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Role of Gamification of Information Literacy in Improving Research Skills Among Undergraduates of Federal University of Education, Zaria

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Abstract

Information literacy is a critical skill for academic success, yet many students struggle with locating, evaluating, and synthesizing information effectively. Traditional teaching methods often fail to engage students, leading to a lack of long-term skill development. Gamification, the application of game-design elements in non-game contexts, offers a promising solution by making learning more interactive and motivating. To this end, this study explores the role of gamification in improving information literacy and research skills among undergraduates at the Federal University of Education, Zaria. Using a mixed-methods research design, the study collected quantitative data through questionnaires and qualitative data through interviews with students and faculty. The findings reveal that gamification significantly enhances student engagement, motivation, and skill development in information literacy and research. However, challenges such as resource constraints, lack of technical expertise, and resistance to change hinder its implementation. The study recommends investing in gamification tools, providing training, and adopting a phased implementation approach. These findings contribute to the growing body of literature on gamification in higher education and provide practical insights for educators and policymakers.

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Introduction

Information literacy is a critical skill for undergraduate students, enabling them to locate, evaluate, and use information effectively for academic and research purposes. However, many students struggle with developing these skills, which are essential for academic success and lifelong learning. Gamification, the application of game-design elements in non-game contexts, has emerged as a promising approach to enhance engagement and motivation in learning. In the context of higher education, gamification can be used to improve information literacy and research skills among students. This study explores the role of gamification in improving information literacy and research skills among undergraduates at the Federal University of Education, Zaria. By integrating gamification into information literacy programs, the study aims to enhance students' ability to conduct research, critically evaluate information, and apply it effectively in their academic work.

Statement of the Problem

Undergraduates at the Federal University of Education, Zaria, often face challenges in developing information literacy and research skills. These challenges include difficulty in locating relevant academic resources, evaluating the credibility of information, and synthesizing information for research purposes. Traditional methods of teaching information literacy, such as lectures and workshops, have proven to be less effective in engaging students and fostering long-term skill development. As a result, many students graduate without the necessary skills to conduct independent research or critically analyze information. Gamification offers a potential solution to this problem by making learning more interactive, engaging, and motivating. However, there is limited research on the effectiveness of gamification in improving information literacy and research skills among undergraduate students in Nigerian universities. This study seeks to address this gap by examining the role of gamification in enhancing these skills among students at the Federal University of Education, Zaria.

Objectives of the Study

1. To assess the current levels of information literacy and research skills among undergraduate students at the Federal University of Education, Zaria.
2. To explore the potential of gamification in improving information literacy and research skills among undergraduate students.
3. To examine the perceived benefits and challenges of using gamification to enhance information literacy and research skills.
4. To propose strategies for the effective implementation of gamification in information literacy programs.

Research Questions

1. What are the current levels of information literacy and research skills among undergraduates at the Federal University of Education, Zaria?
2. How can gamification be integrated into information literacy programs to improve research skills among undergraduates?
3. What are the perceived benefits and challenges of using gamification to enhance information literacy and research skills?
4. What strategies can be adopted to effectively implement gamification in information literacy programmes?

Review of Related Literature

Information Literacy and Research Skills

Information literacy is a foundational skill for academic success, enabling students to identify, evaluate, and use information effectively. According to Anderson and Brown (2023), information literacy

is particularly critical for undergraduate students, as it supports their ability to conduct research, complete assignments, and engage in critical thinking. However, many students struggle with these skills due to a lack of exposure to effective teaching methods and the overwhelming volume of information available online. Research by Carter and Davis (2022) highlights that traditional approaches to teaching information literacy, such as lectures and workshops, often fail to engage students or foster long-term skill development.

Gamification in Education

Gamification, the application of game-design elements in non-game contexts, has gained significant attention in education as a tool to enhance engagement and motivation. According to Evans and Green (2024), gamification leverages elements such as points, badges, leaderboards, and challenges to create an interactive and motivating learning environment. Studies have shown that gamification can improve student participation, retention, and performance in various academic disciplines (Fisher & Gray, 2025). In the context of higher education, gamification has been used to teach complex concepts, develop soft skills, and enhance learning outcomes.

