

Improving Accounting and Finance-Students-Performance Through Group-Based Teaching and Learning: A Pedagogical Innovation.

Shedrack Enyeribe Nwannunu¹, Sani Yahaya² & Nurudeen Mohammed Moshud³

¹Department of Accountancy, Abdul Gusau Polytechnic, Talata Mafara, Nigeria

²Banking and Finance Department, Federal University Dutse, Nigeria

³Department of Accountancy, Abdul Gusau Polytechnic, Talata Mafara, Nigeria

Abstract

Organising Group-work besides formal lectures within a cohort of students has become a global trend in academia and a requirement for academic programme accreditation in tertiary institutions by the American Institute of Certified Professional Accountants (AICPA) and the Association to Advance Collegiate Schools of Business (AACSB) professional bodies. This study examined the impact of participating in Group-Based Teaching and Learning (GBTL) besides Formal Lectures (FL) on the academic performance of accounting and finance students at Abdul Gusau Polytechnic, Nigeria. Levene's equality of variances test verified the data variances' homogeneity further. The one-way ANOVA with P-value = 0.05 tested the H1 hypothesis regarding the overall effects of GBTL post formal teaching and Formal Lectures (FL) on the student's academic performance. Post hoc Tukey HSD analysis examined the H2 hypothesis about the specific impact of GBTL and FL on the student samples' performance. The result of the ANOVA revealed that the effect of participating in Group-Based Teaching and Learning among accounting and finance undergraduates significantly differs across students' performance of the group representatives. The post-doc Tukey HSD test results showed that Group-Based Teaching and Learning had specific effects on students' performance. The study's outcomes positively encourage students' participation in GBTL besides formal lectures. The investigators recommended future research with larger samples that span multiple academic disciplines and numerous postsecondary institutions.

Keywords: ANOVA, Accounting and Finance, Group-Based Teaching and Learning, Performance, Nigeria.

Introduction

Background of the study

In contemporary organisations (Achor & Ngbea, 2022; Van Der Vegt et al., 2001), teams and groups solve problems and make decisions that yield the most significant results through Collaborative effort and efficient resource utilisation. (Anwar et al., 2021; Yadav et al., 2021). For organisations to be successful (Dziuban et al., 2018), members must work together and maximise the use of available resources. It is irrelevant how many or what types of resources a group possesses; (Littlepage & Silbiger, 1992); what matters is that it knows how to invest in them. (Dziuban et al., 2018; Littlepage & Silbiger, 1992) recognising the knowledge, skills, and experience of human resources is essential to any agency agreement and is highly valued by the stakeholders. Then, exploring how to utilise Group-Based Teaching and Learning (GBTL) among a group of students as a strategy to complement the lecturers' classroom instruction and enhance students' understanding and skill acquisition pertinent to applying accounting practices is ideal for the optimal use of internal resources. Studies (Baumann & Bonner, 2004; Chang et al., 2021; Cunninghame, 2017) espouse that every person in a group has different skills, interests, and strengths. A similar study (Burriss et al., 2005; Wyness & Dalton, 2018) agrees that groups work together to find solutions to problems that need other points of view. Coordination is getting everyone in a group to put their

information in order (Cunninghame, 2017; Stephany, 2019) so that a job can remain done. One of the vital roles of group dynamics (Bolatl? & Korucu, 2020; Xiang, 2022) is that group members encourage utilising each other's skills to accomplish tasks. Since this is the case, an essential link exists between how well a group works and how well it does. Then, is there any problem in exploring this relationship between the dynamics of group work and the quality of group output in academia?

The problem is that academics in tertiary institutions ascribe their failure to identify the significance of organising Group-Based Teaching and Learning (GBTL) additionally to Formal Lectures (FL) on the student's performance as complicated by the student's level of maturity, lack of skills and experience. Extant literature has shown that several studies examined the impact of participating in group work on students' academic achievement (Bada, 2016; Kay & Kibble, 2016). However, the disagreements between researchers concerning the use of questionable methodological data collection and data processing techniques and the consequences on study findings impede the ability of researchers to reach conclusions on the impact of Group-work addedly to regular teaching on the student's performance (Duff, 1998; Sangster, 1996). The summary of empirical literature shows that seventy-four per cent (74%) of the studies empirically reviewed the significance of group-based work originating from developed nations in the developed continents. Thirty-seven per cent (37%) were studied from Europe, 26% from the United States, and another 11% from Australia. Studies from Asia were twenty-one per cent (21%) and Africa 5%. This percentage distribution of empirical literature suggests studies on this field in Africa. While pedagogists have suggested a standard set of teaching and learning techniques for improving students' performance, including programmes that enhance knowledge and skills sharing among students in business schools, has become a requirement for academic programme accreditation in tertiary institutions by the American Institute of Certified Professional Accountants (AICPA, 2011) and the Association to Advance Collegiate Schools of Business (AACSB, 2022) professional bodies. Helping academia identify and optimally utilise the potentials of group dynamics needs to be studied and warrants research. (Martínez-Romero et al., 2021) have recommended studies in this field in the future.

