# EFFECT OF UNIVERSAL DESIGN FOR LEARNING ON STUDENTS' LEARNING OUTCOMES IN FINANCIAL ACCOUNTING IN SECONDARY SCHOOL IN OGUN STATE, NIGERIA

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*Abstract*

*This study examined the effect of Universal Design for Learning (UDL) on students' learning outcomes in Financial Accounting among secondary school students in Ogun State, Nigeria. Specifically, the study compares the impact of UDL and conventional teaching methods on students' academic achievement and motivation. It also explores the influence of gender on these outcomes. The study employed a quasi-experimental design with a sample of 40 SS2 Financial Accounting students selected from two public secondary schools in Ijebu East Local Government, Ogun State. The experimental group (15 students) was from Ijebu Ife Community Grammar School, and the control group (25 students) was from St. Anthony Grammar School. Data were collected using the Financial Accounting Achievement Test (FAAT) and the Adapted Motivated Strategies for Learning Questionnaire (AMSLQ). SPSS was used to conduct statistical analysis, using descriptive statistics and Analysis of Covariance (ANCOVA). Findings from the study showed that UDL significantly improves student motivation and academic achievement in Financial Accounting, while the conventional method was less effective. Gender did not significantly affect student performance or motivation, and the interaction between treatment and gender was minimal. The study recommends incorporating UDL strategies in teaching to enhance student outcomes and suggests further research into factors such as teacher training and resources that may improve student achievement in secondary schools.*

*Keywords: Financial Accounting, Student achievement, Student Motivation, Secondary Schools, Universal Design for Learning (UDL).*

## Introduction

Education is a cornerstone of progress for both individual and the society. It ensures students are impacted with skills that are needed for their personal development in order to meet the demands of the changing global economy. Akamigbo and Eneja (2020) sees education as a very significant factor that empowers not only individuals but also supports the country's transitioning towards a knowledge-based economy. The Federal Republic of Nigeria (FRN) in its Education Policy Document lay emphasis on the need for educational practices that are adaptable and relevant in a competitive world (FRN, 2014). This shows the importance of innovative teaching strategies and modern technologies in fostering critical thinking, problem-solving, and flexibility (CAST, 2020; Rose, Meyer & Gordon, 2023). In Ogun State where educational environments are characterized by diverse student needs, the challenge of engaging students and motivating them becomes even more critical.

This challenge is of great relevance in the context of Financial Accounting. Financial Accounting is a skilled subject that aids students pursue careers in business, finance, and administration. It equips students with financial literacy needed for both personal and professional success. However, the abstract concepts and complex calculation in the subject often presents challenges to students (Akinloye & Iyekekpolor, 2022). According to Boothe and Lohman (2020), the conventional method often used in teaching do not effectively engage students and tends to diminished their motivation as students struggle to stay engaged. These persistent challenges underscore the need for teaching method that is innovative and inclusive. A method that can address the diverse learning needs of students, especially in complex subjects like Financial Accounting. One of such method is the Universal Design for Learning (UDL). UDL is a teaching method that offers a flexible and inclusive framework by providing multiple means of engagement, representation, and action and expression to students (CAST, 2018). In the view of Sharma, Thakur, Kapoor and Singh (2023), UDL ensures that teaching methods are adaptable and inclusive, allowing all students regardless of their abilities or learning preferences to engage meaningfully with the material. UDL has proven to be effective in promoting engagement and success for diverse learners. This makes it well suited for Ogun's dynamic classroom settings.

Despite the challenges present with conventional method, UDL principles create a learning environment that is inclusive. Which according to Tobin and Behling (2018) can meaningfully engage students with the content and lead to a deeper understanding of the subject. Central to UDL's impact are student achievement and motivation, both crucial in the learning process. Achievement in Financial Accounting equips students with skills necessary for career success and informed decision-making (Akinloye & Iyekekpolor, 2022). Motivation (both intrinsic and extrinsic) on the other hand is critical in subjects like Financial Accounting, as it drives persistence in mastering challenging content (Fovet, 2020). UDL's principles provide dynamic learning experiences which increase student interest and involvement and also enhances their motivation and achievement. Additionally, gender influences learning outcomes in Financial Accounting. Research by Alao and Ukpong (2020) suggests that male and female students may approach the subject with differing levels of confidence, interest, and motivation. These differences can impact engagement and achievement, making it essential to create inclusive learning environments that support all students and mitigate gender-based disparities.

