yang, 2023). This literature review examines the role played by gamification in the library environment by analysing its impact on user interaction, community building and academic outcomes. It investigates the various gamified strategies that libraries have adopted, highlighting successful case studies while addressing potential challenges. It determines the numerous strategies of gamification that libraries have incorporated by focusing on previous studies along with addressing of factors hindering the implementation of gamification in libraries.

2. Objectives

1. To understand how gamification leads to user engagement.
2. To explore how gamification improves the library services and satisfies users.
3. To determine how gamification attracts diverse audiences and promotes an inclusive library environment.
4. To assess the potential of gamification in supporting community building and collaborative learning.
5. To identify the challenges of implementing gamification in libraries and suggest measures to overcome.

3. Methodology

This review explores the role of gamification in libraries, concentrating on research articles published between 2015 and 2025 from four major academic databases: Scopus, Web of Science, Taylor & Francis, and Google Scholar. The review follows a structured approach to guarantee thorough and unbiased data collection. Initially, a comprehensive search strategy was crafted, utilizing keywords like “gamification,” “libraries,” “library engagement,” and “library services” in various combinations. Inclusion criteria required that studies be empirical, published in peer-reviewed journals, and focus on the application or impact of gamification in library contexts. Only articles in English were included. A two-step screening process was implemented: first, titles and abstracts were examined to filter out irrelevant studies; second, full-text articles were evaluated for relevance and quality. Studies were excluded if they pertained to non-library settings or did not present clear outcomes related to

gamification. Data extraction was conducted systematically to gather essential information, including study design, library type, gamification techniques employed, and reported outcomes. A qualitative synthesis of findings was performed, organizing results into themes like user engagement, learning outcomes, and improvements in library services. The review also evaluated the methodological rigor of the included studies to ensure the reliability of the findings.

4. Introduction to Gamification

Defined as the use of game design elements in nongame environments, gamification has attracted much interest of late for its ability to improve learning results, motivation, and user engagement. Deterding et al. (2011) first brought the phrase into widespread use and stressed the need to use techniques such as points, badges, leaderboards, and challenges to affect behaviour and foster intrinsic motivation (Dichev & Dicheva, 2017). Basically, gamification uses were mostly seen in marketing and consumer interaction plans. Its relevance, though, has grown in several fields, including organisational management, healthcare, and education. Research shows that, especially in situations where motivation might wane, gamification can be an effective means of enhancing performance and encouraging engagement. Gamified features have proven effective in educational environments, for example, by increasing interaction with learning materials, fostering healthy competition, and supporting mastery-based learning (Alsawaier, 2018).

5. Gamification in Libraries

The use of gamification, which involves incorporating game-like elements into non-game settings, has become increasingly popular in libraries as a way to boost user engagement and support learning. This approach utilizes features like points, badges, and leaderboards to encourage participation, change routine library tasks, and make the learning experience more enjoyable (Giddens, 2016). Researchers have recognized gamification as a way to connect traditional library services with the needs of the digital era, offering a fresh method to attract a variety of users. One key area where gamification has shown promise is in promoting information literacy. Libraries have started to include gaming elements in their educational programs, using challenges and interactive activities to draw in users (Capdarest-Arest et al., 2019). These systems not only inspire

individuals to explore library resources but also improve their ability to effectively find and use available materials. Hence, gamification serves as a learning tool, making information retrieval both informative and fun. By adopting this engaging approach, libraries encourage deeper involvement and foster a sense of achievement among users. Additionally, by facilitating social interaction through multiplayer games or group challenges, libraries promote teamwork and create a supportive atmosphere where users can share knowledge and ideas (Downie & Proulx, 2022). This social aspect of gamification turns libraries into lively spaces for collaborative learning, thereby strengthening community connections and motivating user participation in future events and activities.

6.Application of Gamification in Libraries

Gamification in library activities involves incorporating game-like features, such as rewards, challenges, competitions, and progress tracking, into library programs to engage and motivate users. The main goal is to make learning and library services more interactive, enjoyable, and accessible. There are various ways to implement gamification in libraries such as

6.1Reading Challenges

Gamification in reading challenges at libraries has emerged as a highly effective way to boost engagement and develop reading habits, especially among younger audiences. Digital games are frequently incorporated into these challenges to make reading more interactive and enjoyable. A prime example is the Epic! Reading Challenge, an app that allows children to track their reading progress, earn badges, and take part in themed challenges (Schrier, 2015). This gamified method greatly enhances children's motivation to read by offering incentives and recognition for their efforts. Another example is Bookopolis, a kid-friendly social reading platform that features gaming elements like leaderboards, points, and badges to encourage participation in reading challenges. Users can set reading goals, complete missions, and connect with peers, creating a fun and community-focused atmosphere (Lamb, 2015). These digital games align perfectly with the goals of library reading challenges by promoting literacy, increasing reading frequency, and providing a sense of achievement.