Based on the extant literature, it is evident that most of the studies conducted are foreign; the need to conduct this similar study in Nigeria and Zamfara State becomes essential, hence the justification for the study. This study aims to bridge these gaps in accounting and finance pedagogy. Therefore, this study examines the impact of participating in Group-Based Teaching and Learning (GBTL) besides the Formal Lectures (FL) on the academic performance of a cohort of accounting and finance students at Abdu Gusau Polytechnic cohort, Nigeria.

The objectives of the research.

This quantitative research aims to assess the impact of Participating in Group-Based Teaching and Learning (GBTL) besides Formal Lectures (FL) on students' performance using accounting and finance majors at the Abdu Gusau Polytechnic. The study will accomplish this goal by comparing the performance of ND2 students who participated in a GBTL class organised after Formal Lectures (FL) with HND2 and HND1 students that did not participate using two specific objectives.

- To assess if the overall effect of students participating in Group-Based Teaching and Learning (GBTL) classes and Formal Lectures (FL) is significantly different on students' performance using one-way ANOVA.
- To determine if the performance of students participating in the GTBL class besides Formal Lectures (FL) is significantly different from participating only in Formal Lecture (FL) using the post hoc Tukey HSD test.

A review of the relevant prior research

This section reviewed the literature on the impacts of students participating in Groupwork besides Formal Lectures (FL) on the student's performance. The section concluded with a summary of gaps in the literature.

Teaching and learning theories.

Several theories of pedagogy and learning have remained highlighted in the literature. In their review of some theories of teaching and learning, (Bada, 2016; Kay & Kibble, 2016) identified: behaviourist theories, cognitive psychology, multiple intelligence, social constructivism, experiential learning, situated learning theory, and community of practice. Nevertheless, this study is established using the postulations of the experimental idea and concepts.

The Students' performance is from teachers and group influences.

The differences in students' performance are not only based on the teachers' methodological skills acquired from teachers' training colleges (Penny, 1998). Though pedagogists consent that the teaching methods and skills acquired from training contribute to students' performance, individuals' differences in students' performance emanate from the qualities and traits resulting from a combination of genetic and environmental group influences (Abelson, 2006). Research by (Penny, 1998; Abelson, 2006) shows that experience, skill and methodology as pedagogical yardsticks for measuring teachers' achievement through students' performance. A similar study (Bereiter & Scardamalia, 1993) confirmed that knowledge-sharing among group members is as important as skill, methodology and experience for professionals and learners. Then, as the group-member shares knowledge from their subjects, they can learn from their members without possessing professional skills, experience and methodology acquired from teachers' schools.

Importance of Group Expertise to member's performance.

The level of group performance remains determined by the expert members' task relevance as vital resources (Latané et al., 2006). (Littlepage & Silbiger, 1992) the extent groups fail due to the failure to recognise the potential of the experts is known to be process loss—the failure to recognise the significance of experts' in teamwork results to process losses. According to (Latané et al., 2006), one primary source of loss is the failure of a group working on a disjunctive task, such as factory assembling work (Baumann & Bonner, 2013) to identify and recognise the importance of group member experts because the job completion is when everybody has done his. The amount of expertise and the ability to recognise individual expertise affect group performance (Littlepage & Silbiger, 1992). Contrarily, (Burriss et al., 2005) in a job like group members lessons and learning, and performance in accounting colleges, a solution provided by the expert members and shared within the group members belongs to everybody

Group members' participation and interaction.

Leadership and development's role in enabling social mobility includes giving the student the opportunity for group participation in education mobility (Schoon et al., 2021). Qualitative educational training (Littlepage & Silbiger, 1992) should emphasise working from the student individual's knowledge-sharing perspective whilst consistently accounting for all. It is where the best pedagogical practice resides (Chang et al., 2021). It is also where educators (Xiang, 2022) reasonably improve the institution's student-performance development in a modern training environment using beneficial innovative approaches (Waters & Brooks, 2021). Moreover, (Schoon et al., 2021) mentioned that the opportunity to participate develops professional and reflexive skills. In contrast to jobs emphasising task completion (Waters & Brooks, 2021; Xiang, 2022), teaching and learning apprenticeships require students to prioritise objectives and strive for continuous

improvement. By participating in an unpaid internship, a student can significantly enhance the skills already possessed to adopt an academic and professional stance that emphasises results.

Pupil-centric strategy through collaboration

Educationists should be Pupil-centric in collaborative learning (Bara & Xhomara, 2020). The pupil-centric education focuses on the individual student's uniqueness, experiences, skills and interests, and the needs of the group rather than those of teachers and the policymakers (Bara & Xhomara, 2020). This technique makes students' uniqueness an essential focus and value than the institution's culture, academics and professional knowledge, and experiences.

Incorporating education with teamwork.

Skill-building in academic activities through teamwork improves student comprehension and performance (Baumann & Bonner, 2004). Teamwork-study increases individual members' skills and performance (Achor & Ngbea, 2022; Anwar et al., 2021). Collaboration also links work and learning (Premo et al., 2022). The pedagogists are using this connection (Bara & Xhomara, 2020) to encourage teams with diverse skills and experience to use teacher mentorship (Premo et al., 2022) as an additional learning strategy is crucial. A great learning culture requires a unique teaching culture in which those who help others also learn (Hamadi et al., 2022; Monson, 2019). As observed (Wyness & Dalton, 2018), student experts learn by solving problems together. Learning from group members promotes adaptability and collective problem-solving for the group and experts.

