

## Availability and Utilization of Assistive Technologies for Learning by Impaired Business Education Students in Colleges of Education in South-East Zone, Nigeria

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### Abstract

*The study investigated the availability and utilization of assistive technologies for learning by impaired business education students in Colleges of Education in South-east zone, Nigeria. The study determined the availability and utilization of Assistive Technologies for learning by impaired business education students in Colleges of Education in South-east zone, Nigeria. The study adopted descriptive survey research design. The area of the study is South-East zone, Nigeria. Questionnaire was used to collect data from 34 impaired Business Education students from Colleges of Education that offer Business education in the five states that form the South-East zone, Nigeria. Data collected was analyzed using mean and standard deviation. Findings show that all the assistive technologies identified are available but some are not utilized and the utilized ones assist the impaired Business education students in learning. Based on the findings, it was recommended among others that government through the Ministry of Education and Colleges of Education Administrations should provide assistive technologies and training for lecturers for effective use in teaching of impaired Business education students.*

**Keywords:** Assistive technologies, Business Education, impaired Business Education students.

### Introduction

The use of assistive technologies has transformed the learning background of every student including the impaired students, offering them new opportunities to access education. Education is the Process of shaping the quality of life of an individual which in turn enhances quality of the society and the universe at large. It is mainly concerned with the ways and means of teaching and learning. According to National Policy on Education (2014), education is essential for an all-round development of an individual and for the socioeconomic development of a nation. To this end, the formulation of ideas, their integration for national development and the interaction of persons and ideas are all aspects of education. Kabuta, (2014) opined that education is very important for every person regardless of his/her age, gender, race, economic status, as well as physical ability or disability. Education for all has long become a basic principle and national policy on education advocates for provision of equal access to educational opportunities for all citizens of the country both inside and outside the formal school system. Abang in Ugoma, Iyedoh and Nwikpo (2018) asserted that in schools, various forms and characteristics of individuals come to learn and to grow and that each of the individuals comes to the school with his/her own nature, abilities to cope with learning tasks. The authors added that some learners are able to learn and make adjustment with ease, while others encounter varying degrees of difficulties as a result of certain impairments.



Impairment according to International Classification of Functioning (ICF) in Ejeh and Alilah, (2021) is an umbrella term covering movement restrictions, participation constraint, intellectual or sensory impairments and performance complications. Adama, (2021) defined impairment as a condition of being weakened, damaged or diminished in some ways which can affect physical, cognitive and emotional functions. Impairment refers to any form of physical disability whether visible or invisible which is capable of affecting the normal and active life of an individual. Maingi-Lore in Abdulhameed, (2022) defined impaired students as those students who have physical, sensory or chronic health impairment which hinder them from their full, active participation in the society on equal basis with the others and hinder them from benefiting fully from learning instructions in the regular settings. According to World Health Organization, (2017), impaired students refer to students with disabilities, including physical, sensory, cognitive, and mental health impairments. Impaired students are students with some physical or mental impairment that substantially limits one or more major life activities. In the context of this study, impaired business education students are the undergraduates of business education who suffer hearing, visual and mobility impairment. Impairment is more painful when it is suffered by students as they find themselves less active in the midst of their normal course mates. Impairment of any form can be an impediment for a business education student to achieve success in his/her academic pursuit. Some of these impairments are visible while some are invisible. Hearing impairment is invisible while visual and mobility impairments are visible.

According to Sharma (2013), hearing impairment refers to a condition where one has the hearing loss of 60 decibels or more in the better ear for conversational range of frequencies. Adama, (2021) defined impaired students as students who are deaf or hard of hearing. Hearing impaired students are students who cannot hear sound at all or above certain loudness. With the development of digital and wireless technologies, more and more devices are becoming available to help people with hearing, voice, speech and language disorders communicate more meaningfully and participate more fully in their academic lives. These technologies are also helpful for students with visual impairment.