This study provides critical insights for educators on the effective implementation of Universal Design for Learning (UDL) to address diverse learning needs. It offers strategies to engage students who face challenges with traditional teaching methods, facilitating more inclusive and effective learning experiences. The findings are valuable to administrators and policymakers, serving as a guide for developing professional development programs that promote inclusive teaching practices and enhance student outcomes. Additionally, curriculum developers can apply the results to integrate UDL principles into Financial Accounting curricula, ensuring accessibility and effectiveness for all learners. This research also contributes to the broader discourse on UDL's potential to transform educational practices. The focus on achievement and motivation provides evidence of how UDL can improve academic success in Financial Accounting in secondary schools in Ogun State. Ultimately, the findings of this study could pave the way for more inclusive, engaging, and effective financial education that equips students with the skills necessary for success in a global economy.

**Statement of Problem**

The teaching of Financial Accounting in secondary schools in Ogun State faces some challenges due to the diverse learning needs of students. While some students excel, many others struggle with abstract concepts and complex calculations. This difficulty is often linked to conventional instructional methods that follow a one-size-fits-all approach. These methods fail to accommodate students with varying cognitive abilities, and educational backgrounds. Thus, leading to disengagement, reduced motivation, and limited success. Furthermore, large class sizes, limited resources, and time constraints hinder personalized support. while the increasing use of digital tools also calls for more inclusive teaching

models.

Financial Accounting, with its complex concepts, requires innovative pedagogical approaches for effective learning. Universal Design for Learning (UDL) offers a framework that is flexible and inclusive, which supports diverse learners by promoting multiple means of representation, engagement, and expression. Despite the success of UDL in other contexts, its impact on Financial Accounting in secondary schools in Nigeria remains underexplored. This study aims to assess the effect of UDL on students' learning outcomes in Financial Accounting in Ogun State with the specific focus on improving students' comprehension, motivation, and academic performance. As the need for inclusive education grows, it becomes even more pressing to explore evidence-based strategies like UDL which is vital for supporting diverse learners and ensuring equitable academic success.

**Theoretical Framework**

Universal Design for Learning (UDL) was developed by David Rose and CAST in the 1990s. The framework is aimed at creating learning environment that is flexible and inclusive, which cater to students with diverse learning needs. UDL is based on three principles namely, Multiple Means of Representation, Multiple Means of Engagement and Multiple Means of Expression. These principles provide various ways to access content, offer personalized methods to engage students and also allows students to demonstrate their knowledge in diverse ways. UDL has the ability to cater to students with varied learning styles and also support them in grasping complex concepts in financial accounting. It uses flexible methods that suit individual learning needs. Thus, students are motivated to engage and learn.

Jean Piaget and Lev Vygotsky are key proponents of constructivist theory. They argued that learners actively build knowledge based on their experiences. Piaget (1934) focused on developmental stages, while Vygotsky (1936) emphasized social interactions and the Zone of Proximal Development (ZPD). According to ZPD, optimal learning occurs with guided support. In the context of financial accounting, constructivist theory encourages students to actively engage with real-life problems to facilitate deeper understanding. UDL supports constructivism by offering adaptable learning experiences, fostering independent exploration, and encouraging collaboration among students. This alignment enhances student engagement and the ability to connect accounting concepts to practical experiences.

**Purpose of the Study**

Specifically, the study sought to examine:
1. the effect of treatment (UDL principles and Conventional method) on the students' achievement in financial accounting.
2. the effect of treatment (UDL principles and Conventional method) on students' motivation in financial accounting.
3. the influence of gender on students' achievement in financial accounting.
4. the influence of gender on students' motivation in financial accounting.

**Research Questions**

The researcher aimed to answer the following research questions:

*Research Question 1:* What is the effect of treatment (UDL principles and Conventional method) on the students' achievement in financial accounting?

*Research Question 2:* What is the effect of treatment (UDL principles and Conventional method) on the students' motivation in financial accounting?

*Research Question 3:* What is the influence of gender on students' achievement in financial accounting?

**Research Hypotheses**

Null hypotheses were formed and tested at a 0.05 level of significance:

*Research Hypothesis 1:* There is no significant effect of treatment on students' achievement in financial accounting.

*Research Hypothesis 2:* There is no significant effect of treatment on students' achievement in financial accounting.

*Research Hypothesis 3:* There is no significant influence of gender on students' achievement in financial accounting.

*Research Hypothesis 4:* There is no significant influence of gender on students' motivation in financial accounting.