6.2 Library Scavenger Hunts

The use of gamification in library scavenger hunts has shown to be an effective way to boost engagement, exploration, and learning among library visitors. By integrating digital games, libraries can turn traditional scavenger hunts into interactive, educational, and fun experiences. For example, many library scavenger hunts make use of the Google Expeditions program to create virtual reality (VR) experiences, enabling participants to explore historical landmarks or themed locations while solving clues and finding hidden items, either digitally or within the library itself (Ranavagol et al., 2025). This immersive approach enhances the scavenger hunt by blending real-world exploration with digital components, promoting collaboration and critical thinking. Another example is the Actionbound app, which allows libraries to create mobile scavenger hunts where users follow clues, scan QR codes, and complete tasks using their smartphones(Figueroa, 2018). This app is commonly used in library events, such as themed tours or resource discovery challenges, to motivate patrons to explore library spaces while engaging with the game's content (Rittel, 2017).

6.3 Digital Badges

The use of gamification through digital badges in libraries has become a powerful way to engage users and improve their learning experiences. Digital badges serve as rewards for completing tasks or reaching milestones, giving users a tangible acknowledgment of their progress. Badgeville is a well-known platform that libraries use to create gamified experiences, offering badges for achievements like attending events, finishing reading challenges, or using specific library services (Smirani & Yamani, 2024). This method not only boosts participation but also cultivates a sense of community and accomplishment. One more example is the digital game LibraryQuest, which rewards players with badges for completing various library-related tasks, such as finding specific books or answering trivia questions about library resources (Kim, 2015). By utilizing digital badges, these games motivate patrons to engage more deeply with the library's offerings while adding a competitive or social aspect through the display of badges. Digital badges also enhance intrinsic motivation, as users are more likely to return for future activities when they feel their achievements are recognized.

6.4 Library Quizzes and Trivia

The use of gamification in library quizzes and trivia has proven to be an effective way to engage patrons and make learning more enjoyable. Libraries are increasingly incorporating digital games into their quiz events, which boosts interactivity and motivation. For example, Kahoot! is a game-based learning platform that libraries use to host interactive trivia games where participants compete, earn points, and answer questions in real time (Wang & Tahir, 2020). By adding gamification features like leaderboards, time limits, and rewards, this platform has greatly enhanced user engagement and retention of knowledge. Another great example is Quizizz, which allows libraries to design custom trivia games and quizzes focused on library resources or particular topics. This platform provides immediate feedback and gives badges for correct answers (Pradnyadewi & Kristiani, 2021). Both of these digital tools enrich the quiz experience by fostering a competitive atmosphere and a sense of achievement, encouraging users to participate more actively.

6.5 Interactive Storytelling and Role-Playing Games (RPGs)

The use of gamification through interactive storytelling and RPGs in libraries has emerged as an effective way to boost learning and user engagement. These games foster creativity, collaboration, and problem-solving while providing a narrative-driven experience. A prime example is Storium, a digital storytelling platform used by libraries where users create and interact with characters, navigate narrative arcs, and make choices that affect the story's direction (Booth, 2017). This platform promotes collaborative storytelling among library visitors, enhancing creativity and critical thinking in line with educational goals. Another example is Tabletopia, a digital RPG platform that replicates board game experiences in a virtual setting, frequently used in libraries to host group role-playing sessions. Participants work together to tackle challenges and reach shared goals, thereby encouraging teamwork and effective communication (Forsythe, 2021). Both of these games demonstrate how digital RPGs can turn libraries into vibrant spaces where patrons engage in narrative experiences, promoting interaction with library resources while also developing skills in teamwork, decision-making, and storytelling.

6.6 Point Systems for Library Activities

The use of point systems in libraries, enhanced through gamification, has become a popular method to encourage patron involvement and increase engagement with library resources. These point systems generally reward users with points for completing tasks like attending events, borrowing materials, or participating in educational activities, which can later be exchanged for rewards or recognition. A notable example of a digital initiative that uses a point system is Beanstack, a platform that libraries use to track reading progress and give points for finishing reading challenges (Downie & Proulx, 2022). Participants earn points for each book they read, which can be traded for rewards, thus motivating continued engagement. Another example is MyLibrary, a gamified app that enables library patrons to earn points by interacting with various library services, such as checking out books, taking quizzes, or joining events (Morgan, 2023). This app incorporates points, badges, and leaderboards to gamify library activities, encouraging users to discover new services and make regular visits to the library.

