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APPLICATION OF DEMONSTRATION STRATEGY AND COMPUTER AIDED INSTRUCTION ON STUDENTS' ACQUISITION OF KEYBOARDING SKILLS: A REVIEW OF ITS EFFECTS

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Abstract

Purpose: The advent of information and communication technology has brought to the front burner the need for students and teachers alike to master the craft of keyboarding. This study investigates the effects of demonstration strategy and computer aided instruction on students' acquisition of keyboarding skills in colleges of education in South-west, Nigeria.

Methodology: Quasi experimental research was adopted for the study. Specifically, the pre-test, post-test non-equivalent control group design was used. The population consisted of 1,729 NCE one business education students in 11 public colleges of education in South-west, Nigeria. The sample size comprised 620 NCE one students out of which 582 (94%) participated fully in the study. Simple random sampling technique was adopted and intact classes were used as experimental and control groups. The instrument for data collection was Keyboarding Skill Acquisition Test (KSAT) developed by the researcher and validated by four experts. The reliability of the instrument was determined using Spearman Rank Order Correlation which yielded a coefficient of 0.80. The instrument was administered as pre-test to both experimental and control groups. The treatment was applied for six weeks after which the post-test was administered. Mean and standard deviation were used in answering the research questions while Analysis of Covariance (ANCOVA) was used to test the hypotheses at 0.05 level of significance. The results were presented in tables.

Findings: Findings revealed that teaching with computer aided instruction (mean = 53.69, SD = 9.47) had a significant higher positive effect on students' acquisition of keyboarding skills than demonstration strategy (mean = 47.87, SD = 11.04) and lecture strategy (mean = 40.78, SD = 12.56).

Unique contribution to theory, practice and policy: Teaching with demonstration strategy and computer aided instruction have salutary effect on students' acquisition of keyboarding skills but computer aided instruction is more effective in the teaching and learning of keyboarding and similar business education skills than other strategies. Therefore, business educators should always endeavour to teach keyboarding with computer aided instruction to improve students' learning outcome in tertiary institutions.

Keywords: *Demonstration-strategy, Computer-Aided-Instruction, Keyboarding-skill.*

Introduction

The world has been entirely globalized. Indeed, there is no sector that has been left out in the contemporary technology-dominated world. From political scene to the health sector, from the educational sector to the economic and commercial sector, everything has been computerized. Technology is at the very heart of most daily activities, jobs, and even inter personal connections. The use of technology across board has therefore, made computer literacy almost compulsory. This has also compelled teachers and students to acquire keyboarding skills.

One crucial thing in all of these is that students need to know how to use the keyboard to write their essays, reports and papers, whether they are submitted to the teacher online or printed out for their grade. Over the course of one school year alone, students can save hours of typing time by learning to touch-type. Without the essential keyboarding skills, many students risk falling behind in their classwork, something that will impact their performance throughout their school years and even affect their employability (Lee, 2015).

Many people who have access to personal computers always feel they have acquired keyboarding skills since they can key in data themselves using one or two fingers on one hand or some fingers on the two hands. Some parents and teachers even assume that students do not require any special training on keyboarding skills provided they have access to personal computer. On the contrary, acquiring keyboarding skills goes beyond typing with one or two fingers; it demands the acquisition of standard speed and accuracy in keyboarding.

Various researchers are of the opinion that in today's classroom, students are expected to produce handwritten and computer generated works as necessitated by demands of assignments and test, write their long essays using word processors and even partake in some computer- based test which require a level of keyboarding proficiency (Donica, Giroux and Faust, 2018; Shute and Rahimi, 2017; Poole and Preciado, 2016; Lim, Song and Lee, 2012).

In order to encourage the students to acquire necessary skills in keyboarding, teachers have to prepare them using strategies that would arouse their interest and enhance their acquisition of the skills. Teaching strategy comprises the methods, principles and techniques used for instruction. Among these strategies are demonstration and computer aided instruction (CAI) which are the focus of the present study.

The present study intends to measure the effect of Demonstration strategy and Computer Aided Instruction on the acquisition of keyboarding skills. One would therefore need to put Demonstration

strategy and Computer Aided Instruction in proper perspectives as conceived by these authors. Demonstration strategy is a 'do as I do' instructional strategy. It is a strategy whereby the teacher performs a specific task in the classroom showing students the step-by-step of how they can perform the same task themselves. Oyekan and Ayoola (2017) describe demonstration strategy as one of the effective teaching strategies in teaching skill-based-courses. It is designed to show the steps involved in an operation. In demonstration strategy, students can learn how to perform manipulative operations when they are shown how the job is done.