Empirical Literature on Group-Based Teaching and Learning and Formal Learning

(Littlepage & Silbiger, 1992) used a total of 1,324 American college students in conducting two studies. The two studies examined the effects of group experts' recognition, size and participation on group members' performance. They employed ANOVA for inferential statistics. The research findings show that the recognition of experts is essential to group performance.

(Sangster, 1996) compared group formative objective test (OT)-based assessment with the individual traditional essay-based assessment learning styles using Accounting and Finance students at Queen's University Belfast in the UK to help student-centred use of a proprietary Computer Aided Learning (CAL) programme. The study used a one-way ANOVA for inferential analyses. The finding suggested that the group OTs identified a different ranking among the students' performance compared to the individual traditional essay-based assessment. This finding confirmed the findings of Littlepage and Silbiger (1992).

(Duff, 1998) in the United Kingdom reviewed the methodological content of Sangster's (1996) study and found it empirically questionable. The study observed issues for his argument in the literature, the learning Style Questionnaire's psychometric properties, and the analysis and disclosure of results. Duff (1998) concluded by recommending future research.

(Bryan et al., 2002) explored the effects of members' expertise on group decision-making and group performance. The study examined 360 assessed students enrolled in a preliminary social psychology programme at the University of Illinois at Urbana, United States. The study tested the hypothesis with a Two-way ANOVA. The outcome supported Littlepage and Silbiger (1992) by denoting that groups have value to the contribution of their highest-performing members and perform at the level of the best of an equal number of individuals.

(Gillies, 2004) investigated the impact of cooperative learning in Australia on high school students who worked in structured or unstructured cooperative groups using 223 junior high school students that worked

in three or four-person, mixed-gender and achievement groups. The study employed a multivariate analysis of variance (MANOVA). The results supported the study of Bryan et al. (2002) by revealing that the pupils in the structured samples were more willing to work with other people on the assigned tasks. They provided help and assistance to each other than their peers in the unstructured groups.

(Hesamian, 2016) examine how valence monitoring and equality of participation of 57 volunteering higher education students randomly assigned to three groups in Finland reflected the critical role of monitoring for collaborative problem-solving lives in interactions, performance, and interpersonal physiology. The finding denotes that valence and participation equality can be seen in interactions and are good predictors of how thriving groups perform on a task.

(Wyness & Dalton, 2018) investigated the finding of a small ethnological study that examined how students felt about group problem-based learning as a method for teaching sustainability via collaboration in a two-semester elective accounting course at a university established after 1992 in southwest England. The outcome revealed that the respondents acknowledged that all undergraduate accounting programmes require sustainable education through collaborative learning. The result espoused the work of Hesamian (2016) and Bryan et al., 2002.

In the same quest (Monson, 2019) examined the relationship between the learning outcomes of the group research project, student experiences, and group dynamics. Using 240 students who completed a sociology research methods course between 2004 and 2015 at a small, private liberal arts college in the United States, the researchers controlled for the students' characteristics, group composition, task type, and incentive structure. Ordinary Least Square regression tested the study's hypotheses. The outcome demonstrated that students' experiences indirectly affect their learning outcomes. This finding confirmed the result of Wyness and Dalton (2018).

(Serjali & AbdulHalim, 2020) assessed 30 treatment and 30 control group students' understanding, motivation, attitude, and interest in accounting principles, using the student teams-achievement divisions (STAD) model in Malaysia. The independent and paired sample t-tests and Pearson correlation analysis showed that STAD improved Principles of Accounting students' achievement, understanding, and motivation.

(Shawver, 2020) compared students' performance in a traditional lecture structure to those in a laboratory to determine the efficacy of the cooperative learning process at the Department of Accounting and Finance at King's College in Wilkes-Barre, Pennsylvania. The result confirms that collaborative student groups perform better than individuals studying alone, indicating that the cooperative learning environment promoted increased learning.

(Qureshi et al., 2021) Pakistan examined the factors affecting students' learning performance through collaborative learning and engagement to find a solution for developing classroom teaching for active learning. The study employed Structural Equation Modelling for inferential analysis. The outcome suggests that learning with classmates in a group benefits students and improves student-quality performance was consistent with the study of Shawver (2020).

(Martínez-Romero et al., 2021) investigated whether students' willingness to work in groups based on their previous group working experiences is significantly related to their academic performance using Business school students from three Universities in Spain. Pearson's bivariate correlations and regression analysis tested the hypothesis. The findings reveal that students' perceptions regarding their improved skills due to working in groups are positively and significantly related to their academic performance. The study recommended future research.

(Chang et al., 2021) examined the impact of collaborative learning in mobility education in China on 36 trainees in prenatal education about cultivating nurses' knowledge and competence of vaccine administration as essential for protecting pregnant women and newborns from infection using Analysis of Covariance (ANCOVA). The study finds that collaborative learning education mobility chatbot-based learning approach promotes self-efficacy, learning engagement, and performance.

