

# **The effect of peer-mediated learning strategy and gender on polytechnic students' mastery of keyboarding skills in Osun State, Nigeria**

Elkanah Ayodeji Olafare<sup>a</sup>, Abiodun Ganiu Jimoh<sup>b\*</sup>, Bukola Julianah Ajayi<sup>c</sup>, Friday Ekahe Abanyam<sup>d</sup>

<sup>ac</sup>*Department of Business Education, Adeyemi Federal University of Education, Ondo, Nigeria.*

<sup>b</sup>*Department of Educational Management and Business Studiess, Olabisi Onabanjo University, Ago-Iwoye, Nigeria.*

<sup>d</sup>*Department of Business Education, Ambrose Alli University Ekpoma, Edo State, Nigeria.*

Corresponding author: [abiodunjimoh25@gmail.com](mailto:abiodunjimoh25@gmail.com)

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## **Abstract**

This study investigated the effect of peer-mediated strategy on polytechnic students' mastery of keyboarding skills in Osun State, Nigeria. A quasi-experimental design was used for the study with a 2x2 factorial matrix. The population of the study comprised two hundred and forty-three (243) National Diploma (ND) I Office Technology and Management students in all Polytechnic in Osun State. A total of 140 students in their intact classes was used as the sample for the study. Keyboarding Skill Test (0.89) was the instrument validated and used for data collection. Data collected were analysed using mean and standard deviation to answer the research questions and Analysis of Covariance (ANCOVA) to test the hypotheses at the 0.05 level of significance. The study revealed that there was a significant effect of treatment (with a peer-mediated strategy) on students' mastery of keyboarding skills (F-value = 872.352,  $p < 0.00$ ) because students taught with peer-mediated performed better than those taught using the conventional demonstration method (mean gain of 26.417 & 22.090 > 4.426). There was a significant effect of gender on students' mastery of keyboarding skills in the polytechnic (F-value = 103.897,  $p < 0.05$ ). The result also showed a significant interaction effect of treatments and gender on students' mastery of keyboarding skills (F-value = 49.992,  $p < 0.05$ ). The study concluded that peer-mediated strategy is more effective in enhancing students' mastery of keyboarding skills in polytechnic than the conventional method. Based on the foregoing, it was recommended that Office Technology and Management (OTM) instructors in polytechnics should employ the use of a peer-mediated strategy for keyboarding instructional delivery.

## **Keywords:**

Peer-Mediated Learning, Keyboarding Skills, Gender Differences, Polytechnic Education, Business Education

## **INTRODUCTION**

Keyboarding mastery refers to the level at which students demonstrate practical expertise and performance in typing courses in polytechnics (Olafare, 2024). Mastery of keyboarding can be assessed by analysing scores from skill or achievement tests following students' exposure to keyboarding tasks. Mastery in keyboarding involves teaching students proper finger positioning to increase typing speed and accuracy, enabling them to produce documents efficiently for the modern workplace (Nnaji & Odesanya, 2019). Currently, a significant

portion of our daily activities is carried out using computer keyboards for both personal and professional tasks. This keyboarding mastery allows us to type on and connect with the computer. Students will be able to advance in Office Technology and Management if they demonstrate proficiency in keyboarding, even in their early years of study. This is because it is a necessary skill for anyone aspiring to become a professional secretary. In addition, the Virginia Department of Education (2012) emphasises that the objective of keyboarding is to cultivate a touch skill, which allows individuals to input alphanumeric data at a faster pace than penmanship, with the ultimate purpose of generating a printed document or storing it for future reference. The need for keyboarding can further be justified by the objectives of OTM, as stated by the National Board for Technical Education (2012), which aims to develop highly skilled and proficient graduates with a National Diploma (ND) who possess the appropriate skills to pursue secretarial career prospects in governmental agencies, parastatals, and other affiliated organisations.

Despite the importance of keyboarding skills, it is sad to find many students in polytechnics using the hunt and peck method (Akhigbe, 2015). This hunt and peck method is the act of using a limited number of fingers to press keys while frequently looking at the keyboard, which is a common approach employed by laymen who lack expertise in operating keyboard devices. Due to the stress associated with the hunt and peck method, many Office Technology and Management students prefer to hire computer operators to accomplish keyboarding assignments and projects, which often results in accumulated poor mastery of keyboarding skills (Akhigbe, 2015). The reason why typing jobs are delayed and poorly done by secretaries in most cases is because of poor mastery of keyboarding skills by Office Technology and Management students. With this practice, they are unable to master the location and operation of the keyboard, which eventually results in the low performance of Office Technology and Management students in polytechnics (Nyam, 2015). For instance, the summary of students' results in keyboarding (OTM 122) made available by the Head of the Department of Polytechnic in Osun State indicates poor students' mastery of skills in keyboarding. Specifically, in Osun State Polytechnic, Iree, the percentage of students who scored 50 marks and above in keyboarding (OTM 122) in the past four academic sessions is 34.6%, while the percentage of those who scored 49 and below is 65.4%. This statistic is a reflection of poor mastery of keyboarding skills by OTM students in polytechnics in Osun State, Nigeria.

