Video-based flipped classroom technique for word processing: Effects on gender performance of business education students in universities

American Journal of Education and Learning
Vol. 10, No. 2, 35-45, 2025
e-ISSN:2518-6647

Augustina Chinweoke Anyigor-Ogah

Department of Business Education, Faculty of Education, Ebonyi State University, Abakaliki, PMB 53. Ebonyi State, Nigeria.
Email: austking4real@yahoo.com

ABSTRACT

The study's purpose is to determine the effect of video-based flipped classroom techniques on the mean performance of male and female students taught Word Processing using the flipped classroom technique. A quasi-experimental design was used. The design involved a pre-test and post-test non-equivalent control group design. The population for the study consisted of 87 fourth-year undergraduate students from the business education department across seven public universities offering Word Processing in the Southeast. The sample size was 33 students (12 males and 21 females) selected using purposive sampling techniques. Results revealed that both male and female students showed below-average performance in the pretest but demonstrated a significant difference in the actual mean in the post-test. Both groups displayed significant improvement in Word Processing. Additionally, the results indicated no significant difference between the mean achievement scores of male and female students taught Word Processing using the video-based flipped classroom technique. It was concluded that the video-based flipped classroom technique did not appear to have a differential effect on male and female students' achievement in Word Processing. The practical implication is that Word Processing lecturers should embrace the flipped classroom technique due to its advantages in increasing students' achievement in Word Processing, regardless of gender.

Keywords: *Achievement, Business education, Flipped classroom technique, Gender, Performance, Word processing.*

DOI: 10.55284/ajel.v10i2.1488
Citation | Anyigor-Ogah , A. C. (2025). An examination of factors related to self-compassion and academic resilience among Taiwanese university students. *American Journal of Education and Learning, 10*(2), 35–45.

Funding: This study received no specific financial support.
Institutional Review Board Statement: The Ethical Committee of the Ebonyi State University, Nigeria has granted approval for this study on 26 February 2024 (Ref. No. EBSU/EDU/BUS/2024/2602).
Transparency: The author confirms that the manuscript is an honest, accurate, and transparent account of the study; that no vital features of the study have been omitted; and that any discrepancies from the study as planned have been explained. This study followed all ethical practices during writing.
Competing Interests: The author declares that there are no conflicts of interests regarding the publication of this paper.
History: Received: 22 March 2025/ Revised: 30 April 2025/ Accepted: 12 June 2025/ Published: 21 July 2025
Publisher: Online Science Publishing

Highlights of this paper

- The study aimed to determine the effect of the video-based flipped classroom technique on the mean performance of male and female students taught Word Processing using the flipped classroom method.
- Both male and female groups showed below-average performance in the pretest in Word Processing.
- The male and female students in the groups performed above average on the post-test. This indicates that there was a significant improvement in both groups.
- There was a significant improvement from the pretest to the post-test performance for both male and female groups. Both groups demonstrated significant gains in Word Processing skills. The results in both groups, using the flipped classroom technique, were effective in improving students' performance in Word Processing.
- There is no significant difference in the mean gains of male and female students taught Word processing using the flipped classroom technique, although there was a higher improvement in female.

1. INTRODUCTION

Word Processing, which is a course in the business education discipline, is one of the courses taught to learners. Business education, a parent of Word Processing, is concerned with the acquisition of pedagogical and professional competencies in industry and education necessary for personal use; for entry into the business world as an employer, employee, or self–employed, and for effective participation in the educational industry as professional business education teachers (Ubulom & Dambo, 2016). Therefore, business education simply refers to the intellectual as well as vocational instructions offered to learners for personal survival and contribution to overall national development. Business education, with word processing as a subset course, is one of the vocational courses offered in universities. Word processing is a mandatory course offered in the business education programme for Office Technology and Management (OTM)/Secretarial Education.

Word processing is the automation of document production, which involves the manipulation of characters, words, sentences, and paragraphs to produce office communication in the form of letters, memoranda, messages, documents, reports, proposals, manuals, mailing labels, and newsletters (Amah, 2018; Ellis, 2020; Jacobs & Botma, 2019). Word processing is a software package that helps to edit, print, and save documents for future retrieval and reference. Microsoft Office Word is the most commonly used word processor. A word processor allows the user to organize and present text on a page or several pages. Agomuo in Egbunefu, Amadi, and Nwobike (2018) noted that a business education student requires Word Processing skills to be able to utilize Microsoft Word features effectively for the production of reports, memos, and every other written-word document. Word processing knowledge is important as it constitutes the basic skills that will usher students into the effective use of other software applications.

