

# Effect of Computer Aided Learning On Business Education Students' Performance in Keyboarding in Universities in Ekiti State, Nigeria

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**ABSTRACT:** *This study investigates the effect of Computer Aided Learning (CAL) on business education students' performance in keyboarding at universities in Ekiti State, Nigeria. The research specifically aims to compare the performance mean scores of students exposed to CAL versus conventional teaching methods before and after treatment. A quasi-experimental design was utilized, involving pre-test and post-test assessments for both an experimental group (CAL) and a control group (conventional method). The sample comprised 200-level business education students from two randomly selected universities in Ekiti State. The study employed a self-designed Keyboarding Performance Test, which included sections for bio-data, objective items, and a speed and accuracy test. Validity was ensured through expert reviews, and reliability was confirmed with a pilot test yielding a Cronbach's alpha of 0.82. Data analysis involved descriptive and inferential statistics, with t-tests conducted at a 0.05 significance level. Results indicated no significant difference in mean scores between the groups before treatment ( $t_{cal} = 0.203$ ,  $P = 0.849 > 0.05$ ), confirming homogeneity. However, post-treatment results showed a significant difference ( $t_{cal} = 32.002$ ,  $P = 0.000 < 0.05$ ) favoring the CAL group, with a mean score difference of 21.86. These findings align with existing literature, highlighting the effectiveness of technology-enhanced learning. In conclusion, CAL significantly improves business education students' performance in keyboarding. It is recommended that universities in Ekiti State invest in ICT facilities and staff training to integrate CAL, fostering a more interactive and effective learning environment. This approach can enhance student performance and better prepare graduates for the modern workforce*

**KEYBOARDS:** Computer Aided Learning (CAL), Business Education, Performance, Keyboarding

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## INTRODUCTION

Technology has become an indispensable component of our ever evolving world. Prior to acquiring the ability to walk, children are exposed to and utilising the technology in their environment. At educational institutions, students commence utilising technology as a means to enhance their comprehension of topic requirements. Technology, through the use of computers, tablets, and the corresponding software, serves as a tool for educators and learners to enhance their proficiency in meeting educational standards. The growing availability of technology has led to an increased desire for its integration in the classroom. Graduates of business education from various schools should be at the forefront of implementing office technologies in their everyday interactions. This is aimed at preparing them for both the workplace and the classroom. The global advancements in office technology have transcended national and international boundaries, transforming the world into a global village. This has facilitated the widespread availability of information to organisations and individuals, regardless of their location or time. As a result, this has impacted the characteristics, process, and types of equipment utilised in office operations. Aina (2019) states that in order to succeed in the current computerised and information technology-driven workforce, particularly graduates with a business education background, it is essential to have a proficient understanding of keyboarding.

Proficiency in keyboarding is essential and integral to business education, particularly in colleges where it plays a significant role in training students pursuing business education. According to Akhigbe (2015), keyboarding refers to the process of inputting data using specific keys on a computer. Keyboarding is a fundamental course offered to students in the business education department. Its primary goals are to teach students how to type using the touch method and to establish good typing practices. Additionally, it encompasses the development of fundamental velocity and precision, and offers opportunities to apply these abilities to the arrangement of correspondence, reports, tables, memos, and various forms of personal and professional communication.

The technological advancements in business education primarily stem from the perspective of information and communication technology (ICT). The electronic office, often known as e-office, is a modern concept in which all office tasks are carried out using computers, eliminating the need for paper. The importance of proficient keyboarding skills is of utmost significance and requires significant attention. Because keyboarding is a complex skill, students sometimes struggle to acquire and comprehend fundamental keyboard concepts.

The widespread integration of technology in various human activities has led to the global popularity of keyboard usage. Given the widespread adoption of computers, both desktops and android phones, students now have the opportunity to use these devices for various purposes such as data processing, gaming, browsing, entertainment, and education (Ochoyi & Ukwumunu., 2018). As a result, they are able to operate the keyboard with minimal or no expertise in keyboarding skills. It suggests that young learners often use the keyboard in a careless and disorganised manner, employing the "hunt and peck" strategy simply to achieve their desired outcomes.

The academic performance of students in this course appears to be deteriorating. The instruction of Keyboarding, which necessitates students to have prior exposure to ICT, may have been delivered in a theoretical manner. This factor may have contributed to the subpar academic performance of students in the course. The quality of education in higher education institutions, especially universities, has experienced a decline in the teaching and learning of keyboarding. The researchers, who work as a lecturer at a university in Ekiti State, have noticed that business education students' poor academic performance in keyboarding is caused by the traditional lecture method used by university lecturers in Ekiti State. This method fails to engage students actively and instead encourages passive learning.

