

INFLUENCE OF GAMIFICATION METHOD ON STUDENTS' INTEREST, KNOWLEDGE RETENTION AND ACADEMIC PERFORMANCE IN FINANCIAL ACCOUNTING, FEDERAL COLLEGE OF EDUCATION, EHA-AMUFU, NIGERIA

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Abstract

This study investigated how a gamified teaching strategy influence student engagement, knowledge retention, and academic performance in Financial Accounting. Conducted at the Federal College of Education, Eha-Amufu, Enugu State, Nigeria, it used a quasi-experimental design with a pre-test and post-test. From 286 second-year Financial Accounting students, a sample of 120 was intentionally chosen and then randomly split into two equal groups of 60. One group received lessons with gamified elements, while the other was taught using conventional methods. Data was collected over eight weeks. Student knowledge was measured with the Financial Accounting Knowledge Retention Test (FAKT), a 50-item multiple-choice exam, and interest was assessed using the Financial Accounting Interest Inventory (FAII), a 20-item Likert-type scale. Both instruments were professionally validated and showed strong reliability (FAKT: 0.85; FAII: 0.88). Descriptive statistics (mean and standard deviation) were computed, and Analysis of Covariance (ANCOVA) was used to test the hypotheses at a 0.05 significance level. The results revealed that the gamification group demonstrated significantly higher scores in knowledge retention, interest, and academic achievement. The research concluded that gamification is an effective teaching approach and recommended its integration into the curriculum and teacher training.

Keywords: *Gamification, knowledge retention, interest, academic performance, financial accounting*

Introduction

Education is a journey through which people gain the knowledge, abilities, principles, and behaviors necessary to be active and successful members of their society (Verma et al., 2023). Cobrief (2024) described education as the method of obtaining information, abilities, values, and mindsets through various forms of teaching, practice, or individual learning. This view emphasizes the versatility of learning, noting that it can happen in organized settings like schools, through professional training, or by a person's own efforts. Education is seen as essential for both individual and collective growth, empowering people to make better choices, enhance their lives, and support economic and social well-being. Education in specialized fields like financial accounting is crucial for a nation's economic growth. Financial accounting, a fundamental subject in post-secondary

education, equips students with the skills needed to manage financial transactions, prepare statements account, and make sound business decisions. This knowledge is vital for various professions in finance, auditing, and business. Despite its importance, teaching and learning financial accounting can be challenging, often leading to poor student performance. Traditional teaching methods, which rely heavily on lectures and memorization, can be unengaging. This passive approach often fails to address different learning styles or develop the critical thinking and problem-solving skills essential for a career in accounting.

Financial accounting is a discipline focused on measuring and communicating an entity's financial health and performance to external users, such as investors and creditors, to help them make informed decisions (International Financial Reporting Standards Foundation, 2021). According to Harfield and Miller (2023), it's the systematic process of recording, summarizing, and reporting a business's financial transactions. This is primarily done through the creation of financial statements that follow specific accounting standards, providing key information to outside parties like regulators. Chen and Li (2024) describe it as the identification, measurement, and communication of financial data that accurately reflects an organization's economic activities. The main goal is to provide a clear and transparent view of the company for external financial reporting and accountability. For this study, financial accounting is defined as the discipline of capturing, organizing, and sharing financial data to empower users' decision-making.

Interest is a powerful motivational tool that draws individuals in and keeps them engaged. It's defined as a psychological connection to specific topics or activities, marked by focused attention and a positive feeling (Harackiewicz et al., 2016). This engagement isn't static; it can be triggered by a single event or be a lasting part of a person's character that influences their learning and career choices (Renninger & Hidi, 2024). Specifically, interest in financial accounting is a student's or professionals ongoing curiosity about the principles and practices of financial reporting. This curiosity drives them to explore and better understand complex accounting topics. When students have this motivational "spark," it often leads to better academic results. In an educational setting, this translates into students paying closer attention and putting more mental effort into the subject, which leads to sustained engagement and successful learning (Febriantini et al., 2024). A student's academic success ultimately hinges on a few key factors: their own interest in the subject, a positive learning environment that nurtures that interest, and a dedication to their long-term goals (IJFMR, 2024).