6.7 Leaderboards

The use of leaderboards in library settings as a form of gamification has gained popularity for its ability to boost user engagement, create a competitive atmosphere, and encourage participation in library events. Digital games that incorporate leaderboards offer patrons visible rewards and rankings, motivating them to improve their performance and visit the library more often. A notable example is Duolingo, a language-learning app that uses leaderboards to track user progress and spark competition among learners. The points system and publicly displayed leaderboards in Duolingo help maintain users' interest in educational content, making it a valuable tool for library language-learning programs (Shortt et al., 2023). One more example is Fitocracy, a gamified fitness app used by libraries to promote health-related challenges. Users earn points for completing different exercises and can see how they rank on the leaderboard, which encourages motivation and participation in library health initiatives (Bhatia, 2023).

6.8 Escape Room Challenges

Incorporating gamification into escape room challenges in libraries offers a unique and engaging way to enhance learning experiences and foster collaboration. This method uses game mechanics like

challenges, rewards, and competition to create immersive educational activities. Research shows that gamified escape rooms in library settings effectively encourage critical thinking and teamwork among participants. "Library Escape" is an online game where players solve puzzles and riddles related to library resources, promoting an interactive and enjoyable exploration of library materials (Guo & Goh, 2016). Quest2Learn, another digital game used in libraries, has participants complete challenges based on library research tasks, reinforcing information literacy skills within a fun and dynamic gamified environment (Kim, 2015).

6.9 Themed Events

The use of gamification, which involves adding game-like elements to non-game settings, has become increasingly popular for boosting user engagement, especially during themed events at libraries. By incorporating features like points, rewards, and challenges, gamification encourages visitors to interact and learn. Libraries have started using digital games to offer more engaging educational and recreational experiences. Example, the Zork series has been effectively used in library treasure hunts, where participants solve puzzles and find clues throughout the library, enhancing both the thematic experience and the educational aspect (Wells & Boyd, 2019). Some games create a competitive and interactive space for patrons to test their knowledge on various topics while earning rewards, which increases their sense of accomplishment and enjoyment. These situations highlight how digital games can enhance themed library events, promoting engagement, education, and community participation through well-designed gamification techniques.

6. Requirements for the Implementation of Gamification in Libraries

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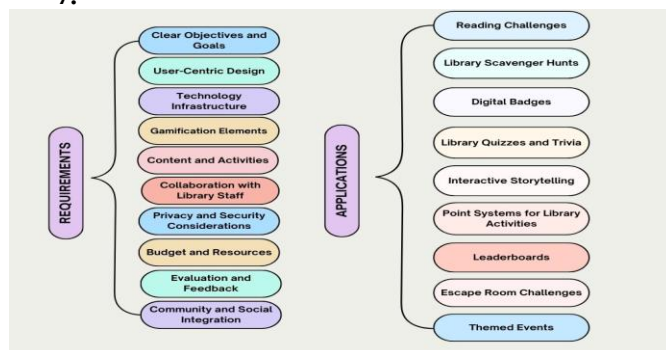


Figure 1: Requirements and Applications of Gamification in Libraries

The integration of gamification in libraries requires careful thought about several key elements to create an engaging, educational, and enjoyable experience for users. First, libraries need to set clear objectives, which might include promoting reading, increasing user engagement, or encouraging educational participation, along with defining measurable assessment goals (Jung & Wang, 2021). A user-focused design is crucial, taking into account the target audience's age, interests, and accessibility needs, while also motivating users through both intrinsic and extrinsic rewards. The technological setup should include necessary hardware like computers, tablets, kiosks, and RFID scanners, along with software such as gamification platforms, library management systems, and mobile app development tools to support the gamified experience (Oberhauser & Lecon, 2017). Incorporating gamification elements like rewards, progression systems, challenges, and storytelling is vital for creating an immersive and engaging experience, with varied content tailored to different interests and age groups. It is also important to train library staff to facilitate these gamified activities and to collaborate with local communities to boost participation. Ensuring data privacy and obtaining user consent is critical for protecting user information, especially when working with minors. Libraries should also plan for funding to support technology, training, and ongoing updates to the gamified elements. Regular evaluations, using user feedback and success metrics, will help refine the program, while community integration through social sharing and peer interactions can foster collaboration and encourage participation (Buckley & Doyle, 2016). By focusing on these aspects, libraries can successfully implement gamification to enhance user engagement and promote learning.