This is because the conventional way of teaching and acquiring technical and vocational skills in higher institutions is still primarily conducted through face-to-face interactions. The performance of university students, especially those studying business education, has been impacted by this.

The declining proficiency of students in keyboarding has emerged as a significant concern in recent times, with various factors being cited as potential causes for this negative trajectory. The factors contributing to the challenges in teaching keyboarding include teaching methodologies, a lack of experienced teachers, inadequate facilities, equipment, and instructional materials, reliance on traditional teaching methods, a high student-to-teacher ratio, and keyboarding phobia (Lawal, 2016).

The researchers noted that the lecture style is the most often employed instructional approach by teachers and lecturers. Teachers appear to be at ease with this approach as they have authority over both the content and the duration. The lecture method is an instructional technique characterised by a unidirectional flow of information, where the teacher delivers an oral presentation of the subject matter and students respond by attentively listening and recording notes (Ogbu, 2018). It seems that this approach has been ineffective and may be a factor in the low academic achievement of students in keyboarding. The rate at which students comprehend and integrate the subject content seems to be consistently sluggish.

Therefore, it is imperative to pursue strategies that would improve the academic performance of students in keyboarding. This research focuses on the computer aided learning (CAL) technique as a means to enhance students' academic performance in keyboarding.

Computer aided learning (CAL) refers to the utilisation of a computer to deliver instructional content. It pertains to the utilisation of computer software to meet the requirements of students (Nduati, 2015). Computer aided learning is an educational programme specifically created to function as a teaching tool. It can be highly beneficial in offering personalised, repeating, or similar practice to the student in problem-solving exercises, as well as activities for improving a wide range of skills (Mwei, 2021). In this context, the learner engages with the computer instead of a textbook, allowing them to progress at their own speed.

Computer-based instruction is more effective than traditional teaching methods since it utilises technology to provide material, test and evaluate students, and provide feedback. It contributes to the process of making education more individualised. It serves as a source of motivation for students, encouraging their active engagement in the learning process (Loveless, 2017). It fosters the cultivation of creativity and problem-solving abilities, as well as the development of individual identity and self-reliance in learners. CAL offers students

a variety of resources such as drawings, graphics, animation, music, and other materials to allow them to learn at their own speed and accommodate their unique needs (Gana, 2018). It is used to regulate numerous variables that influence learning and cannot be managed by conventional educational methods (Liao, 2011).

In computer aided learning (CAL), the content is organised into "frames" to facilitate sequential mastery of the material by students. The majority of computer aided learning packages are digital adaptations of instructional methods used to enhance the instruction and acquisition of keyboarding skills. Computer aided learning involves the presentation of material on a computer display, followed by students providing responses that are then evaluated. If the response is accurate, the student progresses forward. If the response is incorrect, similar problems are provided until the correct response is obtained (Jesse, 2012). Computer aided learning is an interactive method that uses beautiful animation, sound, and example to convey concepts. It enables students to advance at their own speed and engage in independent work. Computers offer instantaneous feedback, enabling students to determine the accuracy of their answers. Computer aided learning has been widely utilised by numerous studies across various topic areas to enhance the efficacy of teaching and learning. Given the extensive utilisation of information and communication technology (ICT), there is a natural curiosity about the influence of ICT on the process of teaching and learning. The concept that classrooms should be outfitted with technology is based on the premise that technology may enhance the speed, quality, quantity, and efficacy of learning (Adoni, 2010).

According to Adoni (2010), CAL encompasses the utilisation of computers, online self-learning programmes, interactive CDs, satellites, radio, optical fibre technologies, telepresence systems, and many types of information technology (IT) hardware and software for educational purposes. The researcher believes that the usage of Computer-Assisted Learning (CAL) is a pertinent and effective method of delivering education to learners. CAL helps develop the necessary skills and knowledge for the modern workforce, as it profoundly transforms our way of life, learning, and work. Taylor (2013) identified three functions of Computer-Assisted Learning (CAL) in a classroom: as an instructor, a resource, and a learner. The utilisation of Computer-Assisted Learning (CAL) in keyboarding sessions has the potential to enhance both the depth of understanding and the students' disposition towards keyboarding. The disposition of students towards keyboarding is of utmost importance in facilitating the teaching and learning procedures. The manner in which keyboarding is introduced in the classroom and how students perceive it significantly influences the cultivation of a favourable attitude towards the topic. Attitudes are cultivated or shaped through the educational encounters experienced by learners.