## Methods

### Research Design

This study employed a quasi-experimental design to examine the effect of UDL on student learning outcomes in Financial Accounting in secondary schools in Ogun State, Nigeria. The pre-test and post-test measures were employed to examine the effectiveness of the instructional strategies. This design was chosen to ensure external validity by conducting the study in a natural classroom environment, addressing potential biases like selection and history effects, and reducing logistical constraints typically encountered in randomized experiments.

### Participants and Sampling Procedure

The study targeted SS2 students from two public co-educational schools, with a sample size of 40 students, 15 in the experimental group using UDL and 25 in the control group receiving conventional instruction. The participants were selected using a multi-stage sampling approach, which included simple random sampling to choose the Local Government Area and purposive sampling for selecting co-educational schools.

### Research Instrument

The research instruments used for data collection included the Financial Accounting Achievement Test (FAAT), the Adapted Motivated Strategies for Learning Questionnaire (AMSLQ), and the Adapted VARK Questionnaire. These instruments were validated by experts and ensured a comprehensive assessment of students' academic achievement and motivation.

### Data Analysis

Data were analyzed using descriptive and inferential statistics to evaluate the impact of UDL on student learning outcomes compared to traditional methods.

## Result

**Table 1: Distribution of Secondary School Students Based on Treatment Condition.**

| Groups | Frequency | Percent |
|---|---|---|
| Experimental | 15 | 37.5% |
| Control | 25 | 62.5% |
| Total | 40 | 100.0% |

The distribution of students across treatment conditions shows that 37.5% (15 students) were in the experimental group, while 62.5% (25 students) were in the control group, bringing the total sample size to 40 students (100%). The larger proportion in the control group suggests that more students were exposed to conventional teaching methods compared to those who received the experimental treatment.

*Research Question 1:* What is the effect of treatment (UDL principles and Conventional method) on the students' achievement in financial accounting?

**Table 2: Mean of Pretest and Posttest Scores of Groups Taught Financial Accounting Concepts**

| Groups | N | Pretest X̄ | SD | Posttest X̄ | SD | Mean Difference |
|---|---|---|---|---|---|---|
| UDL Principles | 15 | 27.93 | 3.674 | 48.87 | 8.305 | 20.94 |
| Conventional Teaching | 25 | 33.56 | 8.622 | 38.12 | 10.756 | 4.56 |

The UDL principles group (Experimental) showed a significant improvement, with the mean score increasing from 27.93 (Pretest) to 48.87 (Posttest), a mean difference of 20.94. This suggests that UDL principles had a substantial positive effect on students' academic achievement in financial accounting. The Conventional teaching group (Control) also showed some improvement, but the increase was smaller, from 33.56 (Pretest) to 38.12 (Posttest), with a mean difference of 4.56. The higher mean difference in the UDL group (20.94 vs. 4.56) indicates that the UDL principles were more effective in enhancing students' academic performance compared to the conventional teaching method. The standard deviation increase in both groups suggests some variability in students' performance post-treatment. However, the higher posttest mean score in the UDL group further emphasizes its impact. These findings support the conclusion that UDL principles significantly improve academic achievement in financial accounting compared to conventional teaching methods.

*Research Question 2:* What is the effect of treatment (UDL principles and Conventional method) on the students' motivation in financial accounting?

**Table 3: Mean of Pretest and Posttest Scores for Students' Motivation in Financial Accounting**

| Groups | N | Pretest X̄ | SD | Posttest X̄ | SD | Mean Difference |
|---|---|---|---|---|---|---|
| UDL Principles | 15 | 3.4667 | 0.36187 | 3.7400 | 0.32689 | 0.2733 |
| Conventional Teaching Method | 25 | 3.5000 | 0.32146 | 3.4040 | 0.38240 | -0.0960 |

- UDL Principles: Motivation (0.2733 increase) improved after treatment, indicating that students responded positively to UDL principles.
- Conventional Teaching Methods: A decline in motivation (-0.0960) suggests that students in this group experienced reduced enthusiasm and participation post-treatment.
- The greater improvement in the UDL group supports the effectiveness of UDL principles in enhancing student engagement and motivation.

*Research Question 3:* What is the influence of gender on students' achievement in financial accounting?