Further still, demonstration strategy creates interest in the learners because it involves students' participation and attention. Through demonstration strategy, students see each step and hear it explained by the teacher. In addition, it helps clear off what might otherwise be vague and even meaningless particularly for people who are not strong in mental or abstract visualization. Demonstration strategy challenges students. It makes them believe that if the teacher can do it, they too should be able to perform such activities. In the opinion of various scholars, students taught with demonstration strategy did better than those taught with conventional lecture method (Ochogba, Ogide and Ogide, 2019; Umoru and Haruna, 2018; Muhammad, Bala and Ladu, 2016; Alasoluyi, 2015; Akhigbe, 2015; Ekoro, Ofem and Sylvester, 2015; and Igweh, 2012).

Computer plays an important role in different fields of education. Computer aided instruction (CAI) is the impartation of knowledge with the instrumentality of the interest and other computer related devices, application and media (Ademiluyi and Emode, 2019). Dowdle (2016) defines CAI as an interactive instructional technique whereby a computer is used to present the instructional material and monitor the learning that takes place. It is an instruction or remediation presented on a computer. This tool improve instructional qualities and it is also used to train individuals for vocations. CAI programmes are interactive and can illustrate a concept through attractive animation, sound, and demonstration. It allows students to progress at their own pace and work individually or as a group. CAI provides immediate feedback, letting students know whether their answers are correct. If the answer is not correct, the programme shows students how to correctly answer the question. It offer a different type of activity and a change of pace from teacher-led or group instruction.

In addition, CAI improves instruction for students with disabilities because students receive immediate feedback and do not continue to practice the wrong skills. It captures the students' attention because the programmes are interactive and engage the students' spirit of competitiveness to increase their scores. It encourages the students to move at their own pace and usually do not move ahead until they have mastered one level of skill. CAI also provides differentiated lessons to challenge students who are at risk, average or gifted. From the fore going therefore, CAI may be seen as a good instructional strategy in teaching keyboarding skills.

The review of literature has shown the need to use demonstration strategy and computer aided instruction to enhance students' acquisition of appropriate keyboarding skills to prepare students for excellent outcome in keyboarding while in school and also prepare graduates with efficient and marketable skills that would make them competitive in the world of work. Hence, the significance

of demonstration strategy and computer aided instruction in improving teaching and learning of keyboarding skills has been presented as well as their models development by different experts.

Literature on theoretical framework shows that skill acquisition theory and technology acceptance model were all in support of the demonstration strategy and computer aided instruction usage in teaching and learning of keyboarding skills. Skill acquisition theory specifically encourages constant practice in acquisition of keyboarding skills as the number of repetitions is regarded as the primary parameter that affects the course of learning a skill. The theory established that learners have to pass through the three stages of learning: cognitive, interactive and automaticity before they can acquire appropriate keyboarding skills. Several studies in the review had exposed the combined effects of demonstration strategy and computer aided instruction on students' acquisition of keyboarding skills compared to the conventional lecture strategy.

Moreover, Technology acceptance model established the fact that both the teachers and learners must show the willingness to adopt the use of technology to complement other strategies of teaching and learning in order to enhance acquisition of appropriate keyboarding skills. Despite the immense importance of keyboarding skill to all disciplines and the demand for skill in this technological-dominated world, so far, there is no known empirical study conducted on effect of demonstration strategy and computer aided instruction on students' acquisition of keyboarding skills in public colleges of education in the South-west geo-political zone of Nigeria and outside the boundaries of Nigeria. The present study is therefore, necessary to fill this vacuum created in knowledge.

It is assumed by the present authors that the effect of each strategy of teaching on students' learning and achievement in acquisition of keyboarding skills might not be the same. However, from the foregoing, there is the need to re-evaluate the teaching techniques for keyboarding, hence, this study intends to examine the effects of demonstration strategy combined with computer aided instruction on students' acquisition of keyboarding skills using public colleges of education in South-west geo-political zone of Nigeria.

Statement of the Problem

Keyboarding is an essential skill for students to learn in this modern age. Unfortunately, many students tend to resist keyboarding class because memorizing the keyboard layout and practicing standard typing exercises do not interest them for extended periods of time. However, there is no escape route from acquisition of appropriate keyboarding skills bearing in mind the immense importance of the acquisition of these particular skills and as succinctly remarked by Umoru (2020) keyboarding is alive, keyboarding skills have come to stay; therefore, there is no way students could run away from keyboarding since it is part of the curriculum and it is a very crucial tool that is useful throughout a life time.

Keyboarding is one of the compulsory courses offered in business education. According to Ademiluyi and Oyedele (2020), business education, when the term actually refers to business teacher education, refers to courses offered in the three year colleges of education and university faculties of education which seek to impart in students, knowledge, skills and pedagogy of business. Business education undergraduates are supposed to acquire theoretical knowledge, practice and skills for teaching business subjects.