Many teachers seem to be unaware that their teaching methods, behaviour, and interactions with students are more important than the subject matter they teach. The teacher's demeanour has a direct impact on the student's disposition. A favourable outlook on keyboarding indicates a favourable emotional state towards the subject, while an unfavourable attitude towards keyboarding corresponds to a negative emotional state.

In his analysis study, Liao (2011) discovered that Computer-Assisted Learning (CAL) has a beneficial impact on individuals. This conclusion was drawn after analysing 52 research studies conducted in Taiwan. Omeje (2009) did an evaluation of the computer application

software capabilities that Business Education Teachers in tertiary institutions in Kogi state need to have. The study employed a descriptive survey research design. The study's findings revealed that possessing computer application software skills is crucial for corporate Education professors and students to effectively integrate into contemporary corporate environments. The research emphasised that teachers who do not possess these skills cannot be considered computer literate and will be unable to effectively teach students.

In 2009, Chibuikwe and Igboke conducted a study to assess the effectiveness of computer-assisted learning (CAL) apps in teaching Business education to students at Nigerian tertiary institutions. The study employed a descriptive research design. Only seven out of the forty items had means above the cut-off mark of 2.55, suggesting that the respondents lacked sufficient exposure to the essential features of Information and Communication Technology in their respective organisations. The range of standard deviation for the questions varied from 0.31 to 1.23, indicating that the respondents' opinions were quite close to each other. Out of the institutions assessed for the adequacy of teaching Information and Communication Technology, only four (4) had means over the cut-off point of 2.55, indicating inadequacy. The findings indicated that business education did not exhibit a favourable response to the emphasis placed on the utilisation of information and communication technology (ICT) application software. This could explain why the prospective graduate teachers of Business Education remained misinformed and ignorant. Computer aided learning (CAL) strategy could be critical to students' academic performance in keyboarding, which seems to be technologically based compared to other strategies of teaching. Therefore, the present study investigates the effect of computer aided learning (CAL) strategies on students' performance in keyboarding in universities in Ekiti State, Nigeria. The purpose of the study was to examine the effect of computer aided learning (CAL) on business education students' performance in keyboarding in universities in Ekiti State, Nigeria. Specifically, the study examined the difference in the performance mean score of university students exposed to computer aided learning (CAL) and conventional method before and after the treatment.

### **Research Hypotheses**

The following null hypotheses were postulated for this study.

1. There is no significant difference in the performance mean score of business education students exposed to computer aided learning (CAL) and conventional method before the treatment.
2. There is no significant difference in the performance mean score of business education students exposed to computer aided learning (CAL) and conventional method after the treatment

### **Methodology**

This study adopted a quasi – experimental pre-test and post-test two group design (one experimental group and one control group). The pattern of the design is as shown below.

O<sub>1</sub> X<sub>1</sub> O<sub>2</sub>: Experimental group (CAL)  
O<sub>3</sub> C O<sub>4</sub>: Control group (Conventional Method)

Where

O<sub>1</sub>, O<sub>3</sub>– Pre-test (Observation before treatment)

O<sub>2</sub>, O<sub>4</sub> – Post-test (Observation after treatment)



X<sub>1</sub> – Treatment via CAL

C – Control group: Conventional method

The population of the study comprised of 200 level business education students in three universities in Ekiti State. The sample consisted of intact class size of 200 level students drawn from two universities in Ekiti State. The sample was selected using multistage sampling procedure. In stage one; two universities were randomly selected from the three public universities in Ekiti State. The next stage involved the purposive selection of 200 level business education students from each of the selected universities using purposive sampling technique. In Stage three, simple random sampling technique was used to group the selected universities into different experimental and control groups.

The Keyboarding Performance Test was self-designed by the researcher. The instrument was in three sections; Section A sought for bio data of respondents while Section B consists of 25 objective items and section C is a test of 50 words per minute to measure students' level of speed and accuracy development in keyboarding. The contents of the objective item were based on the keyboarding concepts taught during the intervention period.

The face and content validity of the instruments were ensured by giving the instruments to experts in Tests and Measurement, and Business Education to assess the wordings and ambiguity of the test items as well as their coverage. The reliability of the instruments was determined by finding the internal consistency of the instruments. The researchers conducted a pilot test with 20 business education students from a university outside the sampled universities in Ekiti State, which is not within the scope of the study nor part of the sample size, but has similar characteristics as the sample for the study. Data collected were tested using Cronbach's coefficient alpha which yielded a co-efficient value of 0.82.

The study was carried out in three stages, namely pre-treatment, treatment and post-treatment. The data collected for this study were analyzed using descriptive and inferential statistics. All the hypotheses were tested using t-test at 0.05 level of significance.

## Results

**Hypothesis 1:** There is no significant difference in the performance mean score of business education students exposed to computer aided learning (CAL) and conventional method before the treatment.