Although Word Processing is considered as one of the graduation requirements for students of Business Education (Office Technology and Management (OTM) option /Secretarial education option according to the Nigerian University Commission benchmark for the business education programme, yet observation shows that students' performance in Word Processing in South East Universities seems not to be satisfactory. Anyigor-Ogah (2022) discovered from some Universities (UNN, ESUT, EBSU, and AE-FUNAI) that between the 2016/2017 – 2018/2019 academic session, 601 students of the four (4) institutions above took the Word Processing examination. However, out of the 601 students, only 9.65% of them made an A grade, 16.14% had a B grade, 22.46% a C grade, 28.79% and 22.96% made D and F grades respectively.

A careful analysis of the student's achievement from the observation above showed that the majority of students had D – F (51.78%). This is not impressive, as such results are clear proof of students' poor learning achievement. This unimpressive achievement may be attributed to many factors, including the instructional method (Anyigor-Ogah, 2022). The enthusiasm displayed by learners and lecturers because of the productive instructional method will lead to better achievement in the course. To achieve this, Nigerian universities and word processing lecturers should redesign learning in such a way that students' learning experiences can go beyond conventional methods. The

conventional method focuses on remote learning and memorization. Stanford in Ugwoke, Edeh, and Ezemma (2018) opined that the conventional method commonly used by lecturers in teaching and learning impairs students' interest in learning and leads to frustration, learning difficulties, and in extreme cases, causes students to dodge lectures.. According to Atueyi (2020), academic institutions are challenged to meet the demand of 21st-century students with learning environments that are well student-centered, self-directed, technology-enhanced, and flexible.

One of the teaching methods in the education field that can meet the demand of 21st century is the flipped classroom technique. Flipped classroom involves a lecturer posting lecture courseware (text-based, audio, audiovisual, etc.) on the Learning Management System (LMS) and giving the students the opportunity to download, watch supplemental videos, and attempt assignments outside the class setting (Ugwoke et al. (2018) in Anyigor-Ogah and Okoli, 2022). The flipped classroom technique encompasses any use of technology to leverage learning in the classroom so that a teacher can spend more time interacting with the students instead of lecturing. This is most commonly done by using teacher-created videos that students view outside class time. It is called the flipped classroom technique because the whole classroom/homework is "flipped". In its simplest terms, what used to be classwork (lecture) is done at home via teacher-created videos, and what used to be homework (assigned problems) is now done in class.

Wai, Choi, and Tang (2019) highlighted that a typical flipped classroom technique provides students with first exposure to the topic before class (through listening to pre-recorded instructions or lectures or completing prescribed reading) so that students are prepared to participate during class time in more interactive and higher-order activities. This type of teaching is commonly thought of as a reversed teaching model, which is also referred to as invented classroom techniques or classroom flip, where technology or resources are used to leverage and improve learning (Putri, Rusdiana, & Rochintaniawata, 2019). The result is that an instructor can spend more time interacting with students to apply the concepts and knowledge instead of lecturing.

The adoption of flipped classroom techniques in the teaching and learning of Word Processing is not restricted to any particular gender. Lee in Igboke and Anyigor-Ogah (2021) noted that gender is an attributed quality that differentiates males from females. Every individual, irrespective of class or gender, requires knowledge of word processing to meet day-to-day activities. This means that both males and females require word processing skills for proficiency in the production of organized documents. To this end, Atueyi (2020) advocated that both male and female students should be given equal opportunities in education.