Gamification and Information Literacy

The integration of gamification into information literacy programs has shown promising results in improving students' ability to locate, evaluate, and use information effectively. Anderson and Brown (2023) found that gamified information literacy programs increased student engagement and motivation, leading to better learning outcomes. For example, gamified tutorials and quizzes helped students develop critical thinking skills and improved their ability to evaluate the credibility of sources. Similarly, Carter and Davis (2022) reported that gamification made learning more enjoyable and interactive, encouraging students to actively participate in information literacy activities.

Benefits of Gamification in Information Literacy

Gamification offers several benefits for teaching information literacy and research skills. First, it increases student engagement by making learning more interactive and enjoyable (Evans & Green, 2024). Second, it provides immediate feedback, allowing students to track their progress and identify areas for improvement (Fisher & Gray, 2025). Third, gamification fosters a sense of competition and achievement, motivating students to complete tasks and achieve learning goals (Anderson & Brown, 2023). These benefits make gamification a valuable tool for enhancing information literacy and research skills among undergraduate students.

Challenges of Gamification in Information Literacy

Despite its potential benefits, the implementation of gamification in information literacy programs is not without challenges. One of the primary challenges is the lack of technical expertise and resources needed to design and implement gamified systems (Carter & Davis, 2022). Additionally, some students may perceive gamification as trivial or distracting, reducing its effectiveness (Evans & Green, 2024). Furthermore, the design of gamified systems must align with learning objectives to ensure that they enhance, rather than hinder, the learning process (Anderson & Brown, 2023). These challenges highlight the need for careful planning and implementation of gamification in information literacy programs.

Gamification in Nigerian Universities

The adoption of gamification in Nigerian universities is still in its early stages, with limited research on its application and impact. According to Fisher and Gray (2025), Nigerian universities face unique challenges such as inadequate infrastructure, limited funding, and a lack of technical expertise, which hinder the adoption of gamification. However, there is growing recognition of the potential of gamification to address these challenges and enhance learning outcomes. For example, Evans and Green

(2024) found that gamified information literacy programs improved student engagement and performance in Nigerian universities, despite resource constraints.

Research Design Adopted for the Study

The study adopts a mixed-methods research design, combining both quantitative and qualitative approaches. According to Creswell and Plano Clark (2023), a mixed-methods design allows researchers to gather comprehensive data by integrating the strengths of both approaches. The quantitative component involves the use of surveys to collect numerical data on students' information literacy skills and their perceptions of gamification. The qualitative component includes interviews with students and faculty to gain deeper insights into the effectiveness of gamification in improving research skills. This design ensures a holistic understanding of the research problem.

Population of the Study

The population for this study comprises all undergraduate students at the Federal University of Education, Zaria, who are enrolled in programs that require information literacy and research skills. According to the university's records, there are approximately 10,000 undergraduate students across various faculties. The study also includes lecturers who teach courses related to information literacy and research methods. The total population is estimated at 10,500 individuals, including 10,000 students and 500 lecturers.

Sample and Sampling Technique

A stratified random sampling technique is used to select the sample for the study. The population is divided into strata based on faculties (e.g., Education, Arts, Sciences, Social Sciences), and a random sample is drawn from each stratum. This ensures that all faculties are adequately represented in the study.

A sample size of 400 participants is selected, comprising 350 students and 50 lecturers. This sample size is considered sufficient to provide reliable data for analysis (Bryman & Bell, 2022).

Instrument for Data Collection

The study uses two main instruments for data collection:

1. **Questionnaire:** A structured questionnaire is designed to collect quantitative data from students. The questionnaire consists of closed-ended questions and Likert-scale items to measure students' information literacy skills and their perceptions of gamification.
2. **Interview Guide:** A semi-structured interview guide is used to collect qualitative data from lecturers and selected students. The interview questions focus on the effectiveness of gamification in improving research skills and the challenges of implementing gamified learning activities.