Adama, (2021) defined visual impairment as low vision, legal and total blindness. The author stated that for the visually impaired individual to live independently, they need assistive technologies such as; screen readers, screen magnifiers, Braille embossers and desktop video magnifiers. Corn and Lusk in Shivani, (2018) affirmed that individuals with visual impairment have measurable vision, yet experience difficulties accomplishing visual tasks even with the use of refractive correction. Visual impairment also known as blindness or partial blindness is a condition of reduced visual performance that cannot be remedied by refractive correction (spectacles or contact lenses), surgery or medical methods (Shivani, 2018). This condition can be caused by factors like genetics, cataract, glaucoma, brain injury or stroke among others. A visually impaired business education student can learn effectively with the use of Assistive Technologies.

Mobility impairment is an impairment suffered by students which affects their free movement. Mobility impairment, according to University of Washington (2023) is a disability that affects movement ranging from gross motor skills, such as walking, to fine motor movement, involving

manipulation of objects by hand. Ugoma, Iyedoh and Nwiko (2018) defined mobility impairment as partial or total loss of physical operational abilities, problems with the use and movement of nerves or muscles and complications with the composition and, or operation of bones and joints including amputation, arthritis and cerebral palsy. According to Adama, (2022), mobility impaired students are students with mobility problems who need devices that will help them to move from one place to another. Mobility impairment can either be a congenital health problem, a condition acquired with age or caused by a disease or injury. The assistive technologies require by mobility impaired students to enhance their independence, access and navigate learning environment include wheelchairs, scooters, walkers and crutches.

Assistive technology according to Ellis in Mark, Ajay and Michael (2020) is any instrument, equipment or technology adapted or specially designed for improving the functioning of a person with a disability. Adama. (2021) defined Assistive Technology as a veritable instrument which provides strength to people with disabilities and bring them to regular educational setting. In the context of this study, Assistive Technologies are tools or devices that can serve as learning support for impaired business education students. Assistive technologies like cutting edge software and smart-phone apps can help impaired students learn more effectively. Jamie, (2021) defined assistive technologies as the reading, writing, visual, auditory and communication aids that students are supposed to master within the educational system. Assistive technology (AT) has been proven effective in enabling students with disabilities to access educational opportunities. Jamie, (2021) stated that the use of Assistive Technologies such as braille, audio texts, magnifiers, and screen reading software can help students with visual impairment improve their reading abilities (Muradyan, 2023). Vincent, Okeowo and Ariyo, (2023) averred that Assistive technology can close the learning gap for students with disabilities, allowing them to participate actively in the educational process.

Business education is defined by Mfam and Ntino, (2018) as a vocational education programme that offers life-long learning experiences in book-keeping and accounting, office management and ergonomics, business operations and management, and marketing. Okwuanaso and Nwazor in Mfam and Ntino, (2018) opined that business education is vocational education in which a recipient could fit into four major occupational areas such as book-keeping and accounting jobs, marketing and distributive jobs, clerical and general office jobs, and stenographic and secretarial jobs. Business Education refers to the teaching and learning of business-related subjects, such as accounting, finance, management, marketing, and entrepreneurship, in educational institutions (Okeke, 2022). Business education is a course of study that equips students with knowledge and skills that make them proficient in various fields of business such as accounting, management and marketing. It also prepares an individual to be a business educator who is able to educate students in the field of Business education.

Business education is offered in different levels and institutions of higher education in Nigeria such as Universities and Colleges of Education. This study focuses on impaired business education students in Colleges of Education. According to Council for the Accreditation of Educator Preparation, (2022), a College of Education is a higher education institution that specializes in

training teachers and educators, offering programs in education-related fields. However, due to the nature of business education, the impaired Business Education students in Colleges of Education face unique challenges that hinder their effective learning and proficiency upon graduation. Business education as a vocational and technical course at this digital age requires the knowledge of digital technologies, therefore impaired business education students should be exposed to assistive technologies so as to function effectively in any work place upon graduation and prove actually that there is ability in disability.