**Table 1:** t-test analysis for Pre – test Mean Scores of Business Education Students in Experimental and Control Groups

Variations	N	Mean	SD	df	t <sub>cal</sub>	P (Sig)	Rem.
Computer Aided Learning	32	10.42	1.18	59	0.203	0.849	Not Significant
Conventional	29	10.52	1.31				

P>0.05

Table 1 shows that the t-cal value of 0.203 is not significant because the P value (0.849) > 0.05 at 0.05 level of significance. This implies that null hypothesis is not rejected. Hence, there is no significant difference in the performance mean score of business education students exposed to computer aided learning (CAL) and conventional method before the treatment. The students in both groups were homogeneous at the commencement of the study.

**Hypothesis 2:** There is no significant difference in the performance mean score of business education students exposed to computer aided learning (CAL) and conventional method after the treatment.

**Table 2:** t-test analysis for Post – test Mean Scores of Business Education Students in Experimental and Control Groups

Variations	N	Mean	SD	df	t <sub>cal</sub>	P (Sig)	Rem.
Computer Aided Learning	32	36.82	1.88	59	32.002	0.000*	Significant
Conventional	29	14.96	1.75				

\*P<0.05

Table 2 shows that the t-cal value of 32.002 is significant because the P value (0.000) <0.05 at 0.05 level of significance. This implies that null hypothesis is rejected. Hence, there is significant difference in the performance mean score of business education students exposed to computer aided learning (CAL) and conventional method after the treatment. The mean score showed a significant difference of 21.86 in favour of students exposed to Computer Aided Learning.

### Discussion

The results of this study indicated that the performance of students in both the experimental and control groups during the pre-test was low and there was no significant difference between the two groups. These findings confirmed that the two groups participating in the study were similar in terms of their characteristics before the trial. Put simply, the knowledge levels of the two groups participating in the study are the same. Therefore, any notable disparity observed subsequently would not be attributed to random chance, but rather to the particular intervention implemented.

The findings from Table 2 indicate a significant difference in the performance mean scores between business education students exposed to Computer Aided Learning (CAL) and those taught using conventional methods. The t-cal value of 32.002, significant at the 0.05 level (P-value = 0.000), supports the rejection of the null hypothesis, suggesting that CAL significantly enhances student performance. The mean score difference of 21.86 in favor of CAL further underscores its effectiveness over traditional teaching methods.

These findings are consistent with the provided literature. Tyagi (2014) observed that students who engaged in online education for keyboarding speed outperformed those taught through conventional methods, showing higher post-test achievement scores. This aligns with the current study's results, emphasizing the advantage of technology-enhanced learning environments in improving student performance. Similarly, the study by Chibuikwe and Igboke (2009) demonstrated the effectiveness of CAL in teaching Business Education. Although their study revealed limited exposure to ICT among respondents, it highlighted the potential benefits of incorporating technology into the curriculum. The current study reinforces this notion by showcasing the significant performance gains achieved through CAL, advocating for greater integration of ICT in education.

Watson (2011) also found that incorporating technology into teaching improved student performance in mathematics assessments. Their findings resonate with the current study, which demonstrates the positive impact of CAL on student performance in business education. The modest yet significant improvements observed by Watson suggest that even

incremental integration of technology can yield meaningful educational benefits. Furthermore, Serin (2020) reported that students taught using the computer-based instruction achieved higher post-test mean scores and better retention than those taught through conventional methods. This finding parallels the current study, which shows that CAL, akin to CBI, can enhance academic performance and knowledge retention. Both studies highlight the importance of innovative teaching methods in fostering better educational outcomes.

### **Conclusion**

The study concludes that there is a significant positive impact of Computer Aided Learning (CAL) on the performance of business education students in keyboarding in state-owned universities in Ekiti State Nigeria. The analysis revealed a significant difference in mean scores, with students exposed to CAL outperforming those taught using conventional methods in keyboarding. This finding aligns with existing literature, which consistently demonstrates the benefits of integrating technology into educational practices.

### **Recommendations**

Based on the findings, it is recommended that university managements in Ekiti State, Nigeria should invest in upgrading and expanding ICT facilities to support the implementation of Computer Aided Learning (CAL) in Business Education Department. This investment should include providing adequate training for academic staff to effectively integrate CAL into their teaching methodologies. Additionally, regular workshops and seminars on the use of ICT should be organized to ensure that both students and staff are proficient in utilizing these technologies. By prioritizing these enhancements, universities can foster a more interactive and engaging learning environment, thereby improving student performance and better preparing graduates for the demands of the modern workforce.

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