Several researchers have studied the effect of the flipped classroom technique on achievement and gender. Nikitova, Kutova, Shvets, Pasichnyk, and Matsko (2020) found that male and female students' educational gains from learning Ukrainian through the application of a multimedia textbook-based flipped classroom learning model are apparent. Elian and Hamaidi (2018) deduced that there are no statistically significant differences in the means on the academic achievement test attributed to gender. Colomo-Magaña, Soto-Varela, Ruiz-Palmero, and Gómez-García (2020) found that a significant difference was perceived regarding the usefulness of the flipped classroom for the promotion of autonomous learning in both males and females, although women had a superior valuation. Ogbonna, Ibezim, and Obi (2019) found that both synchronous and asynchronous e-learning significantly increased students' achievement and skill acquisition in word processing, irrespective of the gender of the students. Again, Ugwoke et al. (2018) revealed that the academic achievement of male and female students using flipped classroom models on LMS was higher than their counterparts in the control group. Marlowe (2012) found that semester grades showed improvement with the flipped classroom strategy. Odewumi and Yusulf (2018) found that male and female students taught using a flipped classroom performed significantly. Turan and Goktas (2016) found that male and female students taught with the flipped classroom model reported higher learning achievement. Charles-Ogan and Willains

(2015) found that there was a significant difference between the mean achievement gains of male and female students in mathematics education via the flipped classroom approach. Ihekoronye, Odwn, and Ayotola (2015) found that there was no significant mean effect of gender on students' academic achievement in physics. Nabizadeh, Hajian, Sheikhan, and Rafiei (2019) found that the structure of learning strategies, motivational strategies, outcome expectations, and students' GPA did not show a significant statistical difference in terms of gender.

On the contrary, Makinde and Yusuf (2017) found that there was a significant difference. Saunders (2014) found that the flipped classroom curriculum was not a significant factor in increasing male and female students' academic achievement. Therefore, having reviewed previous studies, none of them addressed flipped classroom techniques for Word Processing. Thus, this is the gap the study aims to fill.

In this paper, an investigation of the Video-based flipped classroom technique for Word Processing and its effects on the performance of business education students in universities was presented. The aim was to find out the effect of video-based flipped classroom techniques on the performance of male and female business education students in Word Processing in universities. The specific objectives were outlined, namely: to assess the performance level of students, the mean improvement of students, and the comparison between the male and female groups in terms of their main gains in Word Processing. Also, null hypotheses were articulated to evaluate the significant differences in the opinions of the respondents. The findings of the study will find application in education planning, as well as in the teaching and learning management sector, towards the achievement of flipped lectures.

2. METHODOLOGY

2.1. Design of the Study

The design used for the study was a quasi-experimental research design. The design employed a pre-test and post-test non-equivalent control group design. There was no randomization of the research subjects; instead, intact classes were randomly assigned to groups.

2.2. Participants

The study was conducted in South East Nigeria, located at 5º45' 00" N and 8º 30' 00" E. Geographically, South East Nigeria is situated on the eastern part of the River Niger and is predominantly inhabited by the Igbo ethnic group. The major occupations of these people include crop farming, livestock raising, fishing, and petty trading. South East comprises five (5) states with 95 area councils: Abia (17), Anambra (21), Ebonyi (13), Enugu (17), and Imo (27). The choice of South East Nigeria for this study is significant because it is among the most educationally advantaged geopolitical zones/regions in Nigeria, owing to its educational achievements and the number of educational institutions in the area. The zone has numerous public and private universities offering Business Education programs. The population for the study consisted of 87 final-year undergraduate students from the Business Education departments of seven public universities that offer Word Processing as a course in South East Nigeria. Participants were selected from the registers of the 2022/2023 academic session of these universities. The focus was on final-year students because universities do not have a uniform curriculum; some institutions offer Word Processing in the first year, while others offer it in the second, third, or fourth year. According to the Nigerian University Commission (NUC) benchmarks, by the final year, all students should have been adequately exposed to Word Processing, regardless of their year, as it is a graduate requirement for all Business Education students in the Office Technology and Management (OTM) option.

The sample size was 33 students. Four public universities (two federal and two state-owned) were selected for the study through purposive sampling techniques. They are: Federal University Ndufu Alike Ikwo (FUNAI),

University of Nigeria Nsukka (UNN), Enugu State University of Science and Technology (ESUT), and Ebonyi State University (EBSU). The criteria for selection were based on universities that initially attended to the researcher during information seeking regarding Word Processing result summaries for the last three years. Additionally, the four universities were selected because they have technologies that support a flipped instructional model and other ICT resources such as e-learning tools, computer laboratories, Wi-Fi, standby generator plants, interactive whiteboards, overhead projectors, as well as accredited lecturers/technologists required for this study.

The selected schools were further subjected to simple random sampling techniques to assign them into two groups of two universities each. Out of the two groups, one was assigned to the treatment group, and the other to the control group. However, the classes in each group remained intact. Therefore, intact classes from the various institutions were used.

