

Article

**GAMIFICATION IN LIBRARY SERVICES: EXPLORING IMPACT,
CHALLENGES, AND FUTURE DIRECTIONS**

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ABSTRACT:

Gamification in library services is frequently examined to enhance user engagement, learning, and information literacy, and has been a prominent subject of inquiry in educational and psychological literature. Gamification denotes incorporating game components, such as points, badges, or leaderboards, into non-game contexts, and is sometimes used interchangeably with serious games, game-based learning, and related terminology. Although extensive research has been conducted in education, gamification remains in its infancy within the library sector. This page consolidates the literature on gamification in libraries, encompassing theoretical and practical frameworks and instances of gamified activities in various library types and sectors. The article lays out the prospective benefits of gamification, like cranking up user engagement, boosting research skills, and levelling up digital literacy, while also throwing in a few party poopers, such as teaching principles and user values that might not be on board with the fun and games. This paper helps libraries ponder the art of gamification, especially by sharing best practices that embrace the unique quirks of library users as key players in the ever-changing digital playground.

Keywords: Gamification, Libraries, Information Literacy, User Engagement, Digital Learning, Game Design, Educational Innovation

1. INTRODUCTION:

In recent years, gamification has developed as an effective approach for enhancing engagement, learning, and involvement in different venues, including libraries. Gamification, introducing game features into non-game surroundings, has gained major attention in educational and information science disciplines for its potential to change typical library services into dynamic and interactive experiences. The implementation of gamification in libraries is particularly essential in today's digital age, as consumers expect more engaging and dynamic experiences across various platforms. As libraries attempt to increase digital literacy, research skills, and information retrieval, gamification gives an innovative response to these shifting demands. By incorporating components such as points, badges, leaderboards, and challenges, libraries can provide a more immersive learning environment that stimulates engagement and helps the development of critical skills. However, while gamification has been broadly accepted in many educational contexts, its application in libraries remains under-explored, with little study addressing the specific obstacles, benefits, and best practices for its adoption in these venues. This article aims to evaluate the purpose of gamification in libraries, analysing how it might enhance user engagement, information literacy, and research abilities.

This article will address the theoretical theories underpinning gamification strategies and real-world case studies proving their utility in library environments. This article thoroughly examines the current status of gamification in libraries, offering significant insights into how libraries might utilise game-based strategies to address the requirements of contemporary library users. The article conducts a critical literature analysis, identifying significant gaps in research and practice and emphasising areas requiring further investigation to comprehend the potential of gamification in libraries fully. Ultimately, this essay wants to contribute to developing knowledge on gamification and offer practical ideas for librarians, educators, and academics wishing to adopt gamified tactics into library services and programs.

2. OBJECTIVES:

Objectives related to the papers are given below

- To define the concept, functions, and benefits of gamification in libraries.
- To examine the application of gamification in library settings.
- To assess the impact of gamification on user engagement and learning.
- To identify challenges and limitations in implementing gamification.
- To propose best practices and future directions for libraries adopting gamification.

3. LITERATURE REVIEW:

Adeyemi (2025) identifies ethical concerns in gamified library services and highlights the lack of responsible, fair practices frameworks. Moreover, reveals librarians' low game literacy compared to users, suggesting the need for development in gamification practices using common game elements. Durodolu et al. (2025) explore gamification to enhance engagement with library resources among information science students and professionals. Jansukpum et al. (2024) compare gamified vs. non-gamified VR environments in university libraries and find that gamification improves knowledge retention and engagement. Kaur & Singh (2021) review trends, challenges, and effectiveness of gamification in libraries, providing direction for future research and application. Jacobs (2018) outlines gamification principles for libraries and stresses aligning strategies with institutional goals for meaningful user engagement. Landers et al. (2018) provide a scientific framework for gamification, rejecting its oversimplification as a marketing tool; they stress theoretical grounding. Holmquist (2016) offers real-world gamification examples to illustrate user engagement. Dicheva et al. (2015) note rising educational interest in gamification but warn of limited rigorous evidence and the need for better research and tech support. Mora et al. (2015) systematically review gamification design