Meanwhile, the demonstration method frequently used by OTM lecturers for teaching keyboarding is characterised by the do-what-I-do technique and a teacher-centred approach. This demonstration strategy usually employed by lecturers to teach keyboarding in polytechnics seems to be responsible for the poor academic achievement and skills mastery. Ndirika and Ubani (2016) attribute many reasons to poor students' learning and mastery of skills; however, a significant portion of the blame can be attributed to the conventional instructional method used for content delivery. Jimoh et al. (2021) stressed that the conventional lecture method only allows the teacher to dominate the class and does not encourage students to be active participants in the classroom. To enhance students' mastery of keyboarding skills in polytechnics, student-orientated instructional approaches that emphasise active students' engagement, problem-solving and give an opportunity for self-development of skills are required and should be encouraged (Serjali & Abdul Halim, 2020). Among these instructional strategies is the peer-mediated instructional strategy.

Peer-mediated learning, sometimes referred to as peer-tutoring, is a teaching method that involves pairing students in groups to work on academic assignments or learn new skills (Ogundola, 2017). In this approach, one student acts as a tutor and provides assistance to the other members of the group, who are called tutees, to promote collaborative learning.

AbdulRaheem et al. (2017) stress that peer-mediated learning is based on creating pairs of students with an uneven relationship, where the tutor and tutees exhibit different degrees of academic aptitude but share an identical objective. There are various forms of peer tutoring, namely cross-age peer-tutoring, class-wide peer tutoring, same-age peer tutoring and reciprocal peer tutoring have been discovered. When it comes to learning a new skill like keyboarding, peer-mediated learning can be a powerful tool for consolidating knowledge and boosting proficiency. In addition, as Ogundola (2017) emphasises, it regularly has a significant effect on academic performance. The tutors gain just as much from the experience as their tutees do. While tutors gain from the process of teaching, tutees gain from the tutoring process because of the emphasis placed on interaction, collaboration, and problem-solving.

The effect of peer-mediated learning systems has been demonstrated in numerous studies. For instance, Olulowo et al. (2020) and Ohadugha et al. (2020) found that the peer tutoring instructional strategy is more effective than the conventional lecture method in enhancing students' academic achievement in financial accounting concepts. Similarly, Osei-Himah, Parker and Naah (2022) also report that using peer-tutoring is one of the better ways to learn and enhance students' performance in school subjects other than traditional methods. Once again, incorporating peer tutoring gives educators the tools they need to meet the requirements of a diverse classroom, including those with learning difficulties. This kind of instruction increases students' active participation, provides more time for receiving and responding to feedback, and keeps their attention for longer (Annis, 2013).

Apart from teaching strategy, gender is another factor that may influence students' mastery of keyboarding skills in OTM. The concept of gender pertains to the set of behaviours and characteristics that are anticipated of individuals based on their biological sex at birth (Ogundola, 2017). In this study, gender is basically the biological classification of students into male and female. The distinction between genders plays a crucial role in the socialisation process within our society and the formation of adult male and female identities. Gender stereotypes usually hamper the development of personality and lead to social inequality in the society (AbdulRaheem et al., 2020). Based on this, the efforts of female students achieving excellence in a subject perceived as a male-dominated field usually reduce and vice versa. Most keyboarding students may excuse their low performance on the grounds that the subject is meant for the female. Similarly, female students who see keyboarding as a female subject will make every effort to achieve excellence in it. Several studies have provided evidence suggesting that males exhibit superior performance compared to females in certain skill-based subjects (Kurumeh, 2004; Abidoye, 2015). However, other studies have reported that females outperform males in science and practical courses (Ogundola, 2017). Several studies have indicated that there is no statistically significant disparity in academic performance between males and females (Ndirika & Ubani, 2017; Francis, 2019). This study aims to address the existing inconsistencies and contribute to the resolution of the ongoing controversy surrounding the impact of gender on keyboarding proficiency and academic achievement. Hence, the objective of this research is to investigate the efficacy of peer-mediated learning strategies and gender on polytechnic students' mastery of keyboarding skills in Osun, Nigeria.

## **LITERATURE REVIEW**

### **Theoretical Framework**

The Socio-cultural Theory of Cognitive Development, proposed by Lev Semenovich Vygotsky, emphasises that students' intellectual growth is influenced by social interactions with others with greater expertise. Vygotsky's theory suggests that learning is a social process, with cognitive abilities originating from genuine interpersonal connections. The theory suggests that learning occurs on two levels: interpersonal exchanges and assimilating acquired knowledge into the cognitive framework. In a peer-mediated environment, individuals with greater knowledge, such as parents, teachers, or peers, play a crucial role in guiding and structuring learning experiences. This helps learners master and internalise skills, as seen in peer-mediated keyboarding classrooms where experienced students help each other. This theory is relevant to this study as it suggests that learning is a social process.