2.3. Instrument for Data Collection

Word Processing Achievement Test (WPAT) was the instrument developed by the researchers for the study. Word Processing Achievement Test (WPAT) Section 'A' contains the personal data of the respondents, whereas section 'B' contains twenty-five (25) multiple-choice questions covering Word Basics (getting started with Word, saving, and printing), Working with Text (text basics, formatting text), Word Layout, Collaborating and Reviewing (track changes and comments), and Working with Objects (tables). Questions were drawn from the topics to cover every aspect, bearing in mind the volume of information contained in each topic. The tests were scored so that students received 1 point if the answer was correct and zero if the answer was incorrect. The test was given to all students on the first day of lectures (pre-test) and then again on the last day of lectures (post-test). The instrument (WPAT) was validated. WPAT was face validated by two lecturers in Business Education and one lecturer from Science Education Departments of Ebonyi State University, Abakaliki. The face validation of WPAT aimed at scrutinizing the items in terms of relevance, test format, suitability, and clarity. The validators made necessary observations and corrections that made the instrument serve the expected purpose. The researcher was advised not to have two different instruments for achievement tests; instead, the instrument should consist of only multiple-choice items or a combination of multiple-choice questions with theory, designed in sections (A, B, C), whichever case may be. There was a 'Test Blue Print' to guide the appropriate allocation of items. WPAT was further validated by a specialist after a trial test was administered to 30 students to ensure that the instrument measured what it was designed to measure appropriately. Item analysis was conducted on WPAT, and all 25 items were accepted. The reliability of the instrument was established using Kuder-Richardson Estimates (K-R20) for WPAT, and an overall reliability coefficient of 0.97 was obtained.

Data was collected for the study using the Word Processing Achievement Test (WPAT). At the beginning of the experiment, a pre-test was administered to the students, and at the end of the experiment, a post-test was administered to the same students using the same instrument (WPAT), which lasted for 5 weeks. The one-sample t-test was used to determine the pretest and posttest performance of the male and female groups. The paired sample t-test was used to determine the main gains from the pretest and posttest performance of both groups, and the independent sample t-test was used to determine the difference in the mean gain between the male and female groups.

2.4. Experimental Procedure

Both male and female flipped sections used the same instructional videos. For each topic in the course, the researcher created online videos (vodcasts) for the course. This resulted in 7 video lessons with an average runtime of 20 minutes. The shortest lesson was 15 minutes, and the longest was under 40 minutes. They were created using

Electa screen capture software, a webcam, and a USB microphone. Additionally, the image was captured using Tecno CX Camon, and audio was captured with a USB microphone. For the effective outcome of the flipped classroom technique, the researcher developed a Telegram platform for the flipped classroom, where videos and courseware were uploaded for students in the treatment groups. During lecture time, students demonstrated the assigned skills/topics with their instructor and coursemates. Before implementing the flipped classroom technique, the researcher ensured that each student participant had access to the necessary digital media to incorporate flipped instruction. The researcher confirmed flipped lesson availability by inquiring from the flipped curriculum lecturers if a media center was in place: each flipped lesson was accessible to students in the media center, and the technologist showed them how to retrieve each lesson. After inquiring about the availability of Internet connection at home with the students, the flipped lecturer assured the researcher that every student had access to the flipped materials after school, as each student had Internet access at home and a device capable of viewing the flipped instruction. As an additional measure of fidelity, the researcher verified that students in the flipped classroom had access to the materials by frequently visiting the treatment lecture room and witnessing engaging demonstrations among participating students and the flipped instructional model lecturer regarding the flipped classroom technique.

To ensure that the study progressed appropriately, the researcher visited the lecture rooms of the lecturers involved in the study while the instruction was taking place. The visits were the means the researcher employed to ensure that the flipped classroom technique was being implemented correctly. Although the researcher visited participating classrooms during the study, she did not verbally engage in classroom discussions, intervene with instructional strategies, or render pedagogical advice, comments, or suggestions to students or lecturers during the treatment phase of the research study.

2.5. Method of Data Collection

At the beginning of the experiment, students in both groups were given a pre-test, and at the end of the experiment, which lasted five weeks, a post-test was administered. The results of the pre-test and post-test provided data that the researcher used to answer the research questions as well as to test hypotheses.

