REVOLUTIONIZING ACCOUNTING EDUCATION: THE EFFECTIVENESS OF 'ACCOUNTING CYCLE SIMULATION' IN ENHANCING STUDENTS' UNDERSTANDING OF THE ACCOUNTING CYCLE

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Abstract

This study aims to evaluate the effectiveness of "Accounting Cycle Simulation" in enhancing accounting students' understanding and skills. A quasi-experimental method was employed, involving two groups of first-year accounting students from an Open University. The experimental group used the "Accounting Cycle Simulation" for one semester, while the control group followed conventional teaching methods. Pre-tests and post-tests were conducted to measure students' knowledge and skills before and after the intervention, along with satisfaction questionnaires to gauge students' perceptions of the teaching methods used. The results showed that the average post-test scores of the experimental group increased significantly compared to the control group ($t = 8.12$, $p < 0.01$), indicating that this simulation effectively improves students' learning outcomes. The practical implications of this study suggest that the use of game-based learning, particularly the "Accounting Cycle Simulation," can be an effective strategy for enhancing the quality of accounting education in higher education. These findings support the integration of educational technology to create more interactive and engaging learning experiences, which in turn can better prepare students to face professional challenges in the field of accounting.

Keywords: game-based learning, accounting cycle simulation, accounting education, learning effectiveness, quasi-experiment.

1 INTRODUCTION

The accounting cycle is a fundamental element that accounting students must master as it encompasses a series of crucial steps from transaction recording to the preparation of financial statements. A deep understanding of the accounting cycle is essential for building a solid foundation of accounting knowledge and ensuring that students are prepared to face challenges in the professional work environment (Riley et al., 2013). Without a solid grasp of this process, students may struggle to effectively apply accounting concepts in real-world situations. Conventional learning methods, such as lectures and case studies from textbooks, often fail to

provide the practical experience necessary for students to effectively master the accounting cycle (Pintrich, 2013). These methods tend to be passive, with students more frequently acting as listeners rather than active participants in the learning process.

The development of information technology has introduced new innovations in education, including the use of game-based learning (GBL) and gamification as learning tools (Carenys & Moya, 2016; Nadeem et al., 2023). These technologies offer a more interactive and engaging approach to learning, which can enhance student involvement and motivation. Game-based learning integrates game elements into the learning process, allowing students to learn through enjoyable and challenging practical experiences (Belyaev & Belyaeva, 2023; Prensky, 2003). Huang et al. (2023) state that game-based learning can enhance learning motivation through higher engagement and immediate feedback. Additionally, gamification—the application of game elements in non-game contexts-has proven effective in increasing student engagement and motivation (Deterding et al., 2011).

Previous research has shown that game-based learning can enhance student engagement and learning outcomes across various disciplines. For instance, a study by Apostolou et al. (2023) demonstrated that the use of simulations and games in accounting education can improve students' understanding of accounting concepts and their practical applications. Another study by Wouters et al. (2013) indicated that game-based learning tends to yield better learning outcomes compared to traditional teaching methods, particularly in complex and skill-based learning contexts. In the realm of accounting education, the application of game simulations allows students to practice accounting skills in a safe and controlled environment, which boosts their confidence and readiness to tackle real-world situations (Apostolou et al., 2023).

This research aims to fill a gap in the literature by evaluating the effectiveness of the "Accounting Cycle Simulation" application within the context of accounting education. While numerous studies have examined the general use of game-based learning, there is a lack of specific evaluations of accounting cycle simulation applications. Consequently, this study provides a novel contribution by offering empirical evidence regarding the specific benefits of the "Accounting Cycle Simulation." It also explores how gamification elements, such as points, levels, and rewards, can be implemented to enhance student motivation and engagement in accounting learning.

The study seeks to evaluate the effectiveness of the "Accounting Cycle Simulation" in improving accounting students' understanding and skills. Specifically, it will assess the extent to which this application can enhance students' comprehension of the steps in the accounting cycle, assist them in applying their theoretical knowledge in real-world simulation scenarios, and increase their motivation and engagement in the accounting learning process.

Conducted in the context of higher education in accounting, this research focuses on the understanding and application of the accounting cycle, involving a prominent institution with a nationally recognized accounting program. It is anticipated that this study will make a significant contribution to the literature on accounting education by providing empirical evidence regarding the effectiveness of the "Accounting Cycle Simulation" as a learning aid. Furthermore, the findings are expected to assist educators in designing more effective and engaging learning strategies for accounting students, ultimately enhancing the quality of accounting education and the preparedness of students for the professional workforce.