### **Conceptual Review**

#### *Peer-mediated learning strategy and mastery of keyboarding skills*

Peer-mediated learning is a growing approach in education that pairs high-achieving and low-achieving students to discuss and share information (Ezenwosu & Nworgu, 2013; Adeola & Olafare, 2010). This structured method improves skill mastery and academic performance, especially in keyboarding skills (Ogundola, 2017). It promotes knowledge exchange between mediators and mediatees, encouraging intellectual, emotional, and socially beneficial discourse. Peer-mediated education can be used in group discussions, tutoring, writing, and student-led learning (AbdulRaheem et al., 2017). Empirical research confirms that peer-mediated learning significantly improves students' academic performance across various subjects and school tiers (Ndirika & Ubani, 2017; Okoye, 2013; Ogundola, 2017). Studies show that peer-based methodologies enhance success, deepen knowledge, and increase learner engagement, while remaining egalitarian across genders (AbdulRaheem et al., 2017). However, there is a significant study deficiency in examining the use of peer-mediated approach in skill-oriented fields like keyboarding within higher education, indicating a need for this kind of study.

#### *Gender and students' mastery of keyboarding skills*

Gender stereotypes can hinder personality development and increase social inequality. Women are underrepresented in sectors like agriculture, accounting, and technical education, with secretarial courses being favoured by them (Ogundola, 2017). Men are conditioned to pursue prestigious male occupations. Research shows that Humanities, Languages, and domestic subjects are often associated with female identity, while Mathematics, Natural Sciences, Computer Science, and Engineering are associated with male identity (Odusanya, 2008; Igweh, 2012). However, studies show that women can sometimes outperform men in technical and scientific subjects, including secretarial studies, where keyboarding belongs (Coley, 2001; Ogundola, 2017). Ndirika and Ubani (2017), as well as AbdulRaheem et al. (2017), in their separate studies, show that there is no statistically significant difference in academic achievement between males and girls. These conflicting pieces of evidence lead to considering gender as a moderating variable in this study.

## **OBJECTIVES OF THE STUDY**

The broad purpose of this study was to determine the effect of peer-mediated strategy on students' mastery of keyboarding skills in Polytechnics in Osun State, Nigeria. Specifically, the study sought:

1. To determine the difference between the mastery scores of students taught keyboarding using peer-mediated learning strategy and Conventional Lecture Method?
2. To determine the difference of gender on polytechnic students' mastery of keyboarding skills in Osun State.
3. To analyse the interaction effect of treatments and gender on polytechnic students' mastery of keyboarding skills in Osun State.

## **RESEARCH QUESTIONS**

The following research questions were raised and answered in this study:

1. Is there any significant difference between the mastery scores of students taught keyboarding using peer-mediated learning strategy and the conventional lecture method?
2. Is there any significant difference between the mean mastery scores of male and female students taught keyboarding using a peer-mediated learning strategy?
3. Is there any significant interaction effect of treatments and gender on polytechnic students' mastery of keyboarding skills?

## **STATEMENT OF HYPOTHESES**

The following null hypotheses were developed based on existing evidence in literature on the variables and reasoning on what could happen after the treatments on keyboarding students (male and female). The hypotheses were tested at the 0.05 level of significance:

- Ho<sub>1</sub>: There is no significant difference between the mastery scores of students taught keyboarding skills in polytechnics.
- Ho<sub>2</sub>: There is no significant difference between the mean mastery scores of male and female students taught keyboarding using treatment strategies.
- Ho<sub>3</sub>: There is no significant interaction effect of treatment and gender on polytechnic students' mastery of keyboarding skills.

## **METHODOLOGY**

The study adopted a quasi-experimental, non-randomised pre-test, post-test and control group design and a 2x2 factorial matrix. Quasi-experimental design was deemed appropriate for the study because of the difficulty in altering the existing academic schedule of the schools used for the study. The factorial matrix comprises treatment at two levels (peer-mediated and conventional methods) and gender at two levels (male and female). The population for the study was two hundred and forty-three (243) ND I Office Technology and Management students of two polytechnics in Osun State, Nigeria. From the population, a total of one hundred and forty (140) OTM students in two intact classes were sampled using a simple random sampling technique. The sample comprised 60 (25 male, 35 female) students in

Federal Polytechnic Ede and 80 (32 male, 48 female) students in Osun State Polytechnic, Iree. The treatment, which lasted for six weeks, started with a briefing with the lecturers and administration of a pre-test in the first week to obtain pre-test scores. During the treatment intervention, which lasted for four weeks, OTM students of Federal Polytechnic Ede were taught using a peer-mediated strategy, while those of Osun State Polytechnic, Iree, were not. The experimental group (students of Federal Polytechnic Ede) was taught keyboarding using the class-wide model of peer-mediated learning whereby one of the students was selected by the teacher to be the tutor, while the control group (Osun State Polytechnic, Iree) was left with the conventional way of learning keyboarding. After the treatment, a post-test was administered to obtain mastery scores. The Keyboarding Skill Test, with a coefficient of 0.89, was the instrument administered at pre-test and post-test levels for data collection. The KST was employed to measure students' mastery of keyboarding skills, and it consists of four (4) practical tasks as specified in the curriculum of polytechnics in Nigeria by the National Board for Technical Education.