2.6. Data Analysis Techniques

Mean and standard deviation were used to analyze WPAT on the performance level of students, the mean improvement of students, and the comparison between male and female groups in terms of their main gains in Word Processing using SPSS version 16. A one-way t-test was used to test the null hypotheses on WPAT at a 0.05 level of significance regarding the performance level of students, the mean improvement of students, and the comparison between male and female groups in terms of their main gains in Word Processing using SPSS version 16 as well.

3. RESULTS

3.1. Performance Level of the 4th Year Students in Word Processing

Table 1 shows the pretest performance of the 4th year students in Word processing.

Table 1. The pretest performance of the 4th year students in word processing.

Groups	N	H.M	A.M	χ_d	SD	DF	Cal-t	T-value at α=0.05	Qualitative description
Male	12	11.25	7.66	0.43	3.31	11	8.01*	2.20	Below average
Female	21	11.25	5.61	2.48	2.085	20	12.34*	2.08	Below average
H.M = 45% of the test items							***Significant**		

Note: **Keys:** N= Number of students; H.M= Hypothetical mean; A.M= Actual mean; χ_d= Difference between means; SD = Standard deviation, DF=Degree of freedom; t-Cal= t-Calculated value; t-Value= t-Critical value; * = Significance

From Table 1, it can be seen that the male and female groups obtained actual means of 7.66 (SD = 3.80) and 5.61 (SD = 2.48), respectively. The computed t-values of 8.01 and 12.34 are greater than the critical t-values of 2.20 and 2.08, respectively; hence, the results are significant. In both cases, H_{O1} was rejected, indicating that both groups had means lower than the hypothetical mean. Therefore, their pretest performance in Word Processing was below average. The male and female groups did not meet the standard criterion set by the Department of Business Education. The below-average performance of the two groups might imply that they have little or no knowledge of the concepts, as this was still a pretest.

Table 2. The posttest performance of the 4th year students in Word processing.

Groups	N	H.M	A.M	χ_d	SD	DF	Cal-t	T-value at α=0.05	Qualitative description
Male	12	11.25	18.25	10.25	3.018	11	20.94*	2.20	Above average
Female	21	11.25	19.28	11.19	7.57	20	11.66*	2.08	Above average
H.M = 45% of the test items							*Significant		

Note: **Keys:** N= Number of Students; H.M= Hypothetical Mean; A.M= Actual Mean; χ_d= Difference between means; SD = Standard Deviation, DF=Degree of Freedom; t-Cal= t-Calculated Value; t-Value= t-Critical Value; * = Significance.

In Table 2, it can be seen that the actual means for the male and female groups are 18.25 (SD = 3.01) and 19.28 (SD = 7.57), respectively. The computed t-values are 20.49 and 11.66 for the male and female groups, respectively. Therefore, the t-scores are greater than the critical t-values of 2.20 and 2.08, respectively, indicating significance. Consequently, H_{O1} was rejected in both cases. This suggests that the post-test performance in Word Processing was above average. The male and female groups met the standard criterion set by the Department of Business Education. The outstanding performance of both groups may have resulted from the application of the flipped classroom technique.

3.2. Mean Improvement of the 4th Year Students in Word Processing

Table 3 reveals the mean gains from pretest to posttest performance in Word Processing of the male and female groups.

Table 3. Mean gain in word processing of the 4th students.

Groups	N	X_1	X_2	X_d	SD_1	SD_2	SD_d	DF	Cal-t	t-value at α=0.05 with n-1 df
Male	12	7.66	18.25	10.59	3.01	3.31	0.31	11	17.16*	2.2
Female	21	5.61	9.28	13.67	7.57	2.08	5.49	20	13.82*	2.08

Note: **Keys:** N= Number of students; X_1= Pretest mean; X_2= Posttest mean; X_d= Difference between means; SD_1 = Pretest standard deviation, SD_2 = Posttest Standard deviation; SD_d= Diference between standard deviation; DF=Degree of freedom; t-Cal= t-Calculated value; t-value= t-Critical value; * = Significance.