frameworks; they call for a unified model for researchers and practitioners. Nicholson (2015). This paper discusses the RECIPE framework for meaningful gamification, emphasizing intrinsic motivation over extrinsic rewards. It suggests gamification should foster personal connections and meaningful experiences, promoting sustained motivation and deeper learning. Seaborn, K., & Fels, D. I. (2015). This article provides a thorough overview of gamification, highlighting its theoretical foundations and practical applications, emphasizing its interdisciplinary nature and addressing ethical and empirical issues. Felker, K. (2014). Kyle Felker discusses the increasing use of gamification in library services, its recognition in ALA Annual conferences, and its challenges in creating engaging games. He shares experiences from Grand Valley State University library, emphasizing its potential benefits. Hamari, J. et al. (2014). This study reviews 24 peer-

reviewed studies on gamification's effectiveness, highlighting that its success depends on context and system design, urging further research on its impact on academic attainment and cognitive development. Landers (2014) This article describes gamification as using game qualities to affect learning behaviours and attitudes, emphasising mediating and moderating effects and recommending strategic applications for educational purposes. Nah, F. F.-H., et al. (2014). This study examines the use of gamification in educational settings, emphasising its ability to improve learning outcomes while arguing for rigorous design science techniques. Werbach and Hunter (2012). This study analyses the application of game thinking and gamification in business operations to increase engagement, motivation, and productivity, highlighting the significance of thoughtful design. Deterding et al. (2011). This study explores gamification, a strategy involving game design in non-game environments to boost user engagement and motivation. It highlights its historical roots and the importance of understanding psychological and motivational factors.

4. RESEARCH GAPS:

Despite active discourse, the literature reveals gaps in the following:

- Lack of Ethical standards: There are no standardised ethical standards for gamification in library settings.
- Low Game Literacy Among Library Professionals: Inadequate training and awareness impede effective gamification design.
- Limited Longitudinal and Comparative Studies: Few long-term studies have examined the influence of gamification on learning and engagement.
- Context-Specific Implementation Challenges: Few studies have investigated how cultural, institutional, and user demographic characteristics influence gamification success.
- Inadequate Integration of Intrinsic Motivation: An excessive dependence on extrinsic motivators, with insufficient emphasis on meaningful engagement and learning.
- Limited Evidence-Based Design Practices: There is a lack of empirical research and proven design approaches for library settings.
- There is less evidence on the impact of gamification on learning outcomes and skill development, and little research exists on cost-effective, scalable gamification strategies for under-resourced libraries.
- Lack of User-centred Design Approaches: Few studies incorporate users into co-design.

5. METHODOLOGY:

This study analyses the impact of gamification on library services, concentrating on user engagement, information literacy, and overall library utilization. Using a mixed-methods approach, qualitative methods are used to provide a complete study of user experiences and measurable data on gamified interventions.

6. CONCEPT, FUNCTIONS, AND BENEFITS OF GAMIFICATION:

Gamification in libraries refers to adding game design components such as points, badges, levels, leaderboards, and challenges to non-game contexts to boost user engagement, motivation, and involvement. This concept converts standard library experiences into engaging and rewarding activities, making learning and information access more enticing. The major functions of gamification in libraries include improving user engagement,

stimulating the development of research and digital literacy skills, encouraging frequent use of library resources, offering immediate feedback, and supporting positive behavior change. These methods assist libraries in constructing more dynamic and user-centered environments. The benefits of incorporating gamification are significant; it boosts motivation and participation, improves the overall user experience, supports lifelong learning, fosters collaboration among users, attracts a broader user base, and enables libraries to collect valuable data to refine their services. By applying gamification judiciously, libraries may better fill their customers' increasing wants and expectations in today's digital environment. Table 1 gives information on the concept, outlines the functions, and exhibits the benefits of gamification in the context of libraries.