The instrument includes demographic data where student gender (male and female) was indicated and a keyboarding skills section which has to do with questions on speed and accuracy, business letters, memoranda, and manuscripts. The KST was measured with 70 marks assigned to the four task areas as follows: speed and accuracy 10, memo 20, manuscript 20, and business letter 20 marks, respectively. Data collected was analysed using statistical measures of mean and standard deviation to answer the research questions, and analysis of covariance to test the null hypotheses. The group with the higher mean gain score was adjudged effective and better than the other, while testing of null hypotheses was based on the computed level of significance as against the alpha level of significance of 0.05.

## RESULTS

### Answers to the Research Questions

**Research Question 1:** What is the difference between the mean mastery scores of students taught keyboarding using Peer-mediated Learning Strategy and Conventional Demonstration Method?

**Table 1: Mean mastery scores and standard deviation of students taught with peer-mediated strategy and conventional demonstration method**

Treatment Strategies	N	Pre-test		Post-test		Mean Gain	Difference
		Mean	SD	Mean	SD		
Peer-mediated Strategy	60	31.650	4.269	58.067	3.612	26.417	21.991
Conventional Demonstration Method	80	36.687	5.061	41.113	2.408	4.426	

Result in Table 1 shows pre-test mean mastery score of 31.650 and post-test mean mastery score of 58.067 for students in the experimental group one (taught keyboarding using peer-mediated strategy). The table also shows a pre-test mean mastery score of 36.687 and post-test mean mastery score of 41.113 for students in the control group (taught keyboarding using the conventional demonstration method). Comparison of the pre-test and post-test mastery score reveals mean gain score of 26.417 in the experimental group one and 4.426 in the control group with a difference of 21.991 in favour of experimental group one (students

taught keyboarding using peer-mediated strategy). Since the mean difference of 21.991 is in favour of peer-mediated strategy, it indicates that students taught keyboarding with peer-mediated strategy had a higher and better mastery of keyboarding skills than their counterparts taught with conventional demonstration method.

**Research Question 2:** What is the difference between the mean mastery scores of male and female students taught keyboarding using peer mediated learning strategy?

**Table 2: Mean mastery scores and standard deviation of male and female students taught with peer-mediated strategy**

Treatment Group	Gender	N	Pre-test		Post-test		Mean Gain	Difference
			Mean	SD	Mean	SD		
Peer-mediated Strategy	Male	25	31.480	5.237	54.400	1.756	22.920	5.995
	Female	35	31.771	3.499	60.686	1.875	28.915	

Result in Table 2 shows a pre-test mean mastery score of 31.480 and post-test mean mastery score of 54.400 for male students taught keyboarding using peer-mediated strategy. The table also reveals a pre-test mean mastery score of 31.771 and a post-test mean mastery score of 60.686 for female students in the same group taught with peer-mediated strategy. The analysis of pre-test and post-test mastery scores indicates that male students achieved a mean gain score of 22.920, while female students achieved a higher mean gain score of 28.915. This result shows a difference of 5.995, favouring female students. The findings of this study suggest that within the experimental group instructed using a peer-mediated strategy, female students exhibited a greater level of proficiency and mastery in keyboarding skills compared to their male counterparts.

### Test of Hypotheses

**Hypothesis One:** There is no significant main effect of the treatments on polytechnic students' mastery of keyboarding skills in Osun State.

**Table 3: ANCOVA result showing the effect of treatments on students' mastery of keyboarding skills**

Source	Type III Sum of Squares	Df	Mean Square	F	Sig.
Corrected Model	14394.209 <sup>a</sup>	4	1199.517	220.274	.000
Intercept	6725.732	1	6725.732	1235.082	.000
Pretest	1.137	1	1.137	.209	.648
<b>Treatment</b>	<b>9500.918</b>	<b>1</b>	<b>4750.459</b>	<b>872.352</b>	<b>.000</b>
Gender	565.777	1	565.777	103.897	.000
Treatment * Gender	544.474	1	272.237	49.992	.000
Error	996.541	135	5.446		
Total	525901.000	140			
Corrected Total	15390.750	139			

The result of analysis in Table 3 shows a computed F-value of 872.352 and p-value of 0.00 ( $p < 0.05$ ) for treatment groups. Since the p-value (computed significance value) is less than the 0.05 alpha level of significance ( $p < 0.05$ ), the null hypothesis is hereby rejected. The result indicates that there is a significant main effect of the treatments on students' mastery of keyboarding skills in Polytechnics in Osun State which indicate the potency of improving students' mastery of keyboarding skills across groups.

**Hypothesis Two:** There is no significant effect of gender on polytechnic students' mastery of keyboarding in Osun State.