Many scholar have observed that the students' results in keyboarding at the tertiary level of education has not been encouraging in the recent times in Nigeria (Nwalado and Oru, 2016; Nwokike, 2016; Adejumo, 2016; Akhigbe, 2015). The present study assumes that this may be as a result of a number of reasons which include but not limited to the following: the teaching strategy, limited time allocation, large class size, as well as students' interest and attitude to learning to mention a few. Corroborating this, Obi (2018) explains that teaching strategies are the most prominent among several reasons which impact on students' acquisition of effective skills needed to be responsible and responsive professionals.

A close look at the way and manner business education students in colleges of education manipulate the keyboard reveals that they seem not to have adequate mastery of location of keys and thus use 'hunt and peck method' to type instead of 'touch keyboarding'. The reason is not far-fetched. It is because they their initial exposure to keyboarding was without proper training, hence, they resort to creating their own suitable methods of finding the keys to type.

As noted by Oyekan (2017) and Ntukidem (2012), instructional delivery strategy is very vital in any teaching and learning process. The strategy adopted by the teacher may encourage or deter learning. This is another crucial factor that may hinder the appropriate acquisition of keyboarding skills apart from learners' foundational problem, ability and interest in the course. Unsatisfactory performance of students in keyboarding is not good enough for the students who are being prepared for the world of work, because it reveals how competitive and marketable they would be in the world of work after graduation. Business education graduates in particular who are deficient in requisite learning outcomes in keyboarding skills are not likely to be fit into the modern world of work.

Further to these problems is that the students are compelled due to their inadequacy in keyboarding skills, to contract keyboarding assignments out to business centres within and outside the school premises. However, the fact still remains that the place of keyboarding skills in business education cannot be over emphasized. In order to encourage students to acquire appropriate keyboarding skills, teachers have to prepare students using techniques that will make them develop interest, take responsibility for their learning and enhance their acquisition of the skills. If this is not done at tertiary education level, our institutions of higher learning are likely to continue to turn out graduates who lack competence and self-efficacy in keyboarding to the detriment of the world of work. It is against this backdrop that this study seeks to examine the effects of demonstration strategy and computer aided instruction on business education students' acquisition of keyboarding skills using colleges of education in South-west geo-political zone, Nigeria as focal point.

Research Questions

The following research questions were raised to guide the study:

RQ1: What is the effect of demonstration strategy on business education students' acquisition of keyboarding skills?

RQ2: What is the effect of computer aided instruction on business education students' acquisition of keyboarding skills?

RQ3: What are the differential effects of demonstration strategy, conventional lecture method and computer aided instruction on business education students' acquisition of keyboarding skills?

Research Hypotheses

The following null hypotheses were formulated and tested at 0.05 level of significance:

Ho1: There is no significant main effect of demonstration strategy on business education students' acquisition of keyboarding skills.

Ho2: There is no significant main effect of computer aided instruction on business education students' acquisition of keyboarding skills.

Ho3: There is no significant interaction effects of treatments and gender on the acquisition of keyboarding skills of business education students taught with demonstration strategy and computer aided instruction.

Methodology

Quasi experimental research design was adopted for the study. Specifically, the study used pre-test-post-test non-equivalent control group design. The population for the study comprised 1,729 NCE year one Business Education students in 11 public Colleges of Education offering Business Education in the South-west geopolitical zone of Nigeria. The sample for the study consisted of 620 NCE year one Business Education male and female students from three public Colleges of Education offering Business Education in the zone. Simple random sampling technique was used in choosing the colleges for equal representation of public colleges in the same geopolitical zone. The sample for the study was drawn from Adeyemi College of Education, Ondo, Ondo State; College of Education, Ikere Ekiti; and Federal College of Education (Special), Oyo, Oyo State. The number of students in each college was used as they were because an intact class was required. Hat drawn technique was used to assign the three colleges of education to the experimental groups and control group. By using the procedure, experimental group one (demonstration strategy) was assigned to Ekiti State College of Education, Ikere Ekiti; experimental group two (computer aided instruction) was assigned to Adeyemi College of Education, Ondo, Ondo State; and control group (conventional lecture strategy) was assigned to Federal College of Education (Special), Oyo, Oyo State respectively.

The instrument for data collection was Keyboarding Skill Acquisition Test (KSAT) made up of 20 multiple objective test questions and two practical tasks. The instrument was validated by four experts, three in business education from the Department of Business and Entrepreneurship Education, Kwara State University, Malete and one in Test and Measurement from Adeyemi College of Education, Ondo. The reliability of the instrument was determined using Spearman Rank Order Correlation, a coefficient of 0.80 was obtained. The researchers with the help of three research assistants administered the pre-test immediately after the first week meeting.