8. Impact of Gamification on Libraries

The introduction of gamification in libraries has gained attention as a strategic way to boost user engagement and improve service utilization. By incorporating game design elements like points, badges, and leaderboards, gamification has been shown to enhance library participation, creating an interactive and reward-driven atmosphere. Kim (2015) notes that libraries implementing gamified reading challenges and digital scavenger hunts have seen a notable increase in student engagement, with participants more likely to visit the library and use its

resources. Additionally, research by Downie & Proulx in 2022 suggests that gamification cultivates a sense of achievement, encouraging users to explore various materials and participate in library programs. By tapping into intrinsic motivation, gamified systems have been linked to improved information literacy and more frequent library visits. However, some researchers argue that the appeal of gamification may be limited mainly to younger audiences, as older patrons might not resonate with game-based incentives. There are also concerns that gamification could overshadow traditional educational methods or lead to a focus on external rewards rather than intrinsic learning (Jansukpum et al., 2024). Despite challenges, the overall effect of gamification in libraries is viewed positively, as it promotes patron participation, strengthens community ties, and enhances the user experience. In conclusion, while more research is needed to explore its long-term effects, gamification has proven effective in increasing library engagement and creating an interactive, enjoyable environment (Rivera & Garden, 2021).

9. Difficulties Faced in Effective Integration of Gamification in Libraries

The integration of gamification in libraries comes with several challenges, despite its potential to boost user engagement and learning. One major hurdle is the lack of adequate resources and funding needed to implement sophisticated gamified systems, which often require advanced technologies and software. Libraries, especially those in academic settings, may face pushback from staff who are either not familiar with gamification concepts or doubtful about their effectiveness in educational environments (Alzahrani & Alhalafawy, 2023). Further creating and executing gamification strategies that align with educational goals while still being engaging for users can be time-consuming and demand specialized skills (Sabornido et al., 2022). Another significant challenge is the diverse nature of library patrons, making it difficult to design universally appealing gamified experiences that cater to different ages, backgrounds, and levels of technological proficiency. Measuring the impact of gamification on user engagement and learning outcomes poses a challenge, as traditional metrics may not adequately reflect the subtle benefits of these experiences (Lester et al., 2023). Overcoming these obstacles could ultimately result in more interactive and innovative library services, strengthening the connection between users and the resources they have access to.

10. Recommendations

The idea of gamification, which means adding game-like features to non-game settings, has become an effective approach for boosting user engagement and promoting learning in libraries. Studies show that gamification can greatly enhance user involvement, motivation, and satisfaction. For library patrons, gamification turns their experience into an interactive, fun, and educational adventure, encouraging more frequent visits and greater use of resources (Tait et al., 2016). Library staff can also benefit from gamification by fostering a more collaborative and vibrant work environment, which improves outreach efforts and user assistance (Khademi Zare et al., 2024). It is essential for institutions and policymakers to focus on integrating gamified elements, such as rewards, leaderboards, and challenges, to align library services with modern learning and entertainment trends. Government support is crucial for securing funding and creating guidelines that ensure libraries can implement these strategies effectively and sustainably (Bigdeli et al., 2016). Successful implementation requires careful consideration of the diverse user base, accessibility needs, and how gamification fits with library systems and goals. A united effort from users, library staff, institutions, policymakers, and government bodies is essential for developing a successful, sustainable, and inclusive gamified library environment.

11. Conclusion

Incorporating gamification into libraries has shown encouraging results in boosting user engagement, enhancing educational experiences, and building a sense of community. By utilizing game elements like rewards, challenges, and leaderboards, libraries can create more vibrant and interactive spaces that appeal to diverse user groups. This strategic method not only strengthens traditional library roles but also meets the changing demands of today's library users, especially in light of digital advancements. While the benefits of gamification are clear, challenges such as limited resources, the need for staff training, and ensuring inclusivity in game design must be tackled. Future studies should explore the long-term impacts of gamification on library usage, user retention, and educational results. As technology progresses, libraries could leverage virtual and augmented reality, personalized gaming experiences, and social media to further enhance the possibilities of gamification. The continued evolution of gamification in libraries has the potential to transform the relationship between

libraries and their communities, promote lifelong learning, and increase the significance of libraries in the digital era.

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