

Department of Educational Technology, New Jersey City University

Doctorate in Educational Technology Leadership

EDTC 810 - Section 1346: Statistics for Education Research

Final Project

Research Proposal: The Impact of Game-Based Learning on the Motivation and Learning Achievement of New Jersey City University Students in Financial Literacy: A Case Study

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Chapter I: Introduction

a. Introduction

Financial literacy is a crucial ability for college students, who will likely be faced with financial issues regarding budgeting, student loans, and future investments (Lusardi et al., 2014). However, most college students are lacking in financial education and literacy, which results in poor financial decision-making and a lifetime of financial insecurity. Financial education is a pressing issue for most nations and the use of technology to improve learning and teaching of financial literacy in the age of higher technology, digital literacy and twenty-first-century literacies is vital. Financial literacy is an ongoing process. It should be accessible to all students regardless of their socioeconomic backgrounds. Financial expert and professor Emeritus with a research specialization in financial literacy, Dr. Mandell argues that a lack of understanding about personal finances or financial illiteracy can lead to poor financial decisions that disrupt the stability of financial markets (Mandell, 2006, p.0). This lack of knowledge can further contribute to widespread financial hardship, poverty, and social unrest observed in many countries today. Research shows that many young people today struggle with managing their finances. They often lack essential knowledge about saving, budgeting, credit usage, and overall money management. This lack of financial education can lead to poor financial decisions, hindering their ability to save for the future, invest, and ultimately achieve financial stability. Also, this contributes to the widespread financial hardship, poverty, and social tensions observed in many countries nowadays. The United States of America ranks poorly among other nations in saving rate. Based on data from the World Bank, Jahn et. Al. show that the United States is not among the ten countries with the highest saving rates in the world (Jahn et al., 2024). The new generation often faces significant challenges that discourage them from engaging in traditional financial practices

like budgeting, saving, investing and long-term planning. The growing recognition of the importance of financial education is leading to its increased presence in educational systems across the globe. This is a positive step towards creating a more financially informed and empowered future generation. More schools, colleges, and universities in the United States and other nations require financial literacy in their curriculum. This could help them to get grants and continue to provide quality education and prepare future leaders.

Game-based learning (GBL), a subset of educational technology, presents a promising path to engage students and build their financial literacy (Plass et al., 2015). This research proposal presents a study to determine the effect of GBL on performance and motivational level of financial literacy among students at New Jersey City University (NJCU).

b. Statement of the Problem

Traditional teaching techniques used to teach students about financial literacy in colleges, like lectures and texts, can be incapable of motivating college students or achieving deep comprehension of financial concepts and information (Willis, 2011). College students tend to find financial topics dull (dry as some students like to say) and irrelevant, with the result of low motivation and minimal learning (Cole et al., 2009). Lack of interest can be devastatingly crippling to their finances or financial well-being. There is a demand or need for innovative and interactive modes of teaching that work well at inciting student enthusiasm or student motivation and optimizing the achievement of financial literacy among students in higher institutions. Game-based learning, which is interactive and can turn studying into an engaging and enjoyable process, provides an answer (Landers, 2014).

c. Purpose of the Study

The overall purpose of this study is to examine the impact of game-based learning on the motivation and achievement of students in financial literacy at New Jersey City University.

Specifically, this study aims to determine if the use of GBL leads to:

- More student motivation towards learning financial literacy.
- More student accomplishment in financial literacy.
- More student attitude towards financial literacy studies in a favorable manner.

d. Research/Guiding Questions

This research will aim to find answers to the following research questions:

1. What is the effect of game-based learning on students' motivation towards financial literacy courses at NJCU in contrast to traditional teaching? (Salkind, 2017) (Kraemer et al., 2016)
2. How does the implementation of game-based learning affect student achievement in financial literacy among students at NJCU? (Salkind, 2017) (Kraemer et al., 2016)
3. Why could game-based learning function in determining students' motivation and achievement in finance literacy, bearing in mind student engagement, participation, and timely feedback? (Salkind, 2017) (Kraemer et al., 2016)

e. Significance of the Study

The findings of this research are anticipated to benefit the subject areas of education technology as well as finance literacy education in HE. If GBL is shown to have a positive effect on student achievement and motivation, then this study will have empirical support for its implementation in college financial literacy education. The findings can be used to inform

instructional practice, curriculum development, and design of effective learning environments for college students (Van, 2006) (Gee, 2007). Moreover, understanding the interaction between GBL, achievement, and motivation can be useful in determining how to design an interesting and effective learning experience for young adults who are learning essential life skills (Kraemer and Blasey, 2016, Chapter 1 and 2).

f. Limitations and Delimitations

There will be various limits to this study. Sampling is to be done only at one university, that is NJCU, which may prevent generalizability across other universities. The research concerns particular issues of financial literacy and game types that curtail the generalization further. Motivation has a subjective element, and it may be affected by variables over which the research study cannot have control (Salkind, 2017, Chapter 3 and 4).