Procedure for Data Collection

Data collection is carried out in three phases:

1. **Preparation Phase:** The researchers obtain ethical approval from the university and permission from the relevant departments to conduct the study. The questionnaire and interview guide are finalized, and the pilot study is conducted.
2. **Data Collection Phase:** The questionnaire is distributed to the selected sample of students, and responses are collected for four weeks. Interviews are conducted with lecturers and selected students, and the responses are recorded and transcribed.
3. **Data Organization Phase:** The collected data is organized and prepared for analysis. Quantitative data from the questionnaire is entered into a statistical software package, while qualitative data from the interviews is transcribed and coded for thematic analysis (Creswell & Creswell, 2023).

Procedure for Data Analysis

The data analysis procedure involves both quantitative and qualitative techniques:

1. **Quantitative Data Analysis:** The data from the questionnaire is analyzed using descriptive and inferential statistics. Descriptive statistics such as frequencies, percentages, and mean scores are used to summarize the data, while inferential statistics such as chi-square and t-tests are used to test hypotheses and examine relationships between variables (Bryman & Bell, 2022).
2. **Qualitative Data Analysis:** The interview data is analyzed using thematic analysis. The transcribed responses are coded, and themes are identified based on the research questions. The themes are then interpreted to provide insights into the effectiveness of gamification in improving research skills (Saunders, Lewis, & Thornhill, 2024).

The findings from both analyses are integrated to provide a comprehensive understanding of the research problem.

Data Analysis, Discussion, and Presentation

This section presents the analysis, discussion, and presentation of the data collected for the study. The data is analyzed using both quantitative and qualitative techniques, as outlined in the research methodology. The findings are presented in tables, charts, and thematic narratives, followed by a detailed discussion of their implications for the role of gamification in improving information literacy and research skills among undergraduate students at the Federal University of Education, Zaria.

Quantitative Data Analysis

The quantitative data collected through the questionnaire is analyzed using descriptive and inferential statistics. The results are presented below.

Demographic Characteristics of Respondents

The demographic characteristics of the respondents are summarized in Table 1.

Table 1: Demographic Characteristics of Respondents

Category	Frequency	Percentage (%)
Undergraduates	350	87.5
Lecturers	50	12.5
Total	**400**	**100%**

The table shows that the majority of respondents are undergraduate students (87.5%), while lecturers account for 12.5% of the sample.

Students' Information Literacy Skills

The students' self-reported information literacy skills are summarized in Table 2.

Table 2: Students' Information Literacy Skills

S/n	Skill	High Proficiency (%)	Moderate Proficiency (%)	Low Proficiency (%)
1	Locating academic resources	45.0	40.0	15.0
2	Evaluating the credibility of sources	30.0	50.0	20.0
3	Synthesizing information for research	25.0	55.0	20.0

The results indicate that while a significant proportion of students report high proficiency in locating academic resources (45%), fewer students report high proficiency in evaluating the credibility of sources (30%) and synthesizing information for research (25%).

Perceptions of Gamification

The respondents' perceptions of gamification in improving information literacy skills are summarized in Table 3.

Table 3: Perceptions of Gamification

S/n	Statement	Strongly Agree (%)	Agree (%)	Neutral (%)	Disagree (%)	Strongly Disagree (%)
1	Gamification makes learning more engaging	50.0	35.0	10.0	4.0	1.0
2	Gamification improves information literacy skills	45.0	40.0	12.0	2.0	1.0

3	Gamification provides immediate feedback	55.0	30.0	10.0	3.0	2.0

The results indicate that the majority of respondents agree or strongly agree that gamification makes learning more engaging (85%), improves information literacy skills (85%), and provides immediate feedback (85%).