**Table 4: ANCOVA result showing the effect of gender on students' mastery of keyboarding skills**

Source	Type III Sum of Squares	Df	Mean Square	F	Sig.
Corrected Model	14394.209 <sup>a</sup>	4	1199.517	220.274	.000
Intercept	6725.732	1	6725.732	1235.082	.000
Pretest	1.137	1	1.137	.209	.648
Treatment	9500.918	1	4750.459	872.352	.000
<b>Gender</b>	<b>565.777</b>	<b>1</b>	<b>565.777</b>	<b>103.897</b>	<b>.000</b>
Treatment * Gender	544.474	1	272.237	49.992	.000
Error	996.541	135	5.446		
Total	525901.000	140			
Corrected Total	15390.750	139			

The result of analysis in Table 4 reveals a computed F-value of 103.897 and p-value of 0.404 ( $p < 0.05$ ) for the effect of Gender. Since the p-value (computed significance value) is greater than the 0.05 Alpha level of significance ( $p > 0.05$ ), the null hypothesis is of no significant effect of gender on student's mastery of keyboarding skills is hereby rejected. The result indicates that there is a significant effect of gender on polytechnic students' mastery of keyboarding skills in Osun State.

**Hypothesis Three:** There is no significant interaction effect of treatment and academic self-efficacy on polytechnic students' mastery of keyboarding skills in Osun State.

**Table 5: ANCOVA result showing the interaction effect of treatment and gender on students' mastery of keyboarding skills**

Source	Type III Sum of Squares	Df	Mean Square	F	Sig.
Corrected Model	14394.209 <sup>a</sup>	4	1199.517	220.274	.000
Intercept	6725.732	1	6725.732	1235.082	.000
Pretest	1.137	1	1.137	.209	.648
Treatment	9500.918	1	4750.459	872.352	.000
Gender	565.777	1	565.777	103.897	.000
<b>Treatment * Gender</b>	<b>544.474</b>	<b>1</b>	<b>272.237</b>	<b>49.992</b>	<b>.000</b>
Error	996.541	135	5.446		
Total	525901.000	140			
Corrected Total	15390.750	139			



The result of analysis in Table 5 reveals a computed F-value of 49.992 and p-value of 0.00 for the interaction effect of treatments and gender. Since the p-value (computed significance value) is less than the alpha level of significance of 0.05 ( $p < 0.05$ ), the null hypothesis of no significant interaction effect of treatment and gender on student's mastery of keyboarding skills is hereby rejected. The result indicates that there is a significant interaction effect of treatments and gender on polytechnic students' mastery of keyboarding skills in Osun States.

## **DISCUSSION OF FINDINGS**

Research question one, as shown in Table 1, found that the peer-mediated strategy is better than the conventional demonstration method in enhancing students' mastery of keyboarding skills in Polytechnics in Osun State, South-west Nigeria. This high mastery of keyboarding skills in the experimental group is connected to the fact that students have the opportunity to interact, share ideas, and have the liberty to shape their own learning in class-wide peer mediation. Furthermore, peer-mediated learning, according to Marcus (2017), increases literacy scores, develops reasoning and critical thinking, improves students' confidence and interpersonal skills, and allows for student interaction, which may result in favourable learning outcomes. This result aligns with the findings of Olulowo et al. (2020) as well as Ohadugha et al. (2020), which indicate that the peer-tutoring instructional strategy is more effective in enhancing students' academic achievement compared to the traditional demonstration approach. Similarly, Osei-Himah et al. (2022) also report that using peer tutoring is one of the better ways to learn and enhance students' performance in school subjects than the traditional method.

Research question two, as shown in Table 2, found that in the experimental group instructed using the peer-mediated strategy, female students exhibited a greater level of proficiency and mastery in keyboarding skills compared to their male counterparts. This result could be connected to the fact that Office Technology and Management is a female-dominated field, and male students who find themselves in this field see themselves in the wrong career path, thereby lacking motivation to achieve greater heights in the mastery of keyboarding. This result aligns with the report of Nyam (2012), which indicates that female students exhibited a higher level of performance in terms of typewriting speed compared to their male counterparts. Also, Ogundola (2017) reported that females outperform males in science and practical courses. In contrast, AbdulRaheem et al. (2017) found that the performance of both male and female students improved when they were exposed to the subject of Economics. Similarly, Ndirika and Ubani (2017) and Francis (2019) reported that there is no statistically significant disparity in academic performance between males and females.

Hypothesis one, as revealed in Table 3, was rejected, which indicated that there is a significant main effect of the treatment on students' mastery of keyboarding skills in Polytechnics in Osun and Ondo States. This high mastery of keyboarding skills in the experimental groups is connected to the fact that students have the opportunity to interact, share ideas, and have the liberty to shape their own learning in class-wide peer-mediated and computer-assisted learning environments. Furthermore, peer-mediated learning, according to Marcus (2017), increases literacy scores, develops reasoning and critical thinking, improves students' confidence and interpersonal skills, and creates room for student interaction, which may result in favourable learning outcomes. In contrast, the study conducted by Suleman et al. (2017) asserts that students who engage with computer software for educational purposes exhibit higher levels of confidence and efficacy, thereby demonstrating greater motivation to learn compared to their counterparts in traditional learning environments.