Table 3 shows that the male group achieved a mean gain of 10.59 with a standard deviation of 0.31, while the female group had a mean gain of 13.67 with a standard deviation of 5.49. The computed t-values of 17.16 and 13.82 are greater than the tabulated values of 2.20 and 2.08 at α = 0.05 with 11 and 20 degrees of freedom. These differences are significant, which indicates the rejection of H_{O2}. The flipped classroom technique used by lecturers was effective in teaching Word Processing to 4th-year students. The effectiveness of the flipped classroom technique for both male and female groups might be attributed to the fact that students who watched and re-watched videos created by the researcher could have achieved mastery of the concepts, thereby enhancing learning.

3.3. Comparison between the Male and Female Groups in Terms of their Main Gains

Table 4 compares the mean gains of the male and female groups.

Table 4. Mean gain difference between male and female groups.

Groups	N	G_X	G_{SD}	X_d	SD_d	DF	t-Cal	t-value at α =0.05 with n-2 df
Male	12	10.59	0.31	3.08	5.18	31	0.097	2.04
Female	21	13.67	5.49					

Note: **Keys:** N= Number of students; G_X= Gain mean; G_{SD}= Gain standard deviation, X_d= Difference between means; SD_d=.

Difference between SD; DF= Degree of Freedom; *t-Cal= t-Calculated Value; t-Value= t-Critical Value*

As revealed in Table 4, a difference of 5.18 is obtained in favor of the female group. The computed t of 0.097 is less than the table value of 2.04 at a 5% level of significance with 31 degrees of freedom. This was not significant, and so, H_{O3} was accepted. The researcher's decision was to accept the null hypothesis and conclude that there is no significant difference in the mean gains of male and female students taught Word processing using the flipped classroom technique, though there was higher improvement in females.

4. DISCUSSION

4.1. Pretest Performance Level

Both male and female groups showed below-average performance in the pretest in Word Processing. The computed t-test of the two groups was greater than the table value, which means that both groups had means lower than the hypothetical mean. Thus, their pretest performance is low in comparison to the school's passing percentage set at 45% of the total score of the exam. The male and female groups did not reach the criterion set by the Department of Business Education. The below-performance of the two groups might imply that they have little or no knowledge of the concepts since this was still a pretest. This shows that students were not able to master Word Processing skills as expected for university students. This was supported by the work of Anyigor-Ogah and Okoli (2022), who found that Word Processing unimpressive achievement may be attributed to many factors, including the instructional method. The conventional method emphasizes remote learning and memorization. Stanford in Ugwoke et al. (2018) opined that the traditional approach used by lecturers in teaching and learning impairs students' interest in learning, leading to frustration, learning difficulties, and, in extreme cases, students avoiding lectures.

4.2. Posttest Performance Level

The male and female students in the groups performed Above Average in the posttest. This means that there is a significant improvement in both groups. The findings are consistent with those of Odewumi and Yusulf (2018) and Turan and Goktas (2016), who found that male and female students taught with the flipped classroom model reported higher learning achievement. The finding is also in line with Ugwoke et al. (2018), who found that the academic achievement of male and female students taught using a flipped classroom model on LMS does not differ. To explain this further, being a male or female student has an equal chance of doing well in Word Processing. This means that both males and females require Word Processing skills for proficiency in the production of an organized document. Sharing this view, Atueyi (2020) advocated that both male and female students should be given equal opportunities in education. In the course of this research, male and female students were shown to have demonstrated equal zeal and produced the same results in Word Processing. This could be attributed to the fact that, in flipped classroom techniques, students are given permission to download course materials posted on Telegram or emailed to them. In this way, students can undertake multiple activities when they come to class, such as expressing their thoughts and interacting with others to strengthen their understanding of the downloaded course content. Therefore, once the appropriate instructional method is effectively applied, all students, irrespective of gender, are bound to excel. Consequently, universities can directly influence an effective learning culture in undergraduate education by creating

platforms that enhance both student and faculty interactions and promote student-to-student collaborative learning, which will ultimately improve students' learning achievement irrespective of gender.

4.3. Mean Gain of the Two Groups

There was a significant improvement from the pretest to the posttest performance for both male and female groups. Both groups demonstrated significant improvement in acquiring Word Processing skills. The results in both groups using the flipped classroom technique were effective in enhancing students' performance in Word Processing. This supports the findings of the studies by Nikitova et al. (2020), Colomo-Magaña et al. (2020), and Charles-Ogan and Willains (2015), which found that the flipped classroom technique is a helpful tool in improving male and female students' achievement in academic settings (Charles-Ogan & Willains, 2015; Colomo-Magaña et al., 2020; Nikitova et al., 2020). On the contrary, Saunders (2014) and Ihekoronye et al. (2015) found that flipped classroom curriculum was not a significant factor in increasing male and female students' academic achievement.