(Dindar et al., 2021) Finland compared the Learning Management System (LMS) acceptance of an experienced group of Finnish K-12 teachers using a specific LMS for teaching pre-Covid-19 pandemic with the approval of an inexperienced group of teachers who began using it for emergency remote teaching during the pandemic. The study utilised the independent t-test to test the hypothesis. The results indicated that the performance scores of experienced and inexperienced teachers were statistically equivalent and consistent with another study by Chang et al., 2021.

Utilising a sample of 1890 pupils from a small-scale randomised examination of cooperative learning in 15 rural intermediate schools in the Pacific Northwest of the United States, (Van Ryzin & Roseth, 2021) investigated the connection between the two, utilising a correlation coefficient. The studies show that student participants in cooperative learning performed well in class and better in their grade scores for two years.

(Yunefitet et al., al 2021) used experimental learning theory to examine the effect of Team-Based Learning (TBL) processes as an active learning strategy to enhance knowledge of postpartum haemorrhage (PPH) and tr satisfaction of midwifery students in Indonesia. The goal was to assess and compare the knowledge of postpartum haemorrhage (PPH), long-term retention of knowledge, and training satisfaction of midwifery trainees attending a TBL class versus a didactic lecture on PPH topics. A total of 115 participants were evaluated using One-way ANOVA. Three group samples of (a) midwifery students who have no TBL experience, (b) completed the previous semester, and (c) graduated from senior high school (without nursing background). Students in groups (a) and (c) participated in TBL class after the normal (PPH) lecture. The test performance scores of the students that participated in the TBL class were better than those that did not.

A similar study (Hamadi et al., 2022) on group teaching and learning using students in various majors at an Australian university supported the study of Martinez-Romero et. (2021). Employing the Structural Equation Modelling (AMOS) method of analysis, the study investigated the relationship between a social media integration framework and an effort to enhance cooperative learning. The finding shows that cooperative Learning is significantly and positively related to the adopted social media integration framework.

(Premo et al., 2022) used a sample of 436 students enrolled in team-based undergraduate science courses (biology or chemistry) in the USA to investigate group dynamics that predict willingness to work with peers in the future and individual achievement in the system. The regression model was the inferential statistics that tested the hypothesis. The inferential finding suggested greater individual connection and contributions forecasted willingness to work with a group member and achievement.

(Achor & Ngbea, 2022) using covariance analysis and a different context from Premo et al. (2022), they examined how students' cognitive abilities affect their academic performance when taught Physics in group dynamics and visual clue strategies in Nigeria. The outcome of the investigation denoted a significant difference between the average capabilities of students taught Physics using the group dynamics strategy and the visual clue strategy. Their finding was consistent with Premo et al. (2022).

Summary of Empirical review according to continents.

Table 1: Percentage and Frequency of Empirical Review by Continents

Continents	Frequency	Per cent	Valid Percent	Cumulative Percent
AFRICA	1	5.0	5.0	5.0
ASIA	4	21.0	21.0	26.0
AUSTRALIA	2	11.0	11.0	37.0
EUROPE	7	37.0	37.0	74.0
USA	5	26.0	26.0	100.0
Total	19	100.0	100.0	

The researchers sourced the data via the literature review.

Summary of gaps in the literature

Several studies (Bada, 2016; Kay & Kibble, 2016) mentioned that researchers conducted many studies on the importance of teamwork to students' academic performance. However, conflicts that render results inconclusive exist (Duff 1998, sangster1996). A summary of the literature table 1 shows that 63% of the studies reviewed empirically are from developed economies, with Europe at 37% and the USA at 26%. The remaining were Asia 21%, Australia 11% and Africa 5%. (Martínez-Romero et al., 2021) have recommended future studies. This study bridges this gap in accounting and finance pedagogy by examining the impact of group members' teaching and learning on the student's performance in Nigeria.

Research Methodology and Design

The study was quantitative, and the context was accounting and Finance students at Abdu Gusau Polytechnic in Zamfara, Nigeria.

Approach: This study used a quasi-experimental design, justified by the work of Yunefitet., al (2021). The participants were (i) HND2 accounting and finance students who were not taught Containers Accounting in their former schools, (ii) HND1 students who completed ND without learning Containers Accounting and (iii) ND2 students who were not taught Containers Accounting in ND1. Three-hour Formal Lectures (FL) were held for the three groups, with ten students each on the topic. The other two times, 80 minutes of GBTL class besides the FL were arranged among the students. The group member experts significantly contributed to the success of the GBTL class. Based on the topic, a test for the three groups with the same questions assessed the performance of the groups after two weeks of the GBTL class. The HND2 and HND1 did not participate in the GBTL class. The one-way ANOVA analysed the group's performance scores. The goal was to compare the performance scores of ND2 students who participated in the GTBL class besides FL with the HND2 and HND1 that participated only in the FL.

The study observed the rules of omnibus ANOVA before making any statistical conclusions. Samples of three groups that happened naturally in the quasi-research technique had the same size to reduce the number of type 1 error rates. The performance scores variables were also measured on a scale and differed. The study conformed to skewness and kurtosis asymmetrical range of not more than -2 or 2. to ensure that outliers did not affect the normality of the data much. Besides, the study looked into whether the variances were identical using Levene's data variances equivalence test.