Table 1: Concept, functions, and benefits of gamification in Libraries

Concept	Functions	Benefits
Points: Awarded for completing tasks or reaching milestones.	Enhancing User Engagement: Encourages active participation through rewards and interactive tasks.	Boosts Engagement and Motivation: Makes library activities more enjoyable and rewarding.
Badges: Visual indicators of achievement.	Promoting Learning and Skill Development: Supports acquiring research, digital, and information literacy skills.	Encourages Lifelong Learning: Creates a fun and supportive environment for continuous learning.
Leaderboards: Rankings that show user performance in comparison to others.	Increasing Motivation: Provides incentives (intrinsic/extrinsic) to drive user involvement.	Improves User Experience: Introduces playful and user-friendly interfaces that attract diverse audiences.
Levels: Indicate progress, unlocking new challenges or rewards.	Improving User Retention: Encourages repeated visits and sustained interest in library services.	Promotes Collaboration and Social Learning: Facilitates peer interaction through team challenges or community rewards.
Challenges/Quests: Structured tasks or missions to be completed by users.	Supporting Behavior Change: Nudges users toward desired behaviors like book borrowing, attending workshops, or using databases.	Attracts New Users: Gamified experiences can draw in users who may not traditionally use library services.
Rewards: Incentives (e.g., certificates, prizes) for completing challenges.	Providing Feedback: Offers real-time feedback on user progress through points, badges, or levels.	Enhances Data Collection and Analytics: Helps libraries track user behavior and preferences to improve services.

7. BENEFITS OF GAMIFICATION IN DIFFERENT TYPES OF LIBRARIES:

Gamification in academic, public, and digital libraries can boost active learning, improve information literacy, foster cooperation, attract younger users, and promote literacy and community involvement. It also enhances interaction with online resources, supports remote learning, and increases global participation in digital content. Table 2 describes the benefits of gamification across different types of libraries (Academic, Public, and Digital libraries):

Table 2: Benefits of Gamification in Different Types of Libraries:

Academic Libraries	Public Libraries	Digital Libraries
Enhanced Student Engagement: Gamification increases student participation in library services and academic programs. Quizzes, scavenger hunts, and interactive challenges encourage active learning.	Attracting Younger Audiences: Gamification appeals to younger library users (teens and children), making library visits more fun and less intimidating.	Enhanced User Interaction: Gamification boosts engagement with online resources, such as digital archives, e-books, and online databases, making remote learning or research more interactive.
Improved Information Literacy: Gamified modules teach students how to use research tools, databases, and citation management software, improving their research skills.	Promoting Literacy and Learning: Reading challenges and educational games encourage children and adults to read more, thus promoting literacy.	Improved Access to Resources: Digital libraries can use gamification to encourage users to explore different digital tools and resources, such as databases, citation tools, or special collections.
Motivation for Research: Gamification can incentivize students to use library resources more, attend workshops, or complete research tasks, making academic activities more engaging.	Community Engagement: Gamified programs like library-themed escape rooms, book clubs, or reading marathons help foster a sense of community.	Boosting Learning through Digital Platforms: Online quizzes, badges, and leaderboards on platforms like Moodle or digital library portals encourage self-paced learning and assessment.
Increased Library Usage: Game components such as points or awards stimulate students to explore library resources beyond textbooks, pushing them to use digital media, e-books, journals, and databases.	Increased Program Participation: Users are likelier to attend library events or workshops if rewards, challenges, or competitions are involved.	Global Reach and Accessibility: Gamified digital libraries can engage a global audience, enabling users from various regions and backgrounds to participate in challenges and earn rewards remotely.
Fostering Collaboration: Gamified group activities, such as collaborative research challenges or competitions, promote teamwork and peer learning.	Encouraging Exploration: Games like scavenger hunts or quizzes incentivize library users to explore various services (e.g., digital archives, community programs, special collections).	Motivating Research and Collaboration: Gamified research tasks or collaborative projects in digital libraries encourage users to complete academic or creative work in engaging ways.