The teaching commenced from the second week. The experimental group 1 (Ekiti State College of Education, Ikere Ekiti) was taught using demonstration strategy only, experimental group two (Adeyemi College of Education, Ondo) was taught using computer aided instruction, while the control group [Federal College of Education (Special), Oyo] was taught using lecture strategy. The

treatment lasted for five weeks during which each group met once a week for a period of two hours. At the end of the treatment, the post-test of Keyboarding Skill Acquisition Test (KSAT) was administered for one hour by the researcher and the research assistants. The data collected for demographic variable were analysed using percentages while descriptive statistics of mean and standard deviation were used to provide answer to the research questions. Hypotheses were tested at 0.05 level of significance using Analysis of Covariance (ANCOVA). The results were presented in tables. In answering the research questions, the achievement of students were determined in terms of mean scores and mean gains. Where the post-test mean score is higher than the pre-test mean score, it shows that there is a mean gain which means that the treatment has a positive effect. On the other hand, where the post-test mean score is less than the pre-test mean score, it shows there is a mean loss; this implies that there is a negative effect and where the mean score of the pre-test and post-test are the same, it means that there is no effect. There is a high mean score where the standard deviation is high and where the standard deviation is low, it implies that the students' scores clustered around the mean. Decisions on acceptance and rejection of hypotheses were based on the computed significance with Statistical Package for Social Sciences (SPSS) used. The null hypothesis was not rejected, when the computed significance is greater than the alpha significance and if otherwise rejected.

Results

Research Question 1: What is the effect of demonstration strategy on business education students' acquisition of keyboarding skills?

Table 1: Mean and standard deviation of the effect of demonstration strategy on students' acquisition of keyboarding skills

Group	N	Pre-test		Post-test		Mean Difference
		Mean	SD	Mean	SD	
Experimental Group One (Demonstration Strategy)	61	29.70	6.11	47.87	11.04	18.17
Control Group (Lecture Method)	291	23.56	7.07	40.78	12.56	17.22
Mean & Standard Difference		6.14	0.96	7.09	1.52	0.95

Source: Field Experiment 2021

Table 1 reveals that the experimental group one taught keyboarding with demonstration teaching strategy had a mean score of 29.70 in the pretest and a mean score of 47.87 in the post-test with standard deviations of 6.11 and 11.04 for pre-test and post-test, respectively, pre-test ($\bar{x}$ = 29.70; SD = 6.11), post-test ($\bar{x}$ = 47.87; SD = 11.04). The result gave a pre-test, post-test mean gain of 18.17 for experimental group one exposed to demonstration teaching strategy. The low standard deviation (11.04) for post-test shows that the scores of students are clustered around the mean. The traditional lecture method group had a mean score of 23.56 and standard deviation of 7.07 ($\bar{x}$ = 23.56; SD = 7.07) in the pre-test and mean score of 40.78 and standard deviation of 12.56 ($\bar{x}$ = 40.78; SD = 12.56) in post-test, giving a pre-test post-test mean gain in the control group taught keyboarding with lecture method to be 17.22. Comparing the mean difference of experimental group one and control group, the result gave a mean gain of 0.95. With this result, it is clear that demonstration teaching strategy is slightly effective in improving students' acquisition of keyboarding skills because the demonstration strategy group did slightly better than the lecture method group.

Research Question 2: What is the effect of computer aided instruction on business education students' acquisition of keyboarding skills?

Table 2: Mean and standard deviation of the effect of computer aided instruction teaching on students' acquisition of keyboarding skills

Group	N	Pre-test		Post-test		Mean Difference
		Mean	SD	Mean	SD	
Experimental Group Two (Computer Aided Instruction)	230	31.51	6.88	53.69	9.47	22.18
Control Group (Lecture Method)	291	23.56	7.07	40.78	12.56	17.22
Mean & Standard Difference		7.95	0.19	12.91	3.09	4.96

Source: Field Experiment 2021

Table 2 reveals that the experimental group two taught keyboarding with computer aided instruction had a mean score of 31.51 in the pre-test and a mean score of 53.69 in the post-test with standard deviations of 6.88 and 9.47 for pre-test and post-test respectively, pre-test ($\bar{x}$ = 31.51; SD = 6.88), post-test ($\bar{x}$ = 53.69; SD = 9.47). The result gives a pre-test, post-test mean gain of 22.18 for

experimental group two exposed to computer aided instruction. The low standard deviation (9.47) for post-test shows that the scores of students are clustered around the mean. The traditional lecture method group had a mean score of 23.56 and standard deviation of 7.07 ($\bar{x}$ = 23.56; SD = 7.07) in the pre-test and mean score of 40.78 and standard deviation of 12.56 ($\bar{x}$ = 40.78; SD = 12.56) in post-test, giving a pre-test post-test mean gain in the control group taught keyboarding with lecture method to be 17.22. Comparing the mean difference of experimental group two and control group, the result gives a difference of 4.96. With this result, it is clear that computer aided instruction is effective in improving students' acquisition of keyboarding skills because the computer aided instruction group did better than the lecture method group.

Research Question 3: What are the differential effects of demonstration strategy, conventional lecture method and computer aided instruction on business education students' acquisition of keyboarding skills?