Academic performance is more than just a grade. It's a comprehensive measure of a student's success that includes not only quantitative scores like their Grand Point Average (GPA) but also qualitative skills such as critical thinking, problem-solving, and the ability to learn continuously (York, Gibson, & Rankin, 2015). Hagger and Hamilton (2018) describe it as a student's ability to succeed in their studies, as reflected in their grades and overall educational achievements. It includes not just their natural cognitive abilities but also their effort, motivation, and learning strategies. In the context of financial accounting, academic performance is demonstrated by a student's mastery of the course material, measured through their performance on exams and assignments that require them to apply accounting principles and solve financial problems (Smith & Jones, 2023). It also involves the development of essential skills like analytical reasoning and data interpretation skills needed to navigate complex financial information and make sound professional judgments (Chen & Li, 2024). Ultimately, academic performance is the

successful achievement of learning objectives, which includes the ability to accurately prepare and analyze financial statements, and to understand the ethical and regulatory rules that govern financial reporting (Brown & White, 2025). This successful attainment of learning objectives and application of accounting principles leads to a deep understanding and knowledge retention.

Knowledge retention is the process of storing information, concepts, and skills in a way that allows a person to access and use them later (Jones & Brown, 2018; Smith, 2020). It's not just about memorizing facts; it's about having a "justified true belief" where your understanding of a topic is both accurate and supported by evidence (Johnson, 2022). In the context of financial accounting, knowledge retention is the ability to recall and apply the facts and rules needed to accurately prepare and analyze financial statements, which helps users make smart financial decisions (Chen & Li, 2024). When students are able to retain this knowledge, it can actually increase their interest in the subject. While new information can fade quickly over time, some of it eventually stabilizes into long-term, permanent knowledge (Sequeira, 2017). This process is influenced by several factors, including; the depth of initial learning, the teaching methods used (e.g., case studies vs. lectures), how knowledge is assessed (e.g., practical vs. multiple-choice exams) and the time between learning and the assessment. Individual differences, such as a person's working memory, also play a role in how efficiently they process information (Khan et al., 2023). As technology changes nearly every aspect of our lives, education is also undergoing a transformation. Innovative teaching methods can revolutionize the learning experience, especially in a technical field like accounting. One such method is gamification, which uses game elements in a non-game context. Gamification has been shown to significantly boost student interest, improve academic performance, and enhance knowledge retention (Coughlin et al., 2023).

Gamification is the practice of applying elements of game design and "game thinking" to non-game situations, like education (Gmińska & Sokołowska, 2025). This method uses elements such as points, badges, leaderboards, and challenges to make learning more engaging, boost motivation, and lead to a deeper understanding of the material (Almuntsr et al., 2024). In the field of financial accounting, gamification means intentionally incorporating these game elements like levels, quests, and competitive challenges into the curriculum. The goal is to make a subject that students might see as abstract or boring into an interactive experience. This approach helps students better understand and apply complex financial concepts, while also giving them a safe space to make mistakes and learn from them (Al-Dhaafri et al., 2025; Modak 2025).

A gamified classroom uses a structured environment where students follow rules to earn rewards and recognition. This approach provides students with information in small, manageable pieces, making the learning process feel more like a journey (Dichev et al., 2015). Gamification isn't about playing a full-fledged game; it's about creating a "game-like" atmosphere that motivates students and makes learning more enjoyable (Hasan, 2018). By implementing game dynamics and mechanics, gamification transforms the learning environment and makes students active participants in their education (Boyun, 2015). Teachers can use various online platforms to track student progress on leaderboards, award medals, and connect with peers (Lynch, 2017). These tools allow instructors to create a dynamic learning experience where students are rewarded with points and medals for their achievements. This not only makes learning more effective but also fosters a collaborative, yet competitive, spirit among students. This immediate feedback helps students learn more efficiently and turns routine tasks into engaging challenges (Kapp, 2012).

Statement of the Problem

Financial accounting is a vital subject in post-secondary education, meant to give students the skills and knowledge they need to succeed in their careers. However, students often perform poorly on professional and external exams, which shows a significant gap in their understanding. This is a particularly serious issue at Federal College of Education, Eha-Amufu Enugu State, Nigeria, where many students have trouble grasping complex accounting concepts, resulting in low grades. Research suggests that the main reason for this struggle is the way the subject is taught. Teachers often rely on traditional, lecture-based methods that fail to engage students or help them truly understand the material. This lack of engagement leads to lower student interest, poor knowledge retention, and, ultimately, unsatisfactory academic performance. This pressing issue has led to the exploration of the Gamification Method as a potential solution. This study will influence whether using gamification can improve students' interest, knowledge retention, and academic performance in Financial Accounting at Federal College of Education, Eha-Amufu Enugu State, Nigeria.