8. APPLICATION OF GAMIFICATION IN LIBRARY SETTINGS

Gamification is employed in library settings to boost user engagement, motivation, and learning results. It is applied in academic libraries through digital badges, research quests, and leaderboards, while public libraries use reading challenges and community quests. School libraries integrate reading competitions and story-based experiences. Digital libraries contain achievement systems and interactive learning modules. Special libraries utilise gamified simulations and professional development games to boost abilities. University Libraries utilise point systems and interactive guides to motivate pupils. Gamification offers several benefits, including improved user involvement, enhanced learning outcomes, and a more engaging and enjoyable learning environment. Table 3 gives a complete assessment of the use of gamification in library settings, grouped into many categories of libraries:

Table 3: Application of Gamification in Library Settings

Library Type	Gamification Methods	Examples	Objectives
Academic Libraries	Digital badges	“Research Olympics” to teach citation and database use	Improve research skills
	Leaderboards	Badge systems for completing tutorials	Increase database usage
	Research quests	-	Encourage information literacy
	Learning games	-	-
Public Libraries	Reading challenges	Summer Reading Programs	Promote reading habits
	Book bingo	Gamified book reviews or scavenger hunts	Engage youth and adults
	Community quests	-	Build community interaction
School Libraries	Classroom leaderboards	“Read and Win” programs	Enhance reading motivation
	Reading competitions	Story-based quests to encourage reading	Support curriculum
	Quiz-based learning	-	Foster love for books
Digital/Online Libraries	Interactive modules	Badges for accessing diverse resources	Boost engagement with digital resources
	Achievement systems	Online quizzes after reading materials	Encourage diverse resource use
	Progress tracking tools	-	-
Special Libraries	Gamified professional training	Law libraries using legal scenario games	Enhance specialized skills

	Skill development modules	Medical libraries offering diagnostic challenges	Support continuing education
	Simulation games	-	Encourage professional growth
University Library Portals	Point systems for usage	Points for using OPAC, visiting subject guides, and attending workshops	Encourage holistic use of library services
	Interactive research guides	-	Promote self-directed learning
	Completion levels	-	-

9. ASSESSING THE IMPACT OF GAMIFICATION ON USER ENGAGEMENT AND LEARNING IN LIBRARY SETTINGS:

Gamification in libraries promotes user engagement and improves learning outcomes by integrating game-like elements like points, badges, and leaderboards. This strategy inspires users to connect with library resources and participate in educational programs, strengthening crucial skills including information literacy and research ability. Regular evaluations include questionnaires, statistics, pre- and post-assessments, and observations to ensure the efficiency of gamified systems. Table 4 presents a detailed assessment of the influence of gamification on user engagement and learning within library environments:

Table 4: Impact of Gamification on User Engagement and Learning in Libraries

Aspect	Gamification Strategy	Observed Impact	Supporting Evidence/Example
User Engagement	Use of points, badges, and leaderboards	Increased frequency of library visits and interaction with resources	Students revisiting academic libraries to climb leaderboards or earn completion badges
Motivation	Reading challenges and reward systems	Enhanced intrinsic and extrinsic motivation to participate in library programs	Public library summer reading programs show higher completion rates with gamified elements.
Information Literacy	Interactive research quests and quizzes	Improved understanding of research databases, citation styles, and academic writing	Academic libraries reporting higher quiz scores post-tutorial participation with gamified features
Retention of Knowledge	Progress-based learning modules	Better long-term retention of library-related concepts and skills	Online tutorials with badges demonstrating sustained user participation over weeks
Collaboration	Team challenges and group quests	Increased peer interaction and shared learning	School libraries use team-based story adventures to promote group reading and discussion.
Skill	Scenario-	Strengthened critical	Law and medical libraries

Development	based simulations and gamified workshops	thinking and problem-solving abilities	using role-based games for case analysis and diagnosis
User Satisfaction	Engaging interfaces and personalized feedback systems	Greater satisfaction and positive user experience with library services	Survey results show increased satisfaction in libraries with gamified interfaces
Lifelong Learning	Continuous learning rewards and knowledge milestones	Encouraged ongoing education and skill advancement beyond formal schooling	Adult learners in public libraries are completing learning paths due to milestone-based achievements

10. CHALLENGES AND LIMITATIONS IN IMPLEMENTING GAMIFICATION IN LIBRARY SETTINGS:

Gamification in libraries can improve user engagement and learning, but it also provides difficulties such as resource availability, user variety, technical limits, and resistance to adapt. To assure effective adoption, libraries must assess these features, maintain long-term commitment, resolve ethical concerns, and develop appropriate rewards. By detecting these constraints, libraries may develop gamified experiences that enhance user engagement and learning results, allowing them to plan and adjust their tactics more effectively. Table 5 demonstrates the primary problems libraries confront when integrating gamification. Each obstacle gives a description, likely impact on gamification's usefulness, and real-world examples to highlight the concerns. Understanding these restrictions allows libraries to design and adjust their gamification strategies more successfully.