Table 3: Mean and standard deviation of difference in business education students' acquisition of keyboarding skills using demonstration strategy, computer aided instruction and conventional lecture method

GROUP	N	$\bar{X}$	SD
Demonstration Teaching Strategy	61	47.87	11.04
Computer Aided Instruction	230	53.69	9.47
Conventional Lecture Method	291	40.78	12.56

Source: Field Experiment 2021

The data in Table 3 reveals that demonstration strategy group (experimental group one) had mean score and standard deviation of 47.87 and 11.04 respectively ($\bar{x}$ = 47.87; SD = 11.04). Experimental group two students taught keyboarding with computer aided instruction had mean score of 53.69 and standard deviation of 9.47 ($\bar{x}$ = 53.69; SD = 9.47). The control group students taught keyboarding with conventional lecture method had a mean score of 40.78 standard deviation of 12.56 ($\bar{x}$ = 40.78; SD = 12.56). The result in the table shows that computer aided instruction group performed better than both demonstration strategy and lecture method groups while demonstration strategy group performed better than the traditional lecture group. This indicates that computer aided instruction teaching had most positive effect on keyboarding skill acquisition of business education students, followed by demonstration strategy and then the conventional lecture method.

Ho1: There is no significant main effect of demonstration strategy on business education students' acquisition of keyboarding skills.

Table 4: Summary of analysis of covariance (ANCOVA) for test of significance of main effect of treatment of demonstration teaching strategy on business education students' acquisition of keyboarding skills

Source	Type III Sum of Squares	Df	Mean Square	F	Sig.
Corrected Model	47408.261[a]	4	11852.065	503.466	.000
Intercept	64.712	1	64.712	2.749	.098
Pre-test	44051.640	1	44051.640	1871.276	.000
Treatment	14.103	1	514.103	21.839	.000
Gender	631.181	1	631.181	26.812	.000
Treatment * Gender	695.641	1	95.641	4.105	.322
Error	8168.713	347	23.541		
Total	676757.000	352			
Corrected Total	55576.974	351			

Source: Field experiment, 2021

The data presented in Table 4 show the F-calculated values for effects of treatment of demonstration teaching method on business education students' acquisition of keyboarding skills. The table shows that there was a significant main effect of treatment of demonstration teaching strategy on the business education students' acquisition of keyboarding skills ($F(1,347)= 21.84$; $P = 0.000$). As a result, the null hypothesis that there is no significant effect of demonstration strategy on business education students' acquisition of keyboarding skills was rejected. This suggests that the demonstration teaching method improves business education students' acquisition of keyboarding skills. This means that the effect observed was due to the main treatment given to students.

Ho2: There is no significant main effect of computer aided instruction on business education students' acquisition of keyboarding skills.

Table 5: Summary of analysis of covariance (ANCOVA) for test of significance of main effect of treatment of computer aided instruction on business education students' acquisition of keyboarding skills

Source	Type III Sum of Squares	Df	Mean Square	F	Sig.
Corrected Model	68390.277[a]	4	17097.569	457.977	.000
Intercept	3085.474	1	3085.474	82.648	.000
Pre-test	45876.758	1	45876.758	1228.860	.000
Treatment	506.594	1	506.594	13.570	.000
Gender	109.858	1	109.858	2.943	.087
Treatment * Gender	48.395	1	48.395	1.296	.255
Error	19263.719	516	37.333		
Total	1213117.000	521			
Corrected Total	87653.996	520			

Source: Field experiment, 2021

The data presented in Table 5 shows the F-calculated values for effects of treatment of computer aided instruction on business education students' acquisition of keyboarding skills. The table shows that there was a significant main effect of treatment of computer aided instruction method on business education students' acquisition of keyboarding skills ($F(1,516)= 13.57$; $P = 0.000$). As a result, the null hypothesis that there is no significant main effect of computer aided instruction on business education students' acquisition of keyboarding skills was rejected. This suggests that the computer aided instruction improves business education students' acquisition of keyboarding skills. This means that the significant effect observed is due to the main treatment (computer aided instruction) given to students.

Ho5: There is no significant effects of demonstration strategy and computer assisted instruction on business education students' acquisition of keyboarding skills.

Table 6: Summary of analysis of covariance (ANCOVA) for test of significance of main effect of treatment of demonstration strategy and computer aided instruction on business education students' acquisition of keyboarding skills

Source	Type III Sum of Squares	Df	Mean Square	F	Sig.
Corrected Model	72385.452[a]	6	12064.242	305.738	.000
Intercept	3112.315	1	3112.315	78.874	.000
Pre-test	49554.152	1	49554.152	1255.827	.000
Treatments	532.596	2	266.298	6.749	.001
Gender	743.290	1	743.290	18.837	.000
Treatments* Gender	506.881	2	53.441	1.342	.072
Error	22689.141	575	39.459		
Total	1360209.000	582			
Corrected Total	95074.593	581			

Source: Field Experiment 2021

The data presented in Table 6 shows the F-calculated values for effects of treatment of demonstration strategy and computer aided instruction on business education students' acquisition of keyboarding skills. The table shows that there was significant effect of treatment of demonstration strategy and computer aided instruction on the business education students' acquisition of keyboarding skills ($F(2,575)= 6.75$; $P = 0.001$). As a result, the null hypothesis that there is no significant effects of demonstration strategy and computer aided instruction on business education students' acquisition of keyboarding skills was rejected. This suggests that the demonstration strategy and computer aided instruction improve business education students' acquisition of keyboarding skills.