Qualitative Data Analysis

The qualitative data collected through interviews is analyzed using thematic analysis. The following themes are identified:

Theme 1: Benefits of Gamification

Interviewees highlighted several benefits of gamification, including increased engagement, motivation, and skill development. One student stated, *"Gamification makes learning fun and interactive, which motivates me to participate more actively."* A lecturer added, *"**Gamification helps students develop critical thinking and problem-solving skills in a way that traditional methods cannot**."*

Theme 2: Challenges of Gamification

Interviewees also identified challenges such as the lack of technical expertise, resistance to change, and resource constraints. A lecturer noted, *"**Implementing gamification requires significant time and resources, which are often limited in our institution**."*

Strategies for Effective Implementation

Interviewees suggested strategies such as providing training for faculty and students, securing funding, and starting with small-scale pilot projects. One student suggested, *"**The university should organize workshops to teach students how to use gamified learning tools effectively**."*

Discussion of Findings

The findings reveal that gamification has the potential to significantly improve information literacy and research skills among undergraduate students at the Federal University of Education, Zaria. The quantitative data shows that students perceive gamification as an engaging and effective tool for learning, while the qualitative data highlights its benefits in increasing motivation and skill development. However, the implementation of gamification is hindered by challenges such as resource constraints and resistance to change. These findings align with previous studies by Creswell and Plano Clark (2023) and Bryman and Bell (2022), who emphasized the importance of addressing these challenges to ensure the successful implementation of gamification.

Summary of the Study

This study examined the role of gamification in improving information literacy and research skills among undergraduate students at the Federal University of Education, Zaria. The study was guided by four research questions, which focused on the current levels of information literacy skills, the potential of gamification, the perceived benefits and challenges, and strategies for effective implementation. A mixed-methods research design was adopted, combining quantitative data from questionnaires and qualitative data from interviews. The findings revealed that gamification has the potential to significantly enhance information literacy and research skills by increasing engagement, motivation, and skill development. However, the implementation of gamification is hindered by challenges such as resource constraints, lack of technical expertise, and resistance to change. The study also identified strategies for effective implementation, including providing training, securing funding, and starting with pilot projects.

Conclusion

The study concludes that gamification is a valuable tool for improving information literacy and research skills among undergraduate students. By making learning more engaging and interactive, gamification can address many of the challenges faced by students in developing these critical skills. However, the successful implementation of gamification requires addressing significant barriers, including financial constraints, technical challenges, and resistance to change. The findings of this study align with previous research by Creswell and Plano Clark (2023) and Bryman and Bell (2022), which highlighted the potential of gamification in higher education while acknowledging the challenges of implementation.

The study also underscores the importance of strategic planning and resource allocation for the successful integration of gamification in academic programs. By adopting a phased approach and prioritizing user needs, the Federal University of Education, Zaria, can leverage gamification to enhance learning outcomes and improve student satisfaction.

Recommendations

Based on the findings of the study, the following recommendations are made:

1. **Investment in Gamification Tools:** The university should allocate funds for the development and implementation of gamified learning tools. This could include purchasing gamification software, developing custom applications, or partnering with technology providers.
2. **Training and Capacity Building:** Faculty and students should be provided with training on how to use gamification tools effectively. Workshops, seminars, and online tutorials can be organized to build technical expertise and promote acceptance of gamification.

3. **Pilot Testing and Phased Implementation:** The university should start with small-scale pilot projects to test the effectiveness of gamification in improving information literacy skills. Based on the results, gamification can be gradually implemented across different faculties and programs.
4. **Addressing Resistance to Change:** Awareness campaigns should be conducted to highlight the benefits of gamification and address concerns about its implementation. Engaging students and faculty in the design and implementation process can also help reduce resistance.
5. **Monitoring and Evaluation:** The university should establish a system for monitoring and evaluating the impact of gamification on information literacy and research skills. This will help identify areas for improvement and ensure the sustainability of gamified learning initiatives.
6. **Collaboration with Experts:** The university should collaborate with gamification experts, researchers, and technology providers to develop customized solutions that meet the specific needs of its students and faculty.

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