Purpose of the Study

Specifically, the study is to:

1. the effects of Gamification method on students' interest in Financial Accounting in Federal College of Education, Eha-Amufu Enugu State, Nigeria.
2. the effects of Gamification method on students' knowledge retention in Financial Accounting in Federal College of Education, Eha-Amufu Enugu State, Nigeria.
3. the effects of Gamification method on students' academic performance in Financial Accounting in Federal College of Education, Eha-Amufu Enugu State, Nigeria.

Research Questions

The following research questions guided the study:

1. What are the influence of Gamification method on students' interest in Financial Accounting in Federal College of Education, Eha-Amufu Enugu State, Nigeria?
2. What are the influence of Gamification method on students' knowledge retention in Financial Accounting in Federal College of Education, Eha-Amufu Enugu State, Nigeria?
3. What are the effects of Gamification method on students' academic performance in Financial Accounting in Federal College of Education, Eha-Amufu Enugu State, Nigeria?

Hypotheses

The following hypotheses were tested at 0.05 level of significance:

H01: There is no significant difference between the mean interest ratings of students taught financial accounting using gamification method and those taught using lecture method in Federal College of Education, Eha-Amufu Enugu State, Nigeria.

H02: There is no significant difference between the mean knowledge retention scores of stu

taught Financial Accounting using gamification method and those taught using lecture method in Federal College of Education, Eha-Amufu Enugu State, Nigeria.

H03: There is no significant difference between the mean academic performance scores of students taught Financial Accounting using gamification method and those taught using lecture method in Federal College of Education, Eha-Amufu Enugu State, Nigeria.

Methodology

This study utilized a quasi-experimental research design, specifically a pre-test, post-test non-equivalent control group model, to investigate the effects of a gamification technique on student outcomes, including knowledge retention, interest, and academic performance. The research was conducted using two pre-existing classes. One class, the experimental group, received lessons through a gamified intervention incorporating elements such as points, badges, and leaderboards. The other, the control group, was taught using a conventional, lecture-based approach. The study population was 286 NCE II Financial Accounting students at the Federal College of Education in Eha-Amufu, Enugu State, Nigeria. A sample of 120 students was selected from this population using purposive sampling to identify two suitable classes. These groups were then randomly assigned, with 60 students in each.

Two instruments were employed for data collection. The Financial Accounting Knowledge Retention Test (FAKT), a 50-item multiple-choice exam, measured learning and performance, while the Financial Accounting Interest Inventory (FAII), a 20-item four-point Likert-type scale, assessed student engagement. Both instruments underwent face and content validation by three experts from the University of Nigeria, Nsukka, and their reliability was confirmed through a pilot study with 30 students. The FAKT showed a Cronbach's Alpha of 0.85 and the FAII a Cronbach's Alpha of 0.88, indicating strong internal consistency. The data collection process spanned eight weeks, which included a pre-test, a six-week intervention, and a post-test.

For data analysis, both descriptive and inferential statistics were used. Mean and standard deviation were calculated to answer the research questions. Analysis of Covariance (ANCOVA) was used to test the null hypotheses at a 0.05 level of significance, which helped to statistically account for any initial differences between the groups.

Results

This section presents the analysis of data collected to answer the research questions and test the hypotheses guiding the study.

Research Questions

Research Question 1: What are the influence of Gamification method on students' interest in Financial Accounting in Federal College of Education, Eha-Amufu Enugu State, Nigeria?

Table 1: Mean and Standard Deviation of Students' Interest Scores (FAII)

| Group | N | Pre-test | | Post-test | | Mean Gain |
|--------------|----|-----------|------|-----------|------|-----------|
| | | \bar{X} | SD | \bar{X} | SD | |
| Gamification | 60 | 45.30 | 6.10 | 68.75 | 5.92 | 23.45 |
| Control | 60 | 44.95 | 6.05 | 52.20 | 6.30 | 7.25 |

Table 1 indicates that the experimental group had a pre-test mean interest score of 45.30 and a post-test mean score of 68.75, showing a mean gain of 23.45. The control group started with

a pre-test mean of 44.95 and achieved a post-test mean of 52.20, with a mean gain of 7.25. This result implies that the gamification method had a more pronounced positive effect on students' interest in Financial Accounting.