Table 7: LSD pairwise comparison

Group		Mean Difference	Sig.
Demonstration strategy (Exp. 1) M=45.79)	CAI	2.69	0.000
	Lecture method	1.83	0.021
CAI (Exp. 2) (M=48.48)	Demonstration strategy	2.69	0.000
	Lecture method	4.52	0.000
Lecture method (Control) (M=43.96)	Demonstration strategy	1.83	0.021
	CAI	4.52	0.000

Table 7 shows pairwise comparison in each groups. There was a significant effect between all the pairs. The comparison between demonstration strategy and computer aided instruction was significant (MD = 2.69, P = 0.00), between demonstration strategy and lecture method (MD = 1.83, P = 0.021), and between computer aided instruction and lecture method (MD = 4.52, P = 0.00). It is clear that computer aided instruction had most effect followed by demonstration method and then the lecture method.

Discussion of Findings

The study investigated the effects of demonstration strategy and computer aided instruction on students' acquisition of keyboarding skills. The results reveal that demonstration strategy is effective in improving students' acquisition of keyboarding skills because the demonstration strategy group performed better than the lecture method group. The findings corroborate Ochogba, Ogide and Ogide (2019) who reported that teaching students with demonstration strategy is very effective because students taught with demonstration strategy performed better than those taught with the conventional lecture method.

Findings also show that there was a significant main effect of treatment of demonstration strategy on business education students' acquisition of keyboarding skills. This is in tandem with the opinion of Umoru and Haruna (2018) who stated that demonstration strategy of teaching is more effective on students' academic performance than lecture method. The findings also agree with the work of Oyekan and Ayoola (2017) that demonstration strategy is one of the effective teaching strategies in teaching skill courses and it enhances better performance of students than teaching with lecture method.

This findings is consistent with the observation of Nichols (2014) that students exposed to demonstration strategy in a course of instruction perform better than their counterparts who are taught using conventional methods. The finding of this study is also supported by the opinion of Patrick (2014) that the use of demonstration strategy to teach skill subjects are bringing positive changes in the outcome of learners, only that the sustainability of the use of demonstration strategy is being threatened by lack of commitment to handle the subjects on the part of teachers. In agreement with the findings, Olagunju (2014), Olu (2014), Bartholome (2013) and Daluba (2013) said that the use of activity stimulating and student-centered approach like demonstration strategy should be embraced instead of depending on the conventional approach like lecture method for better performance of students. These findings also align with the position of Nieman (2013) that demonstration strategy encourages the use of multiple senses in learning including the senses of hearing, seeing, smelling, feeling and touching, all of which, could help to arouse students' attention and thereby help to improve their achievement in a course of instruction.

Findings of research purpose, question, and hypothesis two reveal clearly that computer aided instruction is effective in improving students' acquisition of keyboarding skills because the students taught with computer aided instruction performed better than the lecture method group. This suggests that the computer aided instruction is effective and it improves business education students' acquisition of keyboarding skills.

These findings are supported by Akiti and Onyemah in Adebayo and Igbinedion (2019) who remarked that computer assisted instructional packages are used in the presentation of lesson which enhances better understanding of the subject matter since the learners have the opportunity to visualize the concept taught using typing tutor for mastery of keyboarding exercises. In alignment with the findings, Alasoluyi (2015) commented that the use of computer aided instruction in teaching Economics in senior secondary schools enhances students' performances and students tend to score higher in tests administered to them using computer aided instruction than those students taught using traditional method of teaching. He stressed further that since the use of computer packages is clearly a strategy that reflects modern business and industry practices and provides students with a learnable tool for creative thinking and problem solving abilities, if computer aided instruction is employed as one of the methods for teaching Economics, students' performance will be improved. By implication, the present study has established that employing computer aided instruction in teaching keyboarding skills will improve students' performance.

The findings are consistent with the report of Ojeaga and Igbinedion in Adebayo and Igbinedion (2019) that incorporating technology into learning would provide students with experience that would otherwise not be available to them and through technology, they are able to experience simulations that draw on their senses of sight and learning in ways that are different from looking and reading from a textbook; thereby enhancing their academic performances. It has also been established by researchers that keyboarding becomes interesting when it is taught with seemingly crazy but funny and productive strategies.