4.4. Comparison between the Male and Female Groups

As revealed in Table 4, a difference of 5.18 was obtained in favour of the female groups. The computed t of 0.097 is less than the tabled value of 2.04 at a 5% level of significance with 31 degrees of freedom. This was not significant, and so, H_{03} was accepted. Based on that result, the null hypothesis was accepted, indicating that there is no significant difference in the mean achievement scores of male and female students using the flipped classroom technique in Word Processing. This implies that both male and female students demonstrated equal abilities to achieve higher in Word Processing using the flipped classroom technique. The finding aligns with Nabizadeh et al. (2019), who discovered that academic achievement based on learning strategies did not show a significant statistical difference in terms of gender. Similarly, the findings are consistent with Elian and Hamaidi (2018), who found that there are no statistically significant differences in the mean achievement of students taught using the flipped classroom strategy based on gender. The study demonstrated that with careful and purposeful utilization of the flipped classroom technique, gender differences are not significant in the achievement of business education students in Word Processing.

On the contrary, Makinde and Yusuf (2017) found that there was a significant difference in the mean achievement of students taught using flipped classroom instruction based on gender. To this finding, either male students or female students respond more to the flipped classroom technique. To further strengthen this argument, Ugwoke et al. (2018) affirmed that differences exist between the achievement scores of male and female students in the Element of Accounting when taught using flipped classrooms on LSM.

5. CONCLUSION

The purpose of this research was to use a flipped classroom technique as an instructional model for Word processing. It supports instructors in developing students' interest in Word Processing and helps them improve those skills. In this study, Word processing is the automation of document production, which involves the manipulation of characters, words, sentences, and paragraphs to produce office communication in the form of letters, memoranda, messages, documents, reports, proposals, manuals, mailing labels, and newsletters. Word processing is considered one of the graduation requirements for students of Business Education (Office Technology and Management (OTM) option / Secretarial Education option) according to the National Universities Commission benchmark for the business education program. Observation shows that students' performance in word processing in Southeast universities seems not to be satisfactory.

This paper presents a method to address this concern, which is the flipped classroom technique. The flipped classroom technique is an active learning strategy that can offer multiple perspectives for students with varying knowledge and skills, which can open greater opportunities to acquire Word Processing skills through constructive reasoning.

Based on the findings of the study, it was concluded that the flipped classroom technique did not appear to have a differential effect on male and female students' achievement in Word Processing. Again, there was no significant difference between the mean achievement score of male and female students taught Word Processing using the flipped classroom technique. In line with the findings and conclusions, the following actions are recommended: That regulatory bodies on education such as the National University Commission (NUC) and the National Commission for Colleges of Education (NCCE) should update their curriculum by integrating flipped classroom technique into the curriculum of Business Education which should be mandatory for business education lecturers to use in instructional delivery of Word Processing, and Word Processing lecturers' should embrace flipped classroom technique due to its advantages in increasing students' achievement in Word Processing irrespective of gender.

REFERENCES

Amah, F. N. (2018). *Information and communication technology skills required by lecturers for effective implementation of office technology and management curriculum in polytechnics in Southeast Nigeria.* Unpublished Ph.D. Thesis, Business Education Department, Ebonyi State University Abakaliki.

Anyigor-Ogah, A. C. (2022). *Effect of the flipped instructional model on business education students' interest and achievement in word processing.* Unpublished Ph.D. Thesis. Department of Business Education, Ebonyi State University, Abakaliki.

Anyigor-Ogah, A. C., & Okoli, B. E. (2022). The effect of the flipped instructional model on business education students' interest and achievement in word processing. *Asian Journal of Research in Education and Social Sciences, 4*(2), 151-161.

Atueyi, U. (2020). *Aligning 2020 education to future demands.* Retrieved from https://guardian.ng/features/education/aligning-2020-education-to-future-demands/

Charles-Ogan, G., & Willains, C. (2015). Flipped classroom versus conventional classroom in the learning of mathematics. *British Journal of Education, 3*(6), 71-77.