Despite the fact that a few studies have shown a link between availability and utilization of assistive technologies for learning by the impaired students, studies on Business education students with impairment is scarce. Students of a vocational and technical course like business education in a developing country like Nigeria can hardly access education without assistive technologies. It is challenging to find impaired students study business education in higher level due to its practical nature. Comparatively the learning of impaired students may be hampered than the normal students as a result of their disabilities. Therefore, there arise concerns related to business education and impaired students, such as the availability and utilization of assistive technologies for their learning. It has been observed that the impaired students have difficulty accessing the classroom and laboratory independently and handling some learning facilities. School infrastructures, class participation, exam writing, teaching method are the areas of challenge faced by impaired business education students. Therefore, the study intends to seek the answers to the following research questions; what are the assistive technologies available for learning by impaired Business education students in Colleges of Education in South-East zone, Nigeria?

Secondly, what are the assistive technologies utilized for learning by impaired Business education students in Colleges of Education in South-East zone, Nigeria?

### **Purpose of the Study**

The major purpose of this study was to investigate the availability and utilization of assistive technologies for learning by impaired business education students in Colleges of Education in South-East zone, Nigeria. Specifically, the study focused on

1. The Assistive Technologies available for learning by impaired Business education students in Colleges of Education in South-East zone, Nigeria.
2. The Assistive Technologies utilized for learning by impaired Business education students in Colleges of Education in South-East zone, Nigeria.

### **Research Questions**

The following research questions were formulated to guide this study:

1. What are the assistive technologies available for learning by impaired Business education students in Colleges of Education in South-East zone, Nigeria?
2. What are the assistive technologies utilized for learning by impaired Business education students in Colleges of Education in South-East zone, Nigeria?

## Methodology

**Design of the Study:** The study adopted descriptive survey research design to investigate the impact of digital technologies on academic achievement of impaired Business education students in Colleges of Education in South-east zone, Nigeria. According to Bakare, Ifeanyieze and Olaitan (2020), descriptive survey research design is the description of data collected from a selected group of individuals in population studied where the information obtained from the data could be generalized on every member of the population from where the selected group studied is drawn. Descriptive survey research design was considered appropriate for this study because it was used to sample the opinions of the impaired Business Education students on the availability and utilization of assistive technologies for learning by impaired business education students in Colleges of Education in South-East zone, Nigeria through the use of questionnaire.

**Area of the Study:** The study was carried out in South-East zone, Nigeria. The South-East, Nigeria is the one of the six geopolitical zones of Nigeria representing both a geographic and political region of the country's inland southeast. It comprises five states – Abia, Anambra, Ebonyi, Enugu, and Imo. South-East zone, Nigeria was chosen as the area of the study because the people of South-East Nigeria have positive mindset towards practical skills so as to be self-reliant, have employment opportunities and alleviate poverty.

**Population for the Study:** The population for the study included 34 impaired Business Education students from five federal Colleges of Education that offer Business education in the five states that form the South-East zone, Nigeria which comprised of 9 impaired students from College of Education, Arochukwu in Abia State, 7 students from Nwafor Orizu College of Education, Nsugbe in Anambra State, 8 students from Ebonyi State College of Education, Ikwo, 6 students from Federal College of Education, Eha-Amufu, Enugu State and 4 students from Alvan Ikoku Federal College of Education, Owerri, Imo State (Business Education Departmental presidents of the various Colleges of Education, 2024).

**Sample of the Study:** Due to the manageable size of the population, the entire population was used. **Instrument for Data Collection:** The instrument for data collection was a structured questionnaire titled, Assistive Technologies and Impaired Business Education Students Questionnaire (ATIBESQ) which was developed by the researcher based on literature and research purposes. The instrument was face-validated by two experts, one from Department of Business Education and one from Special Education Unit in the Department of Educational Foundations all in the University of Nigeria Nsukka to ensure its sustainability for the study.