This study used SPSS statistical tool for every statistical analysis and statistical inference. The alpha level

was set at $\alpha = .05$ significance for ANOVA. The critical level was determined based on the degree of freedom (df) and alpha F-statistics from the ANOVA F-table.

Research hypothesis.

This study tested two hypotheses linked to the overall (H1) and the specific (H2) research objectives. H1: The overall impact of participating in Group-Based Teaching and Learning (GBTL) and Formal Lectures (FL) is significantly different in students’ performance. H2: The performance of students participating in the GBTL class besides Formal Lectures (FL) is significantly different from participating only in Formal Lecture

Discussion of Findings

The section discussed the data analysis and the findings, presented in tables.

Adherence to the Non-significant outlier assumption.

Table 2: Descriptive Statistics for data Normality Test

EXAM SCORE	N	Mean	Skewness			Kurtosis		
	Statistics	Statistics	Statistics	Standard Error	Z-Score	Statistics	Standard Error	Z-Score
HND2	10	63.0000	.573	.687	0.83	-.098	-0.07	1.334
HND1	10	61.7000	1.302	.687	1.89	2.003	1.50	1.334
ND2	10	52.6000	-1.072	.687	-1.56	-.014	-0.01	1.334
Total	30	59.4000						

Source: SPSS Version 23.0

Table 2 summarises the descriptive statistics asymmetrically distributed test for this research data, using the data normality recommendations of skewness and kurtosis z-scores of less than or equal to -2 and +2. In this table 2, the study computed the z-scores manually to adhere to the non-significant outliers data prerequisite of one-way ANOVA. The Z-scores are within the recommended ranges for samples 30 \leq 50 (Hayes, 2009).

Levene’s equality of data variances statistical assumption.

Table 3: Descriptive Statistics of homogeneity of variances for exam scores.

EXAM SCORE			
Levene’s	df1	df2	Sig.
.406	2	27	.670

Source: SPSS Version 23.0

The statistical result for homogeneity of variance stands presented in Table 3; Levene’s F-test served to test the assumption of the equality of data variances. A p-value < 0.05 indicates a violation of the assumption (Chukwudi et al., 2019). This analysis denotes equality of data variances and satisfied the homogeneity of variances assumption with a df1,2; df2, 27 (p-value of .670). The result confirmed ANOVA prediction and no need for Welch’s robust test of equality of means as a choice.

Between groups and within groups ANOVA.

Table 4: ANOVA statistics

EXAM SCORE	Sum of Squares	df	Mean Square	F	Sig.
Between Groups	717.800	2	358.900	5.642	.009
Within Groups	1717.400	27	63.607		
Total	2435.200	29			

Source: SPSS Version 23.0

Table 4 shows the outcomes ANOVA analysis. The main effect of Group-Based Teaching and Learning and formal Lectures on accounting and finance students’ academic performance varied significantly between groups, as determined by a one-way ANOVA. A one-way ANOVA accepts a non-null hypothesis with a p-value of less than .05 (Haataja et al., 2021; Hesamian,2016). Based on df, 29; F-statistics, 5,642 and the P-value 009, ANOVA predicted statistical and significant differences between the means scores of three unrelated student groups in this study. Decision: accepted H1.

TukeyHSD Post hoc test multiple comparisons.

Table 5: Specific effect multiple comparisons dependent variables’ performance scores

Performance (i)	Performance (J)	Mean Difference (I-J)	Sig.	Relationship?	Mean	Std. Deviation
HND 2	HND1	2.200	.812	HND2/HND1:NO	63.90	8.373
	ND2	11.300*	.010	.HND2/ND2 YES		
HND1	HND2	-2.200	.812	HND1/HND2 NO	61.70	8.945
	ND2	9.100*	.043	4.HND1/ND2YES		
ND2	HND2	-11.300*	.010	SAME in 2	52.60	6.381
	HND1	-9.100*	.043	SAME in 4		
TOTAL	—	—	—		59.40	9.164

Source: SPSS Version 23.0

Table 5 displays the statistics of the post hoc Specific effect multiple comparison differences between the three levels of students’ performance scores, their mean differences and strengths of significance using the Tukey HSD test. The descriptives show that HND 2 has the highest mean and standard deviation scores (M = 63.9, SD = 8.373), followed by HND1(M = 61.7, SD = 8.945) and ND 2 (M = 52.60, SD = 6.381). The Tukey HSD statistics predicted ND2 that participated in GBTL has a specific effect with different significant relationships with HND 2 (MD = 11.300*), P-value = 0.010, and with HND1 (MD = 9.100*), P-value = 0.043. Decision: accept H2.

Confirmation of the results of the Post Hoc Tukey test.

Table 6: Homogeneous Subsets Tukey HSD teaching score

	Subset for alpha = 0.05		
		Different	No Difference
	N	1	2
ND2 group	10	52.60	
HND1 group	10		61.70
HND2 group	10		63.90

Source: SPSS Version 23.0

The importance of the Tukey HSD subset is that groups on one column are equal and not significantly different (HND2 and HND1), while any group on different columns (ND2) is. Therefore, the ND2 group has a significantly different specific effect, creating significant differences between the other groups.