Colomo-Magaña, E., Soto-Varela, R., Ruiz-Palmero, J., & Gómez-García, M. (2020). University students' perception of the usefulness of the flipped classroom methodology. *Education Sciences, 10*(10), 275.

Egbunefu, C., Amadi, E., & Nwobike, A. (2018). Microsoft word application skills need of business education graduates for job performance and economic diversification in Rivers State. *International Journal of Innovative Education Research, 6*(3), 58-65.

Elian, S. A., & Hamaidi, D. A. (2018). The effect of using flipped classroom strategy on the academic achievement of fourth grade students in Jordan. *Online Journal, 13*(2), 78-89.

Ellis, C. (2020). *The best free word processor 2020: Alternatives to Microsoft Word.* Bath, United Kingdom: Future Publishing Limited.

Igboke, S. A., & Anyigor-Ogah, A. C. (2021). Technical competencies needed by secondary school teachers in Nigeria for effective instructional delivery in business subjects. *International Journal of Research in Social Sciences, 11*(3), 41-50.

Ihekoronye, C. P., Odwn, T., & Ayotola, A. (2015). *Flipped classroom: An outstanding pedagogical Innovation for teaching- learning physics in higher education in Nigeria.* Paper presented at the 3rd School of Education and Humanities International Conference on the Future of Higher Education in Africa held at Bacock University August 24-26, 2015, 1-30.

Jacobs, K., & Botma, J. (2019). *Beyond Clippy's counsel: Word processor feature underuse among the digital generation.* Paper presented at the 2019 IEEE International Conference (ProComm) Aachen, Germany 2019 144 – 153.

Makinde, S. O., & Yusuf, M. O. (2017). The flipped classroom: Its effects on students' performance and retention in secondary school mathematics. *International Journal of Innovative Technology Integration in Education, 1*(1), 117-126.

Marlowe, C. A. (2012). *The effect of the flipped classroom on students' achievement and stress.* Unpublished Master's Thesis. Montana State University, Bozeman.

Nabizadeh, S., Hajian, S., Sheikhan, Z., & Rafiei, F. (2019). Prediction of academic achievement based on learning strategies and outcome expectations among medical students. *BMC Medical Education, 19*, 1-11.

Nikitova, I., Kutova, S., Shvets, T., Pasichnyk, O., & Matsko, V. (2020). Flipped learning methodology in professional training of future language teachers. *European Journal of Educational Research, 9*(1), 19-31.

Odewumi, M. O., & Yusulf, M. O. (2018). Flipped classroom in the context of junior secondary school tie and dye in Abeokuta Metropolis, Nigeria. *Bulgarian Journal of Science and Education Policy, 12*(1), 31-47.

Ogbonna, C. G., Ibezim, N. E., & Obi, C. A. (2019). Synchronous versus asynchronous e-learning in teaching word processing: An experimental approach. *South African Journal of Education, 39*(2), 1-15. https://doi.org/10.15700/saje.V39n2a1383

Putri, M. D., Rusdiana, D., & Rochintaniawata, D. (2019). Students' conceptual understanding in modified flipped classroom approach: An experimental study in junior high school science learning. *Journal of Physics: Conference Series, 1157*(2), 022046. https://doi.org/10.1088/1742-6596/1157/2/022046

Saunders, J. M. (2014). *The flipped classroom: Its effects on student academic achievement and critical thinking skills in high school mathematics.* Doctoral Thesis, Liberty University.

Turan, Z., & Goktas, Y. (2016). The Flipped Classroom: Instructional efficency and impact of achievement and cognitive load levels. *Journal of e-learning and knowledge Society, 12*(4), 51-62.

Ubulom, W., & Dambo, B. (2016). An evaluation of the objectives of the undergraduate business education degree programmes in some Nigerian universities. *International Journal of Innovative Education Research, 4*(1), 26-35.

Ugwoke, E. O., Edeh, N. I., & Ezemma, J. C. (2018). Effect of flipped classroom on learning management systems and face-to-face learning environments on students' gender, interest and achievement in accounting. *Library Philosophy and Practice*, 0_1.

Wai, S. T., Choi, L. Y., & Tang, W. S. (2019). Effects of video-based flipped class instruction on subject reading motivation. *British Journal of Educational Technology, 50*(1), 385-398. https://doi.org/10.1111/bjet.12569