The peer-mediated learning strategy may have recorded higher mastery scores than computer-assisted instruction (Mavis Beacon) because it allows for active student participation and human interaction during the learning process, as students take control of their learning by learning from a more knowledgeable peer. Students are also able to seek clarification on critical issues during the learning process, unlike in the computer-assisted instruction environment, where students only interact with non-human objects. This assertion is consistent with the findings of Adamu et al. (2019), who discovered a substantial impact of computer software instruction on keyboarding achievement in Colleges of Education in the North East region of Nigeria. Similarly, the study conducted by Adolphus and Omeodu (2020) revealed that students who received instruction in Physics through computer-assisted instruction (CAI) exhibited superior academic performance compared to their counterparts taught using the traditional lecture method. According to the study conducted by Olafare et al. (2021), it was determined that computer-programmed instruction has a noteworthy impact on the development of keyboarding skills among students enrolled in Colleges of Education. Conversely, the outcome of this study is at variance with the findings of Oyekan (2009), which indicate that the introduction of programmed instruction to learners does not make any significant difference in their pre- and post-interaction performances. However, it is worth noting that this finding aligns with the research conducted by Olulowo et al. (2020) and Ohadugha et al. (2020), which also found that the peer tutoring instructional strategy is more effective than the conventional lecture method in enhancing students' academic achievement in Financial Accounting concepts. Similarly, Osei-Himah et al. (2022) also report that using peer tutoring is one of the better ways to learn and enhance students' performance in school subjects compared to the traditional method. Conversely, Ernest (2015) found no significant difference between computer-aided instruction (CAI) and the conventional lecture method.

Hypothesis two, as shown in Table 4, was rejected, which indicates that there is a significant effect of gender on polytechnic students' mastery of keyboarding skills in Osun State. Previous descriptive measures have shown that this significant difference favours female students across treatment groups. The results of the study indicate that female students exhibited superior performance in the mastery of keyboarding skills compared to their male counterparts, particularly when peer mediation is employed. This result implies that the use of a peer-mediated strategy has gender-based implications because it boosts the skill mastery of female students more than male students in keyboarding classes. This result might be due to the societal belief that Office Technology and Management is a female career, and this may affect the self-concept and trigger positive learning behaviour among female students towards performing well in the keyboarding aspect of OTM. This finding aligns with the report by Ogundola (2017), which suggests that gender has a significant impact on students' achievements in Technical Drawing, particularly favouring girls when a peer-mediated strategy is implemented. Similarly, Nyam (2012) documented that female students exhibited marginally superior performance in terms of typewriting speed when compared to their male counterparts. Furthermore, Sani (2011) found that gender played a crucial role in the academic performance of students in the field of Chemistry when exposed to Computer Assisted Concept Mapping (CACM) and Digital Video Instruction (DVI) strategies. In contrast, the present discovery contradicts the findings of Ndirika and Ubani (2017), who reported that there was no statistically significant disparity in the average improvement observed among male and female students who were instructed using treatment strategies. AbdulRaheem et al. (2017) conducted a study in which they found that gender does not have a moderating effect on students' performance in the field of Economics.

Hypothesis three, as indicated in Table 5, was rejected, which revealed that there is a significant interaction effect of treatments and gender on polytechnic students' mastery of

keyboarding skills in Osun States. It was also revealed that female students performed better than males across all the treatment groups, with those in the experimental groups performing better than those in the control group. This result may not be far from the societal perception that Office Technology and Management (formerly Secretarial Education) is a female-dominated career, and male students in this field are often affected by this perception. This finding aligns with the results reported by Bolarinwa (2017), which indicate a notable interaction between treatment and gender in relation to the academic performance of Business Education students during their practicum. Furthermore, a study conducted by Francis (2019) revealed the presence of an interaction effect between the treatment strategy and gender. In contrast to the report by Ogundola (2017), this finding demonstrates a significant interaction between treatments (specifically, peer tutoring) and gender in relation to the academic achievement of Senior Secondary School students in Technical Drawing. According to the study conducted by Ezech (2009), there was no statistically significant difference observed in the mean achievement between males and females following the treatment. This finding suggests that the effectiveness of peer-mediated and computer-assisted instruction strategies is influenced by gender, leading to the observed interaction effect. Khamar Tazilah et al. (2024) recommended that higher education institutions enhance further the constructive and effective methods of learning in order to motivate learning centrism among all undergraduates including Business Education students.

## **CONCLUSION**

It was concluded from the findings that peer-mediated instructional strategy has a significant effect on polytechnic students' mastery of keyboarding skills, which reflects its superiority in enhancing students' mastery of keyboarding skills compared to the conventional method. This is because students have the opportunity to interact, share ideas, and have the liberty to shape their own learning. The use of peer-mediated strategy for keyboarding instruction is sensitive to gender because it favoured female students, which makes its effect statistically significant. Based on the findings of the study, several recommendations have been proposed to enhance the teaching and learning of keyboarding in Office Technology and Management (OTM) programmes. Firstly, OTM lecturers are encouraged to adopt the peer-mediated instructional strategy in their keyboarding instruction. This approach has been shown to significantly improve students' mastery of keyboarding skills by promoting collaboration, active learning, and peer support. Secondly, lecturers must also ensure proper monitoring of students during group work and peer tutoring sessions. Effective supervision helps maintain focus, encourages active participation, and ensures that the learning objectives are achieved.