In other words, teaching with computer aided instruction had most profound impact on the acquisition of keyboarding skills of business education students, followed by demonstration

strategy and then the conventional lecture method. Therefore, there were differential effects of treatment and gender on the acquisition of keyboarding skills of business education students.

The result of the findings is buttressed by the works of Julius (2018), Tareef (2014), Tyagi (2014) and Jesse (2012) that computer aided instruction makes teaching and learning far more effective than those of the conventional instructional methods as it is used for presenting information, testing and evaluation and providing feedback. It aids individualized learning and helps to develop creativity and problem solving skills in learners which serves to control a lot of variables having an impact on learning which cannot be controlled by means of conventional educational techniques.

In alignment with the findings, Regan, Berkeley, Hughes and Kirby (2013) and Noor-ul-Amin (2013) claim that computer aided instruction is effective for improving instruction for students in all levels including those with special needs, unlike the conventional lecture method. To take care of all students irrespective of their levels and needs/challenges in teaching and learning of keyboarding skills therefore, computer aided instruction is preferred to demonstration strategy and conventional lecture method. However, Ekoro, Ofem and Sylvester (2015) are of the opinion that students taught using a combination of the traditional instructional method and computer aided instruction perform better than students that are taught by only the traditional instructional method.

Conclusion

Consequent upon the findings of the study, it was concluded that demonstration strategy and computer aided instruction have salutary effect on students' acquisition of keyboarding skills. This implies that computer aided instruction would be effective in the teaching and learning of keyboarding and similar business education skills.

Recommendations

The following recommendations are hereby made based upon the findings of the study:

1. Business educators should endeavour to adopt teaching with demonstration strategy supported with computer aided instruction to improve business education students' acquisition of keyboarding skills since it has been found to be effective.
2. Business educators should always teach with computer aided instruction using newer technologies since it has been established to be the most effective strategy of teaching and improving students' acquisition of keyboarding skills in this contemporary technology-dominated world.
3. Since it has been established that teaching with computer aided instruction is more effective than demonstration strategy, computer aided instruction should always complement any strategy adopted in teaching business education skills.
4. Since the use of keyboard has become almost unavoidable in virtually all facets of learning, Keyboarding should be made a general course like Use of English to cut across all disciplines in tertiary institutions to enable everyone acquire appropriate keyboarding skills since there is no discipline that can do without the use of computer system in this contemporary technology-dominated world.

References

Adebayo, A. M. & Igbinedion, V. I. (2019). Timeliness of keyboarding instruction as perceived by business educators in Ondo and Ekiti State, Nigeria. *American Journal of Creative Education, 2*(3), 138-148.

Adejumo, M. O. (2016). Effect of demonstration and group discussion methods on students' outcomes in keyboarding skills among colleges of education in southwest Nigeria. *Unpublished Ph.D. Thesis*, Olabisi Onabanjo University, Ago Iwoye.

Ademiluyi, L. F. & Oyedele, J. F. (2020). Business Education: Status quo, challenges and opportunities in the 21st century. In Bojuwoye, Oyedele, Ademiluyi & Mamman. *Education in the Era of New Technologies: Issues, Challenges, concerns and panaceas.* Integrity Publications.

Ademiluyi, L. F. & Emode, P. A. (2019). Computer application and internet access competencies needed by polytechnic office technology and management students for computer aided instruction. *Africa Journal of Applied Technology, 5(1), 33-45*.

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 PhD Thesis*, Ekiti State University, Ado-Ekiti, Ekiti State, Nigeria.

Alasoluyi, O. E. (2015). Effect of computer assisted instruction (CAI) on students' performance in economics in senior secondary schools in Ekiti State, Nigeria. *Unpublished M. Ed. Thesis*, Ahmadu Bello University, Zaria.

Bartholome, L. W. (2013). Teaching keyboarding to elementary school students. *National Association of Laboratory Schools Journal. 10*(2).

Daluba, N. E. (2013). Effect of demonstration method of teaching on students' achievement in agricultural science. *World Journal of Education, 3*(6), 1-7.

Donica, D. K., Giroux, P. & Faust, A. (2018). Keyboarding instruction: Comparison of techniques for improved keyboarding skills in elementary students. *Journal of occupational Therapy, Schools and Early Intervention.* http://doi.org/10.1080/19411243.2018.1512067.

Dowdle, N. D. (2016). Computer assisted instruction: A brief tour. https://slidetodoc.com/computer-assisted-instruction-a-brief-tour-acknowledgement-the/

Ekoro, E. I., Ofem, U. E. & Sylvester, D. U. (2015). The role of computer assisted instruction (CAI) in enhancing students' mastery of keyboarding in Cross River State College of Education, Akamkpa. *Niger Delta Journal of Education (NIDJOE), 3*(1), 305-314.

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 PhD Thesis*, Department of Vocational Teacher Education (Industrial Technical Education), Faculty of Education, University of Nigeria, Nsukka.