1.1 Definition and Concept of Game-based Learning (GBL) and Gamification

Game-based Learning (GBL) is an educational approach that employs games as the primary tool for teaching and reinforcing specific concepts or skills. GBL transcends mere play; it leverages game design and mechanics to create deep learning experiences. According to Plass et al. (2015) and Ryan & Rigby (2020), GBL can enhance learning motivation by presenting relevant challenges, providing immediate feedback, and offering opportunities to try and fail in a safe environment.

In contrast, gamification refers to the application of game elements—such as points, badges, leaderboards, and challenges—into non-game contexts to boost engagement and motivation (Deterding et al., 2011). Gamification does not necessarily involve playing games; rather, it utilizes elements that make games engaging and motivating to improve user experiences in various contexts, including education. For example, Sailer et al. (2014) found that gamification elements like reward systems and leaderboards can enhance intrinsic motivation and academic performance.

The use of GBL and gamification in education has garnered considerable research attention in recent years. A meta-analysis by Hamari et al. (2014) on the effects of gamification revealed that implementing game elements in education can significantly enhance student motivation

and engagement. They noted that the positive effects of gamification are amplified when these elements are well-designed and relevant to learning objectives.

In the context of accounting education, the implementation of game simulations has proven effective in improving students' understanding of accounting concepts. For instance, research by Apostolou et al. (2023) indicated that using simulations and games in accounting education can enhance students' comprehension of the accounting cycle and practical skills. Another study by Kao et al. (2023) demonstrated that game-based learning can aid students in learning complex accounting concepts in a more interactive and enjoyable manner, thereby improving their learning outcomes.

1.2 Supporting Theories

The educational theories that support the use of Game-based Learning (GBL) and gamification include motivation theory and constructivist learning theory. Motivation theory, particularly self-determination theory (Deci et al., 1991), posits that intrinsic motivation is influenced by three basic needs: competence, autonomy, and relatedness. GBL and gamification can address these needs by providing challenges that match students' abilities (competence), giving them control over their learning processes (autonomy), and facilitating social interactions (relatedness) (Dunn & Zimmer, 2020).

Constructivist learning theory, as proposed by Vygotsky (1978), emphasizes that learning is an active process where students construct new knowledge based on their experiences. GBL and gamification support this approach by creating interactive learning environments that allow students to learn through experimentation and discovery. For example, Huang et al. (2019) found that incorporating gamification elements into project-based learning can enhance student engagement and help them develop critical thinking skills.

2 METHODOLOGY

2.1 Research Design

This study employs a quasi-experimental design to evaluate the effectiveness of the "Accounting Cycle Simulation" in enhancing accounting students' understanding and skills. A quasi-experimental design is selected because it allows researchers to compare outcomes from an intervention group with a control group without requiring full randomization (Campbell, D. T., Stanley, J. C., & Gage, 1963; Miller et al., 2020). In this context, two groups of accounting

students will be compared: one group will utilize the "Accounting Cycle Simulation" for one semester, while the control group will engage in conventional learning methods.

2.2 Sample and Population

The research sample consisted of 60 randomly selected first-year accounting students from the Open University. The students are divided into two groups: an experimental group and a control group, each consisting of 30 students. The experimental group will use ‘Accounting Cycle Simulation’ as part of their curriculum, while the control group will use traditional learning methods such as lectures and case studies in textbooks. Random sample selection is expected to minimise bias and ensure that both groups have similar characteristics (Creswell, 2003; Weyant, 2022).

2.3 Research Procedure

The research procedure consists of several main steps:

1) Pre-test: Before the intervention, all students from both groups will take a pre-test to measure their basic knowledge of the accounting cycle. This pre-test aims to ensure that there are no significant differences in initial understanding between the two groups.
2) Intervention: The experimental group will use "Accounting Cycle Simulation" for one semester. This application will be integrated into the teaching and learning activities, replacing some traditional lecture sessions. Meanwhile, the control group will continue with conventional learning methods.
3) Post-test: After one semester, all students will take the same post-test to measure their improvement in understanding and skills regarding the accounting cycle.

Satisfaction Questionnaire: In addition to the pre-test and post-test, a satisfaction questionnaire will be administered to students to gauge their perceptions of the learning methods used, including aspects of engagement, motivation, and overall satisfaction.

2.4 Research Instruments

The research instruments used in this study include:

1) Multiple Choice Test: The pre-test and post-test will utilize multiple-choice tests designed to measure students' understanding of the accounting cycle. This test will

consist of 30 questions covering various aspects of the accounting cycle, from transaction recording to financial report preparation.

2) Satisfaction Questionnaire: This questionnaire will assess students' perceptions of the learning methods used. It will include questions about engagement, motivation, and overall satisfaction with the learning process. The questionnaire is adapted from instruments that have been validated in previous research (Dörnyei & Taguchi, 2009).