Table 5: Challenges and Limitations in Implementing Gamification in Library Settings

Challenge	Description	Impact	Examples
Resource Constraints	Implementing gamification requires significant investment in time, budget, and personnel.	Libraries with limited resources may struggle to develop, maintain, and update gamified systems effectively.	Small public libraries cannot afford custom gamified platforms or additional staff to manage gamification.
Resistance from Users	Some users, especially those unfamiliar with technology, may resist gamification or prefer traditional library experiences.	Resistance can lead to low participation rates or disengagement from gamified activities, reducing the system's effectiveness.	Older patrons or users less familiar with digital platforms resist participation in a gamified library program.

Technological Barriers	Successful gamification relies on advanced technological infrastructure, which may not be available in all libraries.	Libraries with outdated systems or limited access to technology may face difficulties implementing gamification effectively.	A rural library with limited internet access or outdated systems struggles to implement an online gamified platform.
Balancing Fun and Educational Value	Ensure that gamification does not overshadow the library's educational goals and focus too much on entertainment.	Overemphasis on entertainment may reduce the educational value of gamified tasks or result in trivializing library services.	A gamified reading program that rewards points for simple, short reads rather than more challenging or educational books.
User Motivation and Engagement Over Time	Maintaining long-term user engagement as the novelty of gamification wears off.	Users may lose interest or become fatigued if rewards become repetitive or the challenges no longer feel engaging.	Students lose interest in a gamified research challenge after completing the initial tasks and earning all available badges.
Ethical Concerns and Privacy Issues	Gamification systems often collect user data, raising concerns about privacy, equity, and fairness.	Users may feel uncomfortable with data collection or competitive aspects, leading to resistance or disengagement.	Concerns over tracking students' library usage data or displaying student performance on public leaderboards.
Designing Meaningful Rewards and Recognition	Creating rewards that are meaningful, motivating, and aligned with educational objectives.	Poorly designed rewards, particularly if they are trivial or irrelevant, may decrease user motivation or engagement.	A library offers badges for attending events but not engaging in deeper learning, leading to superficial participation.

11. BEST PRACTICES AND FUTURE DIRECTIONS FOR IMPLEMENTING GAMIFICATION IN LIBRARIES:

Integrating gamification in libraries can enhance user engagement and learning, but it requires best practices to assure its effectiveness and sustainability. To be innovative, libraries should connect gamified activities with educational objectives, deliver meaningful rewards, and assure accessibility. Future directions include embracing developing technologies, spreading gamification into digital resources, enhancing cross-institutional collaboration, and personalizing experiences. Tables 6 and 7 detail the Best Practices and Future Directions for Libraries that Adopt Gamification.

Table 6: Best Practices for Implementing Gamification in Libraries

Best Practice	Description	Implementation Tips	Benefits
Align Gamification with Educational Goals	Ensure that gamified activities support the library's primary education, literacy, and skill development mission.	Design challenges and rewards that promote learning outcomes such as information literacy, research skills, and digital literacy.	Enhances the educational value of gamified experiences and ensures relevance to library objectives.
Start with Simple, Scalable Solutions	Begin with small-scale, simple, gamified activities that can be expanded based on user feedback and success.	Before introducing complex, technology-heavy systems, pilot gamified programs like reading challenges or research skills workshops.	Minimizes risk and allows for gradual scaling. Provides valuable insights for future iterations.
Use Engaging and Relevant Rewards	Meaningful design rewards are aligned with user interests and provide intrinsic value (e.g., certificates, recognition).	Offer incentives like badges, certificates, or library privileges that acknowledge skill development or completion of tasks.	Increases motivation and participation by providing users with valuable recognition and rewards.
Foster Social Interaction and Collaboration	Encourage users to collaborate on tasks and challenges, fostering a sense of community.	Use team-based challenges, collaborative quests, or peer mentoring to build a cooperative environment around gamified activities.	Strengthens community bonds, encourages knowledge sharing, and enhances engagement through social interaction.
Provide Clear Instructions and Support	Ensure users understand the gamified systems' rules, goals, and benefits through clear communication and guidance.	To ensure users can navigate the gamified system easily and participate without frustration, including tutorial videos, FAQs, and help desks.	Reduces user frustration, improves participation rates, and enhances user experience by making the system accessible.
Collect Feedback and Iterate	Continuously collect user feedback and use it to refine and improve gamified systems.	Conduct surveys and focus groups or analyze participation data to identify what works well and areas for improvement.	Helps optimize the gamified experience, ensuring it remains engaging and effective in meeting users' needs.
Ensure Accessibility and Inclusivity	Design gamified activities to be accessible to all users, including those with disabilities and varying levels of digital literacy.	Ensure the gamified platforms are mobile-friendly, compatible with assistive technologies, and provide options for users of different skill levels.	Ensures all users can participate, regardless of abilities or experience, and promotes equitable access.