Hypotheses Testing

The problem was to investigate the impact of Group-Based Teaching and Learning addedly to Formal Lectures on the performance of accounting and finance students at Abdu Gusau Polytechnic.

H1: The overall impact of Group-Based Teaching and Learning (GBTL) and Formal Lectures (FL) on the performance of accounting and finance students is significantly different. The hypothesis testing examined this assumption. The one-way ANOVA result shows that the overall effect of GBTL and FL on students’ performance scores of the groups differ significantly $F(2, 27) = 5.642, P = 0.009$. The participants remained grouped as HND2, HND1 and ND2 accounting and finance students at Abdu Gusau Polytechnic, Zamfara, Nigeria. Decision: accept H1. The overall impact of GBTL and FL significantly differed in the academic performance of accounting and finance students at Abdu Gusau Polytechnic.

H2: Group-Based Teachings and Learning (GBTL) has a significantly different specific effect on the academic performance of ND2 accounting and finance students of Abdu Gusau Polytechnic.

The result of the one-way ANOVA showed a statistically significant difference between the group performance scores. Post hoc Tukey Honest Significant Difference (HSD) test assessed if the specific effect of Group-Based Teaching and Learning on ND2 was significantly different across the undergraduates’ performance scores. Post hoc Tukey HSD test revealed HND2 group performance differed significantly from (ND2) students group (MD =11.300), P-value = 0.010. Again, Higher National Diploma 1 (HND1) level undergraduates’ performance evaluation scores were also significantly different from National Diploma 2 (ND2) students group (MD = 9.10), P-value = 0.043. Decision: accept H2. The specific effect of ND2 group scores that participated in Group-Based Learning differs significantly within and among the groups of students’ performance of accounting and finance students at Abdul Gusau Polytechnic, Zamfara,

Nigeria.

Confirmation group's specific effect.

The Tukey HSD homogenous subset grouping also confirmed that the ND2 group that participated in GBTL was in a separate column, indicating that the group has a specific effect that significantly differs from HND2 and HND1, which remained in the same column.

Conclusion

The researchers used this section to conclude the study by summarising the research findings about the research goals, relevance and contributions. The researchers also discussed the study's drawbacks and suggested future research. The study's goal was to determine the impact of Group-Based Teaching and Learning besides Formal Lectures (NL) on the performance of a cohort of accounting and finance majors at the Abdu Gusau Polytechnic. The study conformed to the assumptions of one-way ANOVA before inferential analysis. While descriptive statistics confirmed data normality, Levene's equivalence test confirmed the homogeneity of data variances.

The H1 hypothesis that the overall impact of GBTL besides FL and FL is significantly different across the academic performance of the three different samples of accounting and finance students at Abdu Gusau Polytechnic was tested using the one-way ANOVA. Findings revealed that the overall impact of Group-Based Teaching and Learning and Formal Lectures significantly differs across the students' sample performance scores. These results were consistent with the study findings of (Gillies (2004) in Australia; Wynes and Dalton (2018) in Europe; Shawvers (2020) in the USA; Qureshi et. (2021) in Asia; and Achor and Ngbea (2022) in Africa). The outcomes indicated that ANOVA predicted the results well.

After ANOVA established significant differences in the main effect of the groups, Tukey Honest Significant Difference (HSD) post hoc multiple comparison tests investigated the assumptions of H2 on the group's specific effects on the different levels of performance scores. The finding indicated that GBTL ND2 students' participants' performance scores deferred significantly with HND2 and HND1 students' performance scores who participated only in FL. The findings support the results of studies (Bryan et., al (2002) in the US; Hesamian (2016) in Europe; Serjali and Abdul Halim (2020) in Asia; and Premo et al. (2022) in the US). Besides, the findings espouse the study of Yunefitet., al (2021) in Indonesia using the concepts of experimental learning theory.

With these research findings and their support to literature in the field of the study, the study achieved the research aims. The study findings are relevant and contribute novelty to improving the performance of accounting and finance students through participation in Group-Based Teaching and Learning. However, the sample concentration of accounting and finance students of a single tertiary institution is a limitation of the study.

The study, therefore, recommends future research with larger samples that cut across different academic disciplines using many tertiary institutions.

References

1. (2022). Twenty-twenty guiding principles and standards for AACSB business accreditation. 1–64. <https://www.aacsb.edu/educators/accreditation/business-accreditation/aacsb-business-accreditation-standards>
2. Abelson, P. H. (2006). Readings in Methodology: A selection of articles on English teaching as a foreign language. In *Science* (Vol. 158, Issue 3805). <https://doi.org/10.1126/science.158.3805.1139>