**Table 4: Mean of Pretest and Posttest Scores for Effect of Gender on Students' Achievement and Motivation in Financial Accounting.**

| Variables | N | Pretest Mean | Pretest SD | Posttest Mean | Posttest SD | Mean Difference |
|---|---|---|---|---|---|---|
| Financial Accounting Achievement Test (Male) | 14 | 30.210 | 7.181 | 44.360 | 8.215 | 14.150 |
| Financial Accounting Achievement Test (Female) | 26 | 32.120 | 7.916 | 40.960 | 12.398 | 8.840 |
| Motivation (Male) | 14 | 3.414 | 0.404 | 3.543 | 0.403 | 0.129 |
| Motivation (Female) | 26 | 3.527 | 0.289 | 3.523 | 0.397 | -0.004 |

The data evaluates the influence of gender on students' achievement, motivation and engagement in financial accounting. Achievement: Males had a higher posttest mean score (44.36) than females

(40.96), though females initially performed better in the pretest. This suggests that males improved more after the intervention. Motivation: Both genders had similar pretest and posttest motivation scores, indicating minimal gender-based differences.

Overall, while gender influenced achievement, motivation remained consistent across both groups.

**Hypotheses Testing**

*Research Hypothesis 1:* There is no significant effect of treatment on students' achievement in financial accounting.

**Table 5: ANCOVA-Test on Effect of Treatment on The Academic Achievement of Students in Financial Accounting.**

**Tests of Between-Subjects Effects**

**Dependent Variable: Post Financial Accounting Achievement Test**

| Source | Type III Sum of Squares | df | Mean Square | F | Sig. |
|---|---|---|---|---|---|
| Corrected Model | 2542.588[a] | 2 | 1271.294 | 20.608 | .000 |
| Intercept | 574.486 | 1 | 574.486 | 9.313 | .004 |
| PREFAAT | 1459.861 | 1 | 1459.861 | 23.665 | .000 |
| Treatment | 1979.753 | 1 | 1979.753 | 32.092 | .000 |
| Error | 2282.512 | 37 | 61.690 | | |
| Total | 75890.000 | 40 | | | |
| Corrected Total | 4825.100 | 39 | | | |

a. R Squared = .527 (Adjusted R Squared = .501)

The ANCOVA result shows that there is no significant effect of treatment on the academic achievement of students in financial accounting. The dependent variable is the post-test scores of students. The Tests of Between-Subjects Effects show the key results relevant to this hypothesis. The Treatment variable has a Type III Sum of Squares of 1979.753, with an F-value of 32.092 and a Sig. value of 0.000. Since the p-value (0.000) is less than the conventional significance level of 0.05, we reject the null hypothesis ($H_{01}$). This indicates that there is a significant effect of the treatment on students' post-test achievement in financial accounting. The PREFAAT (pre-test) variable also shows a significant effect with a p-value of 0.000, suggesting that pre-test scores are a significant covariate in explaining variations in post-test scores. The Corrected Model explains 52.7% of the variance in post-test achievement (R-squared = 0.527), with an adjusted R-squared of 0.501, indicating a moderately strong fit of the model. In conclusion, the treatment significantly influences academic achievement in financial accounting, after accounting for pre-test scores, supporting the effectiveness of the treatment.

*Research Hypothesis 2:* There is no significant effect of treatment on students' achievement in financial accounting.

**Table 6: ANCOVA Test on effect of treatment on students' motivation in financial accounting.**

**Tests of Between-Subjects Effects**

**Dependent Variable: Post- Motivation**

| Source | Type III Sum of Squares | df | Mean Square | F | Sig. |
|---|---|---|---|---|---|
| Corrected Model | 1.065[a] | 2 | .533 | 3.942 | .028 |
| Intercept | 4.154 | 1 | 4.154 | 30.749 | .000 |
| Pretest | .007 | 1 | .007 | .050 | .825 |
| Treatment | 1.064 | 1 | 1.064 | 7.876 | .008 |
| Error | 4.999 | 37 | .135 | | |
| Total | 504.500 | 40 | | | |

| Corrected Total | 6.064 | 39 |
| --- | --- | --- |

a. R Squared = .176 (Adjusted R Squared = .131)

The ANCOVA result shows that there is no significant effect of treatment on students' motivation in financial accounting. The analysis reveals the following: The Corrected Model is significant (p=0.028), suggesting that the model accounts for a meaningful portion of the variability in students' post-motivation scores.

- The Intercept is highly significant (p=0.000), indicating that the baseline motivation level (pre-test score) is strongly associated with post-test motivation scores.
- The Pretest score has an insignificant effect on post-motivation (p=0.825), meaning the pre-test motivation score does not significantly predict the post-test score after adjusting for treatment effects. The Treatment variable is significant (p=0.008), which means that there is a statistically significant effect of treatment on students' motivation in financial accounting, rejecting the null hypothesis. This suggests that the treatment had a notable impact on students' motivation after accounting for their pre-test scores.