2.5 Data Analysis

The data obtained from the pre-test and post-test will be analyzed using descriptive and inferential statistics. Descriptive statistics will be used to describe the sample characteristics and the distribution of pre-test and post-test scores. An independent t-test will be employed to compare the pre-test and post-test scores between the experimental and control groups to determine if there are statistically significant differences in the improvement of understanding and skills between the two groups (Field, 2018).

Additionally, regression analysis will be conducted to evaluate the relationship between students' levels of engagement and motivation with their improvement in learning outcomes. Data from the satisfaction questionnaire will be analyzed using descriptive analysis to identify general trends and differences between the experimental and control groups.

3 FINDINGS AND DISCUSSION

3.1 Research Results

This study aimed to evaluate the effectiveness of the "Accounting Cycle Simulation" in improving accounting students' understanding and skills. The research findings are presented in two sections: pre-test and post-test results, and statistical analysis to assess differences between the experimental and control groups.

3.1.1 Pre-test and Post-test Results Presentation

Table 1. Descriptive Statistics of Pre-test and Post-test Results

Group	N	Mean Pre-test	SD Pre-test	Mean Post-test	SD Post-test
Experimental	30	60.2	5.4	85.4	6.1
Control	30	59.8	5.7	70.6	6.5

Table 1 shows that the average pre-test score for the experimental group was 60.2 (SD = 5.4) and for the control group, it was 59.8 (SD = 5.7), indicating that both groups had nearly the same initial understanding of the accounting cycle. After the intervention, the experimental group's average post-test score increased to 85.4 (SD = 6.1), while the control group's average post-test score only increased to 70.6 (SD = 6.5).

3.1.2 Statistical Analysis

To evaluate the differences in outcomes between the two groups, an independent t-test was conducted on the post-test scores. The results of the analysis indicated a statistically significant difference between the experimental group and the control group on the post-test scores ($t = 8.12$, $p < 0.01$). This suggests that "Accounting Cycle Simulation" significantly enhances students' understanding and skills in the accounting cycle compared to traditional learning methods.

3.2 Research Findings

The findings of this study indicate that the use of "Accounting Cycle Simulation" has a significant positive effect on students' understanding and skills in the accounting cycle. The higher post-test scores in the experimental group compared to the control group demonstrate that this application is effective in enhancing students' learning outcomes. These findings are consistent with previous research showing that game-based learning can improve student engagement and learning outcomes (Carenys & Moya, 2016; Plass et al., 2015).

The use of game-based simulations allows students to practice accounting skills in a safe and interactive environment, enhancing their understanding of complex concepts. Moreover, the immediate feedback provided by the application helps students promptly correct their mistakes and reinforce their understanding. This supports the constructivist learning theory, which asserts that learning is an active process where students build new knowledge based on their experiences (Vygotsky, 1978).

Furthermore, the results of this study also support motivational theories, such as self-determination theory, which states that intrinsic motivation is influenced by the needs for competence, autonomy, and relatedness (Deci et al., 1991). "Accounting Cycle Simulation" addresses these needs by offering challenges that align with students' abilities, granting them control over their learning process, and facilitating social interaction through gamification elements like leaderboards and rewards.

The practical implications of this research suggest that the integration of game-based learning, specifically "Accounting Cycle Simulation," can serve as an effective strategy to enhance the quality of accounting education in higher education. Educators are encouraged to consider integrating this technology into their curricula to provide students with a more interactive and engaging learning experience.

4 CONCLUSION

This research shows that the use of "Accounting Cycle Simulation" significantly enhances accounting students' understanding and skills compared to conventional learning methods. The average post-test score of the experimental group using this simulation is much higher than that of the control group, indicating the effectiveness of the application in the context of accounting education.

The main limitation of this study is the use of a quasi-experimental design, which does not entirely eliminate potential bias. Additionally, the sample used is restricted to one university, which may limit the generalizability of the findings to a broader population. The study's duration of only one semester also presents a limitation in evaluating the long-term effects of this simulation.

Future research is recommended to employ experimental designs with full randomization to reduce bias. Furthermore, studies with larger samples from various institutions would aid in generalizing these findings. Long-term research is also needed to evaluate the sustainability of the positive effects of "Accounting Cycle Simulation".

The practical implications of this research indicate that the integration of game-based learning, particularly "Accounting Cycle Simulation," can enhance the quality of accounting education in higher education institutions. Educators are encouraged to consider utilizing this technology to make the teaching and learning process more interactive and effective, thereby better preparing students to face challenges in the professional world.

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