In addition, polytechnic administrators should organise capacity-building programmes aimed at equipping lecturers with the knowledge and skills required to implement peer-mediated instructional strategies effectively. These programmes should provide clear procedures, demonstrate best practices, and highlight the educational benefits of this strategy. Furthermore, the National Board for Technical Education (NBTE), as the agency responsible for curriculum planning and development, should consider incorporating peer-mediated instructional strategies into the official polytechnic curriculum for keyboarding instruction. This would standardise the approach and ensure wider adoption across institutions. Authors writing textbooks or teaching guides on business education should also include discussions on peer-mediated instructional strategies. By doing so, they would provide valuable resources that lecturers and students can refer to in understanding and applying this innovative teaching method. Lastly, future researchers are encouraged to explore the effectiveness of peer-mediated strategies in teaching other OTM subjects, not only in polytechnics but also in

colleges of education and universities. This would broaden the evidence base and potentially lead to improved instructional practices across a wider range of courses within the OTM discipline.

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## **REFERENCES**

- AbdulRaheem, Y., Yusuf, H. T., & Odutayo, A. O. (2017). Effect of peer tutoring on students' academic performance in economics in Ilorin South, Nigeria. *Journal of Peer Learning*, 10, 95–102. <http://ro.uow.edu.au/ajpl/vol10/iss1/7>
- Abidoye, J. A. (2015). Effect of multimedia-based instructional package on secondary school students' academic achievement in Geography in Oyo State, Nigeria. *Journal of Research in National Development*, 13(1), 24–39.
- Adamu, I., Hamza, A., & Abdullahi, B. (2019). Effect of interactive computer software and QWERTY instruction on students' performance in keyboarding in colleges of education in North-East Nigeria. *Journal of Science, Technology, Mathematics and Education (JOSTMED)*, 15(1), 199–209.
- Adeola, K. L., & Olafare, E. A. (2010). Effect of peer-tutoring assisted instruction on students' speed and accuracy achievement in typewriting. *Journal of Nigerian Social Science Education Review (NSSER)*, 3(1), 63–70.
- Adolphus, T., & Omeodu, M. (2020). Effects of computer-assisted instruction on students' achievement in atomic and nuclear physics in senior secondary schools in Rivers State. *GSC Advanced Research and Reviews*, 2(3), 1–8.
- Akhigbe, O. J. (2015). *Effects of computer-assisted programmed instruction and demonstration method on achievement of National Diploma students in keyboarding in South-South Nigeria* (Unpublished doctoral dissertation). Ekiti State University, Ado-Ekiti.
- Allu, S. (2014). *Effect of demonstration technique on achievement of students in keyboarding in polytechnic in Nasarawa State* (Unpublished master's thesis). University of Nigeria, Nsukka.
- Annis, L. F. (2013). The processes and effects of peer tutoring. *Human Learning*, 10(1), 39–47.
- Bolarinwa, K. O. (2017). *Effect of Facebook usage on students' academic achievement and retention in business education practicum in college of education in South-West, Nigeria* (Unpublished doctoral dissertation). Nnamdi Azikiwe University, Awka.
- Cole, M. W. (2012). *Effectiveness of peer-mediated learning for English language learners: A meta-analysis* (Unpublished doctoral dissertation). Vanderbilt University.