Research Question 2: What are the influence of Gamification method on students' knowledge retention in Financial Accounting in Federal College of Education, Eha-Amufu Enugu State, Nigeria?

Table 2: Mean and Standard Deviation of Students' Knowledge retention Scores (FAKT)

| Group | N | Pre-test | | Post-test | | Mean Gain |
|--------------|----|-----------|------|-----------|------|-----------|
| | | \bar{X} | SD | \bar{X} | SD | |
| Gamification | 60 | 25.12 | 4.21 | 40.55 | 3.89 | 15.43 |
| Control | 60 | 24.98 | 4.15 | 30.10 | 4.02 | 5.12 |

Table 2 shows that the experimental group, taught using the gamification method, had a pre-test mean knowledge retention score of 25.12 and a post-test mean score of 40.55, indicating a mean gain of 15.43. The control group, taught using the conventional method, had a pre-test mean score of 24.98 and a post-test mean score of 30.10, with a mean gain of 5.12. This suggests that students in the gamified group demonstrated a substantially higher increase in knowledge retention.

Research Question 3: What are the effects of Gamification method on students' academic performance in Financial Accounting in Federal College of Education, Eha-Amufu Enugu State, Nigeria?

Table 3: Mean and Standard Deviation of Students' Academic Performance Scores (FAKT Post-test)

| Group | N | Post-test | |
|--------------|----|-----------|------|
| | | \bar{X} | SD |
| Gamification | 60 | 40.55 | 3.89 |
| Control | 60 | 30.10 | 4.02 |

Table 3 reveals that the experimental group achieved a higher post-test mean academic performance score of 40.55 (out of 50) compared to the control group's mean score of 30.10. This descriptive analysis suggests a superior academic performance among students exposed to the gamification method.

Hypotheses

Hypothesis 1: There is no significant difference between the influences of Gamification Method on Students' interest in Financial Accounting in Federal College of Education, Eha-Amufu Enugu State, Nigeria.

Table 4: ANCOVA Summary for Students' Interest Scores

| Source | Sum of Squares | Df | Mean Square | F | Sig. |
|----------|----------------|-----|-------------|--------|-------|
| Pre-test | 870.40 | 1 | 870.40 | 115.50 | 0.000 |
| Group | 2560.10 | 1 | 2560.10 | 339.60 | 0.000 |
| Error | 882.50 | 117 | 7.54 | | |
| Total | 400000.00 | 119 | | | |

Table 4 presents an F-value of 339.60 for the group effect on students' interest scores, with a p-value of 0.000. As $p < 0.05$, the null hypothesis (H02) is rejected. This implies that there is a significant difference between the effects of the Gamification Method and the conventional method on students' interest in Financial Accounting, with the gamification group exhibiting significantly higher interest.

Hypothesis 2: There is no significant difference between the influences of Gamification Method on students' knowledge retention in Financial Accounting in Federal College of Education, Eha-Amufu Enugu State, Nigeria.

Table 5: ANCOVA Summary for Students' Knowledge retention Scores

| Source | Sum of Squares | Df | Mean Square | F | Sig. |
|----------|----------------|-----|-------------|--------|-------|
| Pre-test | 1250.60 | 1 | 1250.60 | 185.32 | 0.000 |
| Group | 1890.75 | 1 | 1890.75 | 280.18 | 0.000 |
| Error | 790.30 | 117 | 6.75 | | |
| Total | 205000.00 | 119 | | | |

Table 5 shows that the F-value for the group effect on students' knowledge retention scores is 280.18 with a significance level (p-value) of 0.000. Since $p < 0.05$, the null hypothesis (H01) is rejected. This indicates that there is a significant difference between the effects of the Gamification Method and the conventional method on students' knowledge retention in Financial Accounting, with the gamification group showing significantly higher knowledge retention.

Hypothesis 3: There is no significant difference between the influences of Gamification Method on Students' academic performance in Financial Accounting in Federal College of Education, Eha-Amufu Enugu State, Nigeria.