The study will focus on the undergraduate students that are taught financial literacy (for instance, financial literacy, personal finance, economics) at New Jersey City University. The research will focus on the utilization of some computer game-based learning program (for example, Application Based Activity which is a McGraw-Hill Application for Gamification) or site. The intervention will be carried out for some duration (for example, a semester of college or one academic semester).

g. Definitions

- Game-Based Learning (GBL): Using games or game-like features in an instructional setting to enhance learning outcomes in financial literacy. It involves inserting game design mechanics such as points, badges, leaderboards, story, and challenges to make the learner more interested and motivated (Dichev et al., 2017).

- Student Motivation (in Financial Literacy): The level to which students are interested in, involved with, and ready to learn financial literacy (Deci et al., 2000). For this study, motivation will be measured using intrinsic motivation, extrinsic motivation, and total motivation in financial literacy.
- Student Achievement (in Financial Literacy): The level of understanding and proficiency in financial literacy, measured by test results and assessments based on the curriculum.
- Financial Literacy is the ability to understand and interpret knowledge relating to the financial decisions we make (Kapoor et al., 2022, p. xii).

h. Outline of Study

This research proposal is organized into three chapters. Chapter I provides an introduction to the study, which includes the background, problem statement, purpose, research questions, significance, limitations, delimitations, and definitions. Chapter II will provide a review of the literature on motivation, financial literacy education, and game-based learning. Chapter III will provide the methodology to be used in carrying out the study, including the research design, participants, instrumentation, data collection procedures, and data analysis methods.

Chapter II: Literature Review

a. Subheadings

This chapter expands the literature surrounding game-based learning, student motivation, and financial education toward bettering financial literacy in higher education students. It is covered herein, as necessary, by these subheadings:

- The Role of Financial Literacy in College/University Environments
- Motivations and Engagements for Adults Theories of Adult Learning
- General Understanding of Game-Based Learning for Students at Higher Levels of Education
- Game-Based Learning to Promote College Student Motivation
- Academic Performance of College Students and Game-Based Learning
- Design Principles for Effective Game-Based Learning in Financial Literacy
- Challenges and Opportunities of Implementing Game-Based Learning
- Gaps in Research

b. Broad to Specific

The literature review will start with the establishment of the relevance of financial literacy among college students and how it contributes to their financial well-being (Bernheim et al., 2001). It will then present theories of engagement and motivation for adult learning, like self-determination theory and andragogy, to establish a theoretical framework for describing motivation among students at the college level (Salkind, 2017, Chapter 9). The review will then proceed to a general overview of game-based learning across colleges and universities, like how it can be used, its potential limitations, and design issues (Kapp, 2012).

c. Compare and Contrast

The review will compare and contrast studies that have examined the effect of GBL on student motivation in higher education, noting various measurement methods of motivation and various findings across disciplines. It will also compare and contrast investigations of the effect of GBL on college students' academic performance, considering various types of games, learning settings, and assessment measures (Salkind, 2017, Chapter 18, 19, and 22). Further, the review will also analyze effective GBL design principles in financial literacy education such as the provision of real-world illustrations, provision of feedback, and fostering teamwork. The review will also mention challenges and prospects entailed with implementing GBL within higher education institutions (Kraemer and Blasey, 2016, Chapter 10). Lastly, the review will also identify gaps in existing research, for instance, the requirement for more longitudinal studies of long-term outcomes of GBL money behavior and best incorporation of GBL into college personal finance education.

Chapter III: Methodology

a. Overview

A quasi-experimental research design, a pretest-posttest control group design, will be employed to investigate the impact of game-based learning on students' performance and motivation in financial literacy at New Jersey City University (Creswell et al., 2017). Two intact classes of undergraduate students enrolled in a financial literacy course at NJCU will serve as participants for the study. One of the classes will be the control class and will undergo only basic financial literacy training such as traditional financial literacy instruction. The second class will be the experimental class and will receive financial literacy training plus game-based learning methods like financial literacy instruction incorporating game-based learning activities.

b. Research Design

Quasi-experimental design will examine the dependent variables (motivation and achievement of the student in financial literacy) of the two groups before and after the intervention. The design is appropriate for comparing post-before differences in achievement and motivation for the two groups, even though it is aware of classroom-setting realities for higher education (Salkind, 2017, Chapter 5).