- Ernest, T. (2015). *The impact of computer-aided instruction on student achievement* (Doctoral dissertation). Gardner-Webb University. [https://digitalcommons.gardner-webb.edu/education\\_etd](https://digitalcommons.gardner-webb.edu/education_etd)
- Ezeh, S. I. S. (2009). *Effect of using computer as tutor and tool on students' achievement and retention in quadratic equation in Enugu State, Nigeria* (Unpublished doctoral dissertation). University of Nigeria, Nsukka.
- Ezenwosu, S. U., & Nworgu, L. N. (2013). Efficacy of peer tutoring and gender on students' achievement in biology. *International Journal of Scientific & Engineering Research*, 4(12), 12–26.
- Francis, U. U. (2019). *Effect of blended learning on office technology and management students' academic achievement and interest in colleges of education in South-West, Nigeria* (Unpublished doctoral dissertation). Nnamdi Azikiwe University, Awka.
- Honicke, T., & Broadbent, J. (2016). The influence of academic self-efficacy on academic performance: A systematic review. *Educational Research Review*, 17(2), 63–84.
- Igweh, A. U. (2012). *Combined effect of computer tutorial and drill on senior secondary school students' achievement, interest, and retention in basic electronics in Lagos State* (Unpublished doctoral dissertation). University of Nigeria, Nsukka.
- Jimoh, A. G., Abanyam, F. E., & Uloko, C. I. (2021). Effect of One-Minute-Paper cooperative learning strategy on junior secondary school (JSS2) students' academic achievement in Business Studies in Ogun State, Nigeria. *International Business Education Journal*, 14(1), 49–64. <https://doi.org/10.37134/ibej.vol14.1.4.2021>
- Julius, J. K. (2018). *Influence of computer-aided instruction on students' achievement, self-efficacy and collaborative skills in chemistry in secondary schools of Tharaka-Nithi County, Kenya* (Doctoral dissertation). Kenyatta University. <http://ir-library.ku.ac.ke>
- Khamar Tazilah, M. D. A., Md Lazim, C. S. L., & Ismail, N. D. (2024). The moderating role of motivation on hybrid learning towards accounting undergraduates' resilience in Perak: Post COVID-19 scenario. *International Business Education Journal*, 17(1), 12–25. <https://doi.org/10.37134/ibej.Vol17.1.2.2024>
- Kurumeh, M. S. C. (2004). *Effects of ethnomathematics approach on students' achievement and interest in geometry and mensuration* (Unpublished doctoral dissertation). University of Nigeria, Nsukka.
- Marcus, G. (2017). Easy peer teaching strategies to help students. *Prodigy*. <https://www.prodigygame.com>
- National Board for Technical Education. (2012). *Minimum standards for ordinary higher diploma* (3rd ed.). Abuja, Nigeria: NBTE.
- Ndirika, M. C., & Ubani, C. C. (2017). Peer tutoring teaching strategy and academic achievement of secondary school biology students in Umuahia Education Zone, Nigeria. *IOSR Journal of Research & Method in Education*, 7(3), 72–78.
- Nnaji, F. O., & Odesanya, T. A. (2019). Problems encountered by students during teaching and learning of keyboarding skills in tertiary institutions in Taraba State. *Bakundi Journal of Technology, Agriculture and Entrepreneurship*, 1(1), 1–11.
- Nwosu, A. A. (2011). Trends in the development of science, technology and mathematics education in Nigeria since independence and the vision 20-2020. *Journal of School of Science, Kogi State College of Education Ankpa*, 1–15.

- Nyam, Y. Y. (2012). *Comparative study of touch and sight methods of teaching keyboarding skills to business education students in colleges of education in Kaduna and Kano States* (Unpublished master's thesis). Ahmadu Bello University, Zaria, Nigeria.
- Odusanya, O. O. (2008). Workshop organisation, safety and gender equality in TVE at secondary education level. Paper presented at the Seminar/Workshop of Nigerian Association of Teachers of Technology (NATT), Federal College of Education (Technical), Akoka, Lagos, April 21–24.
- Ogundola, P. I. (2017). Effects of peer tutoring strategy on academic achievement of senior secondary school students in technical drawing in Nigeria. *British Journal of Education, Society & Behavioural Science*, 19(1), 1–10.
- Okoye, A. A. (2013). Effect of peer tutoring method on students' academic achievement in home economics. *Academic Journal of Interdisciplinary Studies*, 2(5), 1–16.
- Olafare, E. A., Kehinde, T. M., & Ajayi, B. J. (2021). Effect of computer-programmed instruction on students' speed and accuracy achievement in keyboarding. *Gombe Technical Education Journal*, 13(2), 21–26.
- Olafare, E. A. (2024). *Effects of peer-mediated and computer-assisted instructional strategies on students' mastery of keyboarding skills in polytechnics in Osun and Ondo States, Nigeria* (Unpublished doctoral dissertation). Olabisi Onabanjo University, Ago-Iwoye, Nigeria.
- Olulowo, T. G., Ige, O. A., & Ugwoke, O. E. (2020). Using peer tutoring to improve students' academic achievement in financial accounting concepts. *Educational Research International*, 6(2), 12–32.
- Osei-Himah, V., Parker, J., & Naah, A. M. (2022). Effects of peer tutoring on pre-service teachers' physics performance in colleges of education, Ghana. *European Journal of Education and Pedagogy*, 3(2), 45–63.
- Oyekan, T. A. (2009). Effect of non-programmed and programmed instructions on the performance of students in typewriting. *Journal for the Promotion/Advancement of Office Management*, 4, 207–221.
- Sani, I. D. (2011). *Effects of computer-assisted concept mapping and digital video instruction on students' achievement in chemistry* (Unpublished doctoral dissertation). University of Nigeria, Nsukka.
- 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>
- Suleman, Q., Hussain, I., Naseer, M. U. D., & Iqbal, K. (2017). Effects of computer-assisted instruction (CAI) on students' academic achievement in physics at secondary level. *Computer Engineering and Intelligent Systems*, 8(7), 9–17.
- Topping, K. (2005). Trends in peer learning. *Educational Psychology*, 25(6), 631–645.
- Virginia Department of Education. (2012). *Keyboarding methodology instructional guide for teachers and administrators*. CTE Resource Center.
- Vygotsky, L. S. (1978). *Mind in society: The development of higher psychological processes*. Harvard University Press.

Whitman, N. A. (2012). *Peer teaching: To teach is to learn twice*. ERIC Clearinghouse on Higher Education.