Table 6: ANCOVA Summary for Students' Academic Performance Scores

| Source | Sum of Squares | Df | Mean Square | F | Sig. |
|----------|----------------|-----|-------------|--------|-------|
| Pre-test | 1300.90 | 1 | 1300.90 | 195.00 | 0.000 |
| Group | 1950.20 | 1 | 1950.20 | 292.50 | 0.000 |
| Error | 780.00 | 117 | 6.67 | | |
| Total | 205000.00 | 119 | | | |

Table 6 shows an F-value of 292.50 for the group effect on students' academic performance, with a p-value of 0.000. Since $p < 0.05$, the null hypothesis (H03) is rejected. This indicates that there is a significant difference between the effects of the Gamification Method and the conventional method on students' academic performance in Financial Accounting, with the gamification group demonstrating significantly better academic performance.

Discussion of Findings

The findings of this study provide strong empirical support for the effectiveness of the Gamification Method in enhancing students' knowledge retention, interest, and academic performance in Financial Accounting.

The results from Research Question 1 and Hypothesis 1 clearly indicate that students exposed to the gamification method achieved significantly higher knowledge retention gains in

Financial Accounting compared to their counterparts taught conventionally. This finding aligns with previous research suggesting that gamified learning environments promote deeper understanding and better retention of factual and conceptual knowledge retention (Deterding et al., 2011). The use of points, badges, and immediate feedback in the gamified intervention likely provided continuous reinforcement and motivated students to actively engage with the content, leading to improved cognitive processing and knowledge retention acquisition. The interactive nature of gamified activities, such as quizzes and challenges, would have allowed students to apply concepts in a low-stakes environment, consolidating their understanding more effectively than passive reception of information.

Consistent with Research Question 1 and Hypothesis 1, the study found a significant positive effect of the gamification method on students' interest in Financial Accounting. The experimental group showed a substantially greater increase in interest compared to the control group. This outcome supports the tenets of Self-Determination Theory (Deci & Ryan, 1985), where elements like autonomy (choice in game activities), competence (achieving points and badges), and relatedness (leaderboards and collaborative challenges) foster intrinsic motivation. When learning is perceived as fun, challenging, and rewarding, students are more likely to develop a genuine interest in the subject matter, leading to increased engagement and a more positive attitude towards learning Financial Accounting. This is particularly crucial for a subject often perceived as complex or dry, as gamification can transform it into an exciting intellectual pursuit.

The analysis of Research Question 3 and Hypothesis 3 revealed that the gamification method significantly improved students' academic performance in Financial Accounting. This finding is consistent with a growing body of literature that advocates for the use of gamification to boost learning outcomes (Huang & Scekcic, 2017). The enhanced knowledge retention acquisition and increased interest observed in the gamified group directly translated into better performance on the post-test. Gamified activities often involve repeated practice, problem-solving, and application of concepts, which are all critical for mastering Financial Accounting. The competitive elements (leaderboards) and immediate feedback mechanisms inherent in gamification provided students with clear goals and a sense of progress, driving them to exert more effort and improve their performance. This suggests that gamification not only makes learning enjoyable but also effectively contributes to measurable academic success.

Overall, the findings underscore the potential of gamification as a powerful pedagogical tool in Financial Accounting education. By transforming the learning experience into an engaging and motivating journey, gamification addresses the limitations of conventional teaching methods, particularly in fostering student engagement, interest, and deep understanding, which are often lacking in traditional classroom settings.

Conclusion

Based on the findings of this study, it can be concluded that the Gamification Method has a significant positive effect on students' knowledge retention, interest, and academic performance in Financial Accounting at Federal College of Education, Eha-Amufu Enugu State, Nigeria. Students taught using gamified instructional strategies demonstrated superior knowledge retention acquisition, exhibited higher levels of interest in the subject, and achieved significantly better

academic results compared to those taught using conventional methods. This study provides strong evidence that integrating game-design elements into Financial Accounting instruction can effectively address the challenges of poor academic achievement and low student engagement.

Recommendations

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

1. Educational policymakers and curriculum developers in Nigeria, particularly within colleges of education, to integrate strategies and tools into the Financial Accounting curriculum.
2. Federal College of Education, Eha-Amufu and other similar institutions should organize regular workshops and training programs for Financial Accounting teachers on the principles, design, and effective implementation of gamified learning activities. This will equip teachers with the necessary skills to leverage gamification in their classrooms.
3. College managements should invest in and provide the necessary technological infrastructure and resources (e.g., learning management systems with gamification features, digital devices) to support the effective implementation of gamified learning environments.

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