c. Sampling

The students (participants) will be randomly selected from two intact classes of undergraduates who have signed up for a course in financial literacy at New Jersey City University. Convenience sampling is employed since there is practical difficulty in randomly assigning the students to classes. The two classes will be equated on student demographic variables and prior academic performance. A power analysis will be done for establishing the exact sample size in which the sample is large enough to detect any statistically significant

difference between the two groups (Kraemer and Blasey, 2016, Chapter 5). For example, FlexMR's sample size calculator will assist in identifying the minimum number of participants (students) needed for surveys or polls to achieve statistical significance.

d. Instrumentation

These instruments will gather the data needed.

1. Financial Literacy Motivation Scale (FLMS): A standardized survey, such as the Academic Motivation Scale (AMS) or a similar tool revised for financial literacy, will be used to evaluate students' motivation to acquire financial literacy. The survey will be completed to gauge various facets of motivation, such as, intrinsic motivation, extrinsic motivation, and amotivation. The instrument chosen will have its reliability and validity established by previous research or pilot study (Salkind, 2017, Chapter 6).
2. Financial Literacy Achievement Test: A curriculum-aligned or standardized financial literacy achievement test will be used to measure the students' financial knowledge and ability. The test will cover the specific financial literacy topics addressed (taught) during the intervention period. Validity of the test will be achieved by curriculum alignment, and reliability will be established through measures such as Cronbach's alpha.
3. The software Qualtrics can be used to collect data.

e. Data Collection

Before the intervention, both control and experimental groups will complete the Financial Literacy Motivation Scale (FLMS) and the Financial Literacy Achievement Test (pretest). During the intervention (for example, a semester), the experimental group will undergo financial literacy education with the incorporation of game-based learning activities in conjunction with the use of chosen digital games or platforms. The control group will undergo traditional financial

literacy education without GBL. Both groups will complete the Financial Literacy Motivation Scale and the Financial Literacy Achievement Test posttest.

f. Data Analysis

Posttest questionnaires and achievement tests quantitative data will be analyzed statistically.

Descriptive statistics (for example, means, standard deviations) will be calculated for both groups at pre-and posttest. Inferential statistics such as Analysis of Covariance (ANCOVA) will be used to equate posttest scores between the groups, with pretest scores employed as a covariate (Salkind, 2017, Chapter 15). Effect sizes will also be computed in an attempt to provide an estimate of the practical impact of the findings. Statistical test selection and interpretation of results will be informed by principles of statistical power analysis (Kraemer & Blasey, 2016, Chapter 5) and will be performed using statistical software (SPSS, for instance).

Chapter IV: Analysis of Data/Findings

- This chapter will be included in the final research paper but is not placed in this proposal.

It will detail the descriptive statistics, the results of the inferential statistical tests (for example, ONCOVA), the calculated effect sizes, and a summary of the findings.

Chapter V: Summary, Conclusions, and Recommendations

a. Summary

This research proposal identifies a study to evaluate the effect of game-based learning on students' achievement and motivation in financial literacy among undergraduate students at New Jersey City University. Two intact classes of undergraduate students will participate in a quasi-experimental pretest-posttest control group design. Motivation and achievement data will be gathered through validated questionnaires and tests. Quantitative data will be analyzed using descriptive and inferential statistics, such as ANCOVA.

b. Conclusions

Finally, in the conclusion of the study, the conclusions will answer the questions set forth in Chapter I. The findings will indicate whether GBL has a significant effect on student motivation and performance in financial literacy among college students. The conclusions will further relate the findings to Chapter II literature reviewed, validating or refuting prior research. Specifically, the conclusions will answer:

1. Did game-based learning have a significant effect on students' motivation over traditional instruction? (Arnett, 2000) (Knowles et al., 2015)
2. Did game-based learning significantly contribute to students' financial literacy attainment compared to conventional instruction? (Arnett, 2000) (Knowles et al., 2015)

c. Recommendations

Recommendations will be made based on results from the study for:

1. Policy: Depending on whether or not the study produces positive results, recommendations may be formulated to assist with integrating GBL into college financial

literacy courses at NJCU and potentially in other colleges. This could include providing resources and faculty training.

2. Practice: The results of the study can guide instructors in how to use GBL appropriately in their courses on financial literacy to enhance students' motivation and performance.
3. Future Research: In either scenario, suggestions for future research will be made, for example, exploring the long-term effect of GBL on students' financial conduct or studying the application of various forms of games and game components (Merriam et al., 2020) (Abramovich et al., 2013).

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