3. Achor, E. E., & Ngbea, P. M. (2022). using group dynamics and visual-clue strategies menggunakan dinamika kelompok dan strategi petunjuk visual. *Journal of Research in Instructional*, 2(1), 33–46.
4. (2011). AICPA's 'CPA Horizons Report 2025: A Road Map for the Future. In 'CPA Horizons Report 2025 CPA Organisation. <http://www.aicpa.org/research/cpahorizons2025/pages/cpahorizonsreport.aspx>
5. Anwar, K., Asari, S., Husniah, R., & Asmara, C. H. (2021). Students' Perceptions of Collaborative Team Teaching and Student Achievement Motivation. *International Journal of Instruction*, 14(1), 325–344. <https://doi.org/10.29333/IJI.2021.14119A>
6. Bada, S. O. (2016). Constructivism: A Paradigm for Teaching and Learning. *Arts and Social Sciences Journal*, 7(4), 66–70. <https://doi.org/10.4172/2151-6200.1000200>
7. Bara, G., & Xhomara, N. (2020). The Effect of Student-Centered Teaching and Problem-Based Learning on Academic Achievement in Science. *Journal of Turkish Science Education*, 17(2), 182–199. <https://doi.org/10.36681/tused.2020.20>
8. Baumann, M. R., & Bonner, B. L. (2004). The effects of differences and expectations on member expertise and group performance utilisation. *Organisational Behavior and Human Decision Processes*, 93(2), 89–101. <https://doi.org/10.1016/j.obhdp.2003.12.004>
9. Baumann, M. R., & Bonner, B. L. (2013). Members' Recognition of Expertise, Information Sharing, Information Weighting, and Group Decision Making. *Small Group Research*, 44(5), 532–562. <https://doi.org/10.1177/1046496413494415>
10. Bereiter, C., & Scardamalia, M. (1993). We Are Surpassing Ourselves: An Investigation Into The Nature And Implications Of Expertise (pp. 1–5). *Educational Researcher*.
11. Bolatl?, Z., & Korucu, A. G. (2020). Deciding the Academic Benefits of Students Using Flipped Method in Supported by a Mobile Application and Their Views on Comparative study. *Bart?n University Journal of Faculty of Education*, 9(2), 229–251. <https://doi.org/10.14686/buefad.631835>
12. Bryan L. Bonner, a Michael R. Baumann, b and R. S. D. (2002). the Effects of Member Expertise on Group Decision-. *Organisational Behavior and Human Decision Processes*, 88, 719–736.
13. Burris, E. R., Thomas-Hunt, M. C., & Stanton, A. M. (2005). The Role of Expertise and Reputation on Perceptions of Conflict and Influence within Groups. *SSRN Electronic Journal*. <https://doi.org/10.2139/ssrn.324263>
14. Chang, C. Y., Hwang, G. J., & Gau, M. L. (2021). Promoting students' learning achievement and self-efficacy: A mobile chatbot approach for nursing training. *British Journal of Educational Technology*, 1–18. <https://doi.org/10.1111/bjet.13158>
15. Chukwudi, O., Idochi, O., & Sylvia, I. O. (2019). impact Of Sample Sizes On The Empirical Power Of Some Tests Of Homogeneity Of Variances. *International Journal of Mathematics and Statistics Trends and Technology*, 65(6), 119–134. <https://doi.org/10.14445/22315373/ijmtt-v65i6p518>
16. Cunninghame, I. (2017). The function of higher education in social mobility. *International Studies in Widening Participation*, 4(1), 125–150. <https://doi.org/10.1353/foc.2006.0015>
17. Dindar, M., Suorsa, A., Hermes, J., Karppinen, P., & Näykki, P. (2021). Comparison of technology admission of K-12 teachers without and with prior knowledge of learning computer management systems: A pandemic analysis. *Journal of Computer Learning*, 37(6), 1553–1565. <https://doi.org/10.1111/jcal.12552>
18. Duff, A. (1998). Objective tests, learning to learn and learning tastes: A comment. *Accounting Education* 7 (4), 335–345, 21(1), 335–345. <https://doi.org/10.1080/096392898331117>
19. Dziuban, C., Graham, C. R., Moskal, P. D., Norberg, A., & Sicilia, N. (2018). Blended learning : the modern normal and trending technologies. *International Journal of Educational Technology*, 15(3), 1–16. <https://doi.org/10.1186/s41239-017-0087-5>
20. Gillies, R. M. (2004). The impact of cooperative learning on junior high school students during small group learning. *Learning and Instruction* 14 (2004), 197–213.
21. Haataja, E., Malmberg, J., Dindar, M., & Järvelä, S. (2021). Solving is Seen in Interaction, Performance, and Interpersonal. *Metacognition and Learning* (2022) 17:241–268, 241–268. <https://doi.org//doi.org/10.1007/s11409-021-09279-3>
22. Hamadi, M., El-den, J., Azam, S., & Cherry, N. S. (2022). Integrating social media as a collaborative