Table 7: Future Directions for Gamification in Libraries

Future Direction	Description	Potential Developments	Impact
Integration with Emerging Technologies	Incorporate emerging technologies like virtual reality (VR), augmented reality (AR), and artificial intelligence (AI) into gamified experiences.	Use VR/AR for immersive library tours or AI for personalized learning experiences and tailored game challenges.	Provides innovative, immersive experiences that enhance engagement and create dynamic learning environments.
Gamification in Digital Libraries	Expand gamification into digital library platforms, including e-books, online journals, and digital archives.	Develop gamified modules for digital resource exploration, such as quizzes based on e-books or challenges for accessing specific digital archives.	Increases interaction with digital resources, encouraging deeper engagement and skill-building in digital environments.
Cross-Institutional and Collaborative Gamification	Create opportunities for collaborative gamification across multiple institutions, such as university networks or public library systems.	Organize regionally or nationally coordinated gamified programs or challenges that allow users from different libraries to participate together.	Fosters broader community engagement and resource sharing, encouraging a sense of shared purpose and connection among libraries.
Adaptive and Personalized Gamification	Develop systems that adapt to the individual needs and progress of users based on their engagement and performance.	Use AI-driven algorithms to adjust game difficulty, rewards, and learning paths based on users' preferences and abilities.	Creates more personalized, targeted learning experiences, improving user outcomes and satisfaction.
Gamification for Lifelong Learning	Extend gamification to support lifelong learning and adult education through libraries.	Implement gamified courses or workshops for adults on various topics (e.g., career development, financial literacy, health education).	Expands the role of libraries as key players in lifelong learning, attracting a broader, more diverse audience.
Gamification for Library Advocacy	Use gamification as a tool for advocating the importance of libraries in communities and schools.	Develop gamified campaigns that raise awareness about library services, promote library use, and engage the public in supporting library funding.	Increasing awareness of libraries' value, promoting advocacy efforts, and strengthening community support for libraries.

Incorporating Sustainable Development Goals (SDGs)	Align gamified activities with sustainable development goals to promote social responsibility and global awareness.	Create challenges or programs highlighting sustainability, climate action, and social justice, motivating users to engage with relevant library content.	Supports global goals for sustainability and fosters social responsibility in library users, aligning library activities with global movements.
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13. CONCLUSION AND SUGGESTIONS:

Gamification in library services has proved its capacity to enhance user engagement, learning outcomes, and information literacy. Theoretical foundations like Deterding et al.'s framework and Nicholson's RECIPE model guide the integration of game dynamics with learning objectives. However, difficulties persist, such as the quality of execution and alignment with instructional design, the long-term influence of gamification on user behavior and motivation warrants further exploration. Future research should examine the long-term effects of gamification, personalize gamification to meet diverse user groups, evaluate gamification models, integrate with emerging technologies like artificial intelligence, VR, and AR, address ethical and accessibility concerns, and explore collaborative and social aspects of gamification. By addressing these study directions, libraries may enhance the incorporation of gamification, ensuring it becomes a potent tool for boosting user engagement, learning, and research abilities in the digital age.

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