Therefore, the hypothesis that there is no significant effect of treatment on motivation is rejected.

*Research Hypothesis 3:* There is no significant influence of gender on students' achievement in financial accounting.

**Table 7: Effect of Gender on Students' Achievement in Financial Accounting.**

**Tests of Between-Subjects Effects**

**Dependent Variable: Post Financial Accounting Achievement Test**

| Source | Type III Sum of Squares | df | Mean Square | F | Sig. |
| --- | --- | --- | --- | --- | --- |
| Corrected Model | 736.940[a] | 2 | 368.470 | 3.335 | .047 |
| Intercept | 1474.963 | 1 | 1474.963 | 13.349 | .001 |
| PREFAAT | 632.015 | 1 | 632.015 | 5.720 | .022 |
| GENDER | 174.105 | 1 | 174.105 | 1.576 | .217 |
| Error | 4088.160 | 37 | 110.491 | | |
| Total | 75890.000 | 40 | | | |
| Corrected Total | 4825.100 | 39 | | | |

a. R Squared = .153 (Adjusted R Squared = .107)

The hypothesis 3 posits that there is no significant effect of gender on students' achievement in financial accounting. The result from the ANCOVA shows that the effect of gender on students' post-test achievement in financial accounting is not statistically significant. Specifically, the F-value for gender is 1.576, with a p-value of 0.217, which is greater than the conventional alpha level of 0.05. This indicates that the gender variable does not have a significant effect on students' achievement after controlling for the pre-test scores (PREFAAT). The corrected model is significant (p = 0.047), meaning that the model as a whole explains a significant amount of variance in students' achievement. However, the gender factor alone does not contribute significantly to this explanation. The pre-test scores (PREFAAT), on the other hand, show a significant effect (p = 0.022), suggesting that prior knowledge or performance on the pre-test is a more influential factor in determining students' post-test achievement. Furthermore, the R-squared value of 0.153 indicates that approximately 15.3% of the variance in post-test achievement can be explained by the model, including the pre-test scores and gender. However, the gender effect alone does not appear to be a significant contributor.

*Research Hypothesis 4:* There is no significant influence of gender on students' motivation in financial accounting.

**Table 8: Effect of Gender on Students' Motivation in Financial Accounting.**

Tests of Between-Subjects Effects

Dependent Variable: Post- Motivation

| Source | Type III Sum of Squares | df | Mean Square | F | Sig. |
|---|---|---|---|---|---|
| Corrected Model | .005[a] | 2 | .003 | .016 | .984 |
| Intercept | 4.149 | 1 | 4.149 | 25.339 | .000 |
| PREMO | .002 | 1 | .002 | .011 | .919 |
| GENDER | .004 | 1 | .004 | .026 | .872 |
| Error | 6.059 | 37 | .164 | | |
| Total | 504.500 | 40 | | | |
| Corrected Total | 6.064 | 39 | | | |
| a. R Squared = .001 (Adjusted R Squared = -.053) | | | | | |

The results show that the gender factor has a p-value of 0.872 (Sig.), which is much higher than the common significance level of 0.05. This suggests that there is no significant effect of gender on students' motivation in financial accounting. In other words, the motivation levels between male and female students do not significantly differ after controlling for pre-motivation scores (PREMO). The corrected model also has a very high p-value of 0.984, indicating that the overall model is not statistically significant in explaining the variance in post-motivation scores. Furthermore, the R-squared value is 0.001, and the Adjusted R-squared value is -0.053, both of which indicate that the model explains almost none of the variance in post-motivation scores. Additionally, the PREMO (pre-motivation) variable has a p-value of 0.919, which also supports the conclusion that pre-motivation does not significantly influence post-motivation scores. In conclusion, based on the statistical analysis, we fail to reject the null hypothesis as there is no significant effect of gender on students' motivation in financial accounting.

**Conclusion**

The study provides valuable insights into the effectiveness of Universal Design for Learning (UDL) in enhancing students' academic achievement and motivation in financial accounting. The findings suggest that UDL principles significantly improve student outcomes, particularly in motivation, while the conventional method falls short in terms of both academic achievement and engagement. Gender did not have a significant impact on student performance or motivation.

**Recommendations**

The findings from the study emphasize the need for inclusive teaching strategies like UDL to cater to diverse student needs and improve educational outcomes in financial accounting. Also, the study recommends future research may explore other factors, such as teaching resources, teacher training, or socio-cultural influences, that could contribute to enhancing student achievement and motivation in secondary schools.

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