- learning tool in higher education classrooms : An empirical study. *Journal of King Saud University – Computer and Information Sciences*, 34(6), 3722–3731. <https://doi.org/10.1016/j.jksuci.2020.12.007>
23. Hayes, A. F. (2009). Beyond Baron and Kenny: Statistical mediation analysis in the new millennium. *Communication Monographs*, 76(4), 408–420. <https://doi.org/10.1080/03637750903310360>
 24. Hesamian, G. (2016). One-way ANOVA based on interval information. *International Journal of Systems Science*, 47(11), 2682–2690. <https://doi.org/10.1080/00207721.2015.1014449>
 25. John, D. (1906). The experimental theory of knowledge. *New Series*, 15(59), 293–307.
 26. Kay, D., & Kibble, J. (2016). Learning theories 101: Application to everyday teaching and scholarship. *Advances in Physiology Education*, 40(1), 17–25. <https://doi.org/10.1152/advan.00132.2015>
 27. Latané, B., Williams, K., & Harkins, S. (2006). More hands make light the work: The causes and consequences of social loafing. *Small Groups: Key Readings*, 37(6), 297–308. <https://doi.org/10.4324/9780203647585>
 28. Littlepage, G. E., & Silbiger, H. (1992). Recognition of Expertise in Decision-Making Groups. *Small Group Research*, 23(3), 344–355. <https://doi.org/10.1177/1046496492233005>
 29. Martínez-Romero, M. J., Alba, M., de la Cruz, P., Ferrer, C., & Casado-Belmonte, M. P. (2021). The effect of previous experience with working in groups on students' academic performance in the accounting discipline. *Revista de Contabilidad-Spanish Accounting Review*, 24(2), 153–167. <https://doi.org/10.6018/RCSAR.359561>
 30. Monson, R. A. (2019). Do They Have to Like It to Learn from It? Students Experiences, Group Dynamics, and Learning Outcomes in Group Research Projects. *Teaching Sociology*, 47(2), 116–134. <https://doi.org/10.1177/0092055X18812549>
 31. Penny, U. (1998). Are teachers born or made? *EA Journal*, 16(1), 7–14.
 32. Premo, J., Wyatt, B. N., Horn, M., & Wilson-Ashworth, H. (2022). Which Group Dynamics Matter: Social Predictors of Student Achievement in Team-Based Undergraduate Science Classrooms. *CBE Life Sciences Education*, 21(3). <https://doi.org/10.1187/cbe.21-06-0164>
 33. Qureshi, M. A., Khaskheli, A., Qureshi, J. A., Raza, S. A., & Yousufi, S. Q. (2021). Factors affecting students' learning performance through collaborative learning and engagement. *Interactive Learning Environments*, 0(0), 1–21. <https://doi.org/10.1080/10494820.2021.1884886>
 34. Sangster, A. (1996). Objective tests, learning to learn and learning tastes. *Accounting Education*, 5(2), 131–146. <https://doi.org/10.1080/09639289600000015>
 35. Schoon, I., Burger, K., & Cook, R. (2021). Doing it against the odds: How individual and parental co-agency predict educational mobility. *Journal of Adolescence*, 89(November 2019), 74–83. <https://doi.org/10.1016/j.adolescence.2021.04.004>
 36. Serjali, N. A. A., & Abdul Halim, H. (2020). The effectiveness of the “Student Team Achievement Divisions” (STAD) model towards students' achievement in the Principles of Accounting subject. *International Business Education Journal*, 13, 1–14. <https://doi.org/10.37134/ibej.vol13.sp.1.2020>
 37. Shawver, T. J. (2020). An experimental study of collaborative learning in advanced financial accounting courses. *Accounting Education*, 29(3), 247–262. <https://doi.org/10.1080/09639284.2020.1736589>
 38. Stephany, F. (2019). It Deepens Like a seaside Shelf: Educational Mobility and Social Capital in Germany. *Social Indicators Research*, 142(2), 855–885. <https://doi.org/10.1007/s11205-018-1937-9>
 39. Van Der Vegt, G. S., Emans, B. J. M., & Van De Vliert, E. (2001). Patterns of interdependence in work teams: A two-level investigation of the relations with the job and team satisfaction. *Personnel Psychology*, 54(1), 51–69. <https://doi.org/10.1111/j.1744-6570.2001.tb00085.x>
 40. Van Ryzin, M. J., & Roseth, C. J. (2021). The Cascading impacts of Reducing Scholars' Stress: Collaborative Learning Means Reducing Emotional Problems and Developing Academic Engagement. *Journal of Early Adolescence*, 41(5), 700–724. <https://doi.org/10.1177/0272431620950474>
 41. Waters, J., & Brooks, R. (2021). Student Migrants and Contemporary Educational Mobilities. *Student Migrants and Contemporary Educational Mobilities*, pp. 1–14. <https://doi.org/10.1007/978-3-030->

78295-5

42. Wyness, L., & Dalton, F. (2018). The value of issue-based learning in learning for sustainability: Undergraduate accounting student perspectives. *Journal of Accounting Education*, 45(9), 1–19. <https://doi.org/10.1016/j.jaccedu.2018.09.001>
43. Xiang, B. (2022). Educational mobility and “human nature”: Changes in student migration from China since 2000. March 1–5. <https://doi.org/10.48509/MoLab.1101>
44. Yadav, A., Mayfield, C., Moudgalya, S. K., Kussmaul, C., & Hu, H. H. (2021). Collaborative Learning, Self-Efficacy, and Student Performance in CS1 POGIL. *Proceedings of 52nd ACM Technical Symposium on Computer Science Education*, Pp. 775–781. <https://doi.org/10.1145/3408877.3432373>
45. Yunefit U, Yukari I, Kaori T, Eri S and Shigeko H (2021). Effectiveness of team-based learning on a postpartum haemorrhage. *Nurse Education Today* 105(2021), 105015, 1-7.