**Method of Data Collection:** Thirty four (34) copies of the questionnaire were administered to 34 impaired Business education students in 5 colleges of education in the South-east, Nigeria by the researcher with the help of four research assistants. The four research assistants were briefed on the purpose of the study and how to approach the respondents for easy acceptance, completion and return of the instruments. The instrument was administered to each respondent through personal contact and the percentage rate of return was 100%. The questionnaire was divided into two sections, A and B. Section A elicited demographic information from the respondents, while

Section B had 38 item statements that sought information to answer research questions 1 and 2. The responses in Section B were based on a 2-point scale that ranges from 2 to 1. Responses to Research Question 1 were comprised of the following: Available (A) = 4, Not Available (NA) = 2. Responses to Research Question 2 were comprised of: Utilized (U) = 4, Not Utilized (NU) = 2. Method of Data Analysis: The data was analyzed using mean (X) and standard deviation (SD). The decision rule was based on a mean benchmark of 2.50, where items with a mean response of 2.50 and above implied that they were available or utilized, while items with a mean value below 2.50 were considered not available or not utilized.

## Results

**Table 1: Mean and Standard Deviation of Responses of Impaired Business Education Students on the Assistive Technologies Available for and Utilized by Impaired Business Education Students in Colleges of Education in South-East Zone, Nigeria**

S/N	Item Statement	AVAILABILITY			UTILIZATION		
		Mean	SD	Rmk	Mean	SD	Rmk
1.	Augmentative and Alternative Communication Devices	3.50	0.51	A	2.09	0.71	NU
2.	Assistive Listening Devices	3.53	0.51	A	2.88	0.64	U
3.	Alerting Devices	3.53	0.51	A	3.62	0.49	U
4.	Mp3 Formats	3.53	0.77	A	2.91	0.62	U
5.	BRF A Refreshable Braille Display	3.50	0.51	A	2.71	0.58	U
6.	Screen Readers	3.41	0.50	A	2.88	0.59	U
7.	Screen Magnifier	3.47	0.51	A	2.71	0.58	U
8.	Braille Embosser	3.38	0.49	A	3.56	0.41	U
9.	Desktop Video Magnifier	3.53	0.51	A	2.53	0.52	U
10.	Text-to-speech Software	3.38	0.49	A	2.91	0.62	U
11.	Edmodo	2.65	0.77	NA	1.50	0.51	NU
12.	Online Tutorials	3.50	0.51	A	3.50	0.51	U
13.	Electronic magazine	3.47	0.51	A	3.56	0.51	U
14.	E-Book	3.62	0.49	A	3.65	0.49	U
15.	You Tube	3.65	0.49	A	3.41	0.49	U
16.	Wheelchair	3.71	0.46	A	3.50	0.51	U
17.	Adaptive computer mice and keyboards	2.65	0.77	A	2.24	0.78	NU
18.	Ergonomics furniture and adjustable workstations	2.68	0.88	A	2.24	0.78	NU
19	Digital recorders or smart phones for note-taking	2.80	0.81	A	3.55	0.52	U
	<b>Grand Mean and SD</b>	<b>3.33</b>	<b>0.56</b>	<b>A</b>	<b>2.88</b>	<b>0.58</b>	<b>U</b>

**Key:** SD=Standard Deviation A= Available, NA = Not Available, Rmk = Remark

In the data presented in Table 1, the mean ratings of the responses of the impaired Business education students ranged from 2.65 to 3.71, which are all greater than the cut-off point value of 2.50 on a 4-point rating scale. This indicated that the 19 items in the table were agreed upon by the impaired Business education students to be available Assistive Technologies in their Colleges.