Jesse, S. N. (2012*). Computer assisted instruction and conventional instructional techniques in relation to science performance among selected secondary schools in Embu District.* MED Thesis, Kenyatta University, Kenya.

Julius, J. J. (2018). Influence of computer aided instruction on students' achievement, self-efficacy and collaborative skills in chemistry in secondary schools of Tharaka-Nithi county, Kenya.

Lee, C. (2015). The importance of teaching traditional typing skills in 2015. Retrieved February 21, 2019 from https://www.emergingedtech.com/2015/02/teaching-traditional-typing-skills/

Lim, C., Song, H. D., & Lee, Y. (2012). Improving the usability of the user interface for a digital textbook platform for elementary-school students. *Educational Technology Research and Development*, *60*(i), 159-173, doi:10.1007/S11423-011-9222.5.

Muhammad, A. U., Bala, D. & Ladu, K. M. (2016). Effectiveness of demonstration and lecture methods in learning concept in economics among secondary school students in Borno State, Nigeria. *Journal of Education and Practice*, *7*(12), 51-59.

Nichols, L. (2014). A comparison of two methods for teaching keyboarding in the elementary school. *Computers in the Schools. 11(4). 15-25.*

Nieman, P. (2013). Introducing early keyboarding skills. *Business Education Forum, 51*(1), 27-30.

Noor-ul-Amin, S. (2013). An effective use of ICT for education and learning by drawing on worldwide knowledge, research and experience: ICT as a change agent for education. *Scholarly Journal of Education, 2*(4), 38-45. http//www. Scholarly-journals.com/SJE.

Ntukidem, E. (2012). Technological Advancement in Secretarial profession Challenges and implications for Secretaries. *Business Education Journal, 3*(3), 41-55.

Nwalado, S. H. & Oru, P. O. (2016). Effects of dialogic method of teaching on students' achievement in marketing in colleges of education in Delta State, Nigeria. *Nigeria Journal of Business Education, 3*(1), 150-159.

Nwokike, F. O. (2016). The imperatives of teaching methods in improving the entrepreneurial competencies of business education students in universities in South-east and South-south States of Nigeria. *British Journal of Education, 4*(13), 59-69.

Ochogba, C. O., Ogide, C. J. & Ogide, C. G. (2019). Effect of Demonstration Method on Students' Academic Performance in Basic Technology in Secondary Schools in Ogba/Egbema/Ndoni Local Government Area, Rivers State, Nigeria. *International Journal of Innovative Scientific & Engineering Technologies Research, 7*(2):28-32

Olagunju, L. W. (2014). *Relevance in the education of today's business students.* National Business Education Association.

Olu, G. O. (2014). The impact of Office Technology in Information processing and its implication for secretariat training in the 21st century in Nigeria. *Business Education Journal 3*(4), 62-68.

Oyekan, S. O. (2017). A vision of future teaching. In S. O. Oyekan, A. O. Akinbobola and R. F. Adebile (ed.) *A Compedium of Teaching Methods* (479-482). Patrick Ade Prints (Nig.) Ltd.

Oyekan, S. O. & Ayoola, N. O. (2017). Teaching of agricultural science I. In S. O. Oyekan, A. O. Akinbobola and R. F. Adebile (ed.) *A Compedium of Teaching Methods* (339-364). Patrick Ade Prints (Nig.) Ltd.

Poole, D. M., & Preciado, M. K. (2016). Touch typing instruction: Elementary teachers' beliefs and practices. *Computers and Education*, *102*, 1-14. https://doi.org/10.1016/j.compedu.2016.06.008

Regan, K., Berkeley, S., Hughes, M. & Kirby, S. (2013). Effects of computer assisted instruction for struggling elementary readers with disabilities. *The Journal of Special Education.* journals.sagepub.com/doi/pdf

Shute, V. J. & Rahimi, S. (2017). Review of computer-based assessment for learning in elementary and secondary education. *Journal of Computer Assisted Learning*, *33*, 1-19 doi:10.111/jcal.12172.

Tareef, A. B. (2014). Effects of computer-Assisted learning on the achievement and problem solving skills of the Educational statistics students. *European Scientific Journal, 10*(28), 272-279.

Patrick J. D. (2014). *A teacher is many things.* Idiana University.

Tyagi, S. (2014). Comparative effectiveness of computer assisted Instruction with traditional instruction at teacher training level. *International Journal of Research*, *1*(9), 71-77.

Umoru, T. A. & Haruna, B. (2018). Effect of demonstration and lecture teaching methods on academic performance of secondary school students in financial accounting in Adamawa State, Nigeria. *Nigerian Journal of Business Education*, *5*(2), 447-457 http://www.nigjbed.com.ng

Umoru, T. A. (2020). Plotting pathways across transformational changes in business education: A desideratum for empowering learners to engage the world. *Journal of Business Education*, *7*(1), 1-26.