The standard deviation values of the 19 items in the table ranged from 0.46–0.88, which indicates that the respondents had similar opinions in their responses which were not far from the mean as regards the availability of assistive technologies in the Colleges of Education surveyed.

The data presented in Table 1 also reveals that items 1, 2, 3, 4, 5, 6, 7, 8, 9, 10, 12, 13, 14, 15, 16, and 19 are utilized, with mean values ranging from 2.53 to 3.41. This shows that the mean of each of the items was above the cut-off point of 2.50, indicating that the respondents agree that those Assistive technologies are utilized in their Colleges of Education. The table further shows that the standard deviation (SD) of the items was within the range of 0.49 to 0.64, indicating that responses of the respondents were close to one another and to the mean regarding the assistive technologies utilized by the impaired students in Colleges of Education surveyed. The data presented in Table 1 also reveals that items 11, 17, and 18 are not utilized, with mean values ranging from 1.50 to 2.24, indicating that the respondents agreed that they do not utilize these items in their Colleges of Education. Additionally, the standard deviation ranged from 0.64-0.74 which implies that responses of the respondents were similar and close to the mean

## Discussion

The study with regards to available of Assistive technologies for learning by impaired Business Education students found that Augmentative and alternative communication devices, Assistive listening devices, Alerting devices, Mp3 formats, BRF A refreshable Braille display, Screen readers, Screen magnifier, Braille embosser, Desktop video magnifier, Text-to-speech software, Edmodo, Online tutorials, E-Book, You Tube, Wheelchair, Adaptive computer mice and keyboards, Ergonomics furniture and adjustable workstations and Digital recorders or smart phones for note-taking are available for learning by the impaired Business education in Colleges of Education in South-east zone, Nigeria. The study shows that the impaired students require these assistive technologies to enhance their independence, accessibility and quality of life. These findings are in agreement with those of the World Health Organization (2017) which indicated that Assistive Technologies that improve mobility, hearing, vision, or communication abilities include wheelchairs, prostheses, hearing aids, visual aids, and specific computer software and hardware. Similarly, Muradyan, (2023) observed that the use of Assistive technologies such as Braille, audio texts, magnifiers, and screen reading software can help students with visual impairment improve their reading abilities.

The study with regards to utilized Assistive technologies and digital resources found that most of the available assistive technologies are utilized while some are not. The findings revealed that inability of the teachers to use some of the assistive technologies is the major reason for non utilization. This finding is in line with that of Danemayer & Lim, (2023) who stated that access to Assistive technologies and services are frequently hampered by financial limitations and lack of knowledge and training often results in the underuse of accessible technology by users and caregivers. Additionally, this finding is in concord with Bruinsma's (2011) findings, which indicated that a lack of professional development or training and guidance for teachers and students could hinder effective utilization of Assistive Technologies.

## Conclusion

The study investigated the availability and utilization of assistive technologies for learning by Impaired Business Education Students in the Colleges of Education in South East, Nigeria. It was concluded that assistive technologies are necessary for enhanced independence, accessibility and quality of life of impaired Business education students in Colleges of Education in South east, Nigeria. Unfortunately, some of the available assistive technologies are not utilized by the impaired students due to lack of knowledge for usage by the teachers. Harmonized efforts and planned technique are needed to bridge the gap between the availability of Assistive Technologies and the actual utilization.

## Recommendations

Based on the findings of these study and the conclusions drawn from the study, the following recommendations are made:

1. The government through the Ministry of Education and school administrations of Colleges of Education should provide modern Assistive Technologies and digital resources for teaching the impaired Business education students.
2. Administrators of Colleges of Education should provide training for lecturers on the effective operation of Assistive Technologies and digital resources to ensure that impaired Business Education Students are properly educated.
3. Business education departments should make Assistive Technologies accessible for impaired Business education students in classrooms and laboratories.
4. Government through the Ministry of Education should provide financial support to impaired Business education students for acquisition of the necessary Assistive Technologies.

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