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Business Educators' Level of Awareness and Utilization of Assistive Technologies in Business Education Programme in Tertiary Institutions in Delta State, Nigeria

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This study explored business educators' level of awareness and utilization of assistive technologies in business education programme in tertiary institutions in Delta State. Two research questions were raised and four null hypotheses were tested for the study. Descriptive survey research design was adopted. The entire population of one hundred and twenty-four (124) business educators in the four public-owned Colleges of Education and one university offering business education programme in Delta State was studied without sampling. A validated five point rating scale questionnaire containing 14 items was used for data collection. Cronbach Alpha method was used to establish the reliability of the instrument which yielded coefficients of 0.81 and 0.73, respectively for two clusters of the instrument with an overall coefficient of 0.77. The researcher administered the instrument to the respondents in their offices with the help of five research assistants. Data collected were analyzed using mean and standard deviation to answer the research questions while t-test and Analysis of Variance (ANOVA) were used to test the null hypotheses at 0.05 level of significance. Findings revealed that business educators are aware of and utilized assistive technologies in business education programme in tertiary institutions in Delta State to a low level and very low level. Business educators do not differ significantly in their mean ratings on their level of awareness and utilization of assistive technologies in business education programme in tertiary institutions in Delta State based on years of teaching experience and location. It was concluded that the necessary technological, infrastructural, instructional and motivational frameworks that will facilitates the integration of assistive technologies are missing in tertiary institutions running business education programme in Delta State. Therefore, it was recommended among others that, curriculum developers should design inclusive education concepts in order to facilitate the provision, awareness and utilization of assistive technologies in business education programme across all levels of tertiary institutions.
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Keywords: Tertiary Education, Business Education, Assistive technologies, Awareness and Utilisation

Introduction

Nations of the world have their own unique educational system for enlightening their citizenry from circles of ignorance and poverty. The apex of educational systems of most countries is tertiary education. Tertiary education is key frontiers of knowledge generation and transmission tasked with the responsibility of producing graduates that will respond effectively to the demand of the knowledge economy (Obanya, 2012). Tertiary education comes in after the completion of senior secondary education. In Nigeria, tertiary education comprised of higher institutions which are majorly universities, polytechnics and colleges of education. Irrespective of their nomenclature, tertiary institutions are mandated to ensure that their graduates are functional, relevant and responsive to the requirement of the workforce (Okute, 2019).

In Nigeria, there are different educational programmes in universities, polytechnics and colleges of education that are vocational based and one of such is business education. According to Ezewanfor and Onokpaunu (2017), business education is a branch of vocational education concerned with exposing its recipients to the internal and external foundations and functioning of the workplace. Remarkably, business education programme which is not one of the glamorous courses of study in Nigeria, is built on making its recipients become job creators, wealth providers, workplace ICT consultants, entrepreneurs of small and medium enterprises and executive managers of business entities (Nwazor & Onokpaunu, 2016). The nature of business education programme is attracting students with disabilities to the discipline in tertiary institutions. In order to meet the needs of students with disabilities and make business education programme relevant among other contemporary educational programmes, business educators must integrate the principles of inclusive education in their instructional delivery (Ezewanfor & Onokpaunu, 2019).

The principle of inclusive education has been given a boost due to the advent of assistive technologies. It is believed that the introduction of assistive technologies into educational programme will allow students with disabilities overcome their disabilities and learn subject matter alongside with students without disabilities in the classroom. According to Kumar and Raj (2010), assistive technologies are software programme, or product system used to increase, maintain or improve the functional capabilities of people with disabilities. In the opinion, Chukwuemeka and Samaila (2020), assistive technology (AT) is an umbrella term which is made up of assistive, adaptive, rehabilitative technologies and related services which are specifically made or adapted to serve as technical assistance for students and professionals with disabilities. Effective application of assistive technologies increase students with learning disabilities access to understand curriculum content of educational programmes and also increase the quality of their learning experience (Alkahtani, 2013).

According to Nsofor and Bello (2015), assistive technology is grouped into low technologies, medium technologies and high technologies. Low assistive technologies are the common and inexpensive devices and tools purposively designed to assist in different areas of difficulties. They include simple pencil-grips, magnificent eyeglasses, and large-print cardholder to mention but the few. However, with the current technological advancement, low-tech assistive technologies are becoming more of a crutch than academic support tools (Rowlands, 2015). Medium assistive technologies are the simple and relatively complicated mechanical devices like a wheelchair, audiotape recorder, and ordinary calculator among others. High assistive technologies include advanced electronic and computerised devices that involve the use of hardware and software that convert speech to text and text to speech, spelling checker and reading pen, among others. Collectively, Cennamo, Ross, and Ertmer (2010) averred that

assistive technologies include word processors, speech synthesizers, speech recognition, word prediction programme, optical character recognition, tape recorders, variable speech control, frequency modulated amplification systems, text-to-speech synthesizers, closed-circuit television magnification, braille note-takers, screen readers and voice-recognition technology among others.

Thus, the provision of low technologies, medium technologies and high technologies goes a long way in improving the quality assurance parameters of business education programme in tertiary institutions in Delta State. The increasing number of students with disabilities in business education programme in Delta State calls for the adoption of assistive technologies because it falls under the clarion call for the implementation of student-centered instruction strategies capable of reducing the tendencies of students with learning needs and disabilities to drop-out from learning mainstream courses in tertiary institutions. The utilization of assistive technologies will improve the social interaction skills, independent learning attributes and self–esteem of business education students with learning disabilities within and outside tertiary institutions.

Consequently, the introduction of assistive technologies into business education programme depends on business educators' awareness and utilization of these technologies among other variables. Gutwin and Greenberg (2002) defined awareness as the knowledge created through the interaction of an agent and its environment in order to know what is going on. Teachers' awareness of assistive technologies will help them make request for the purchase of the appropriate device for their institutions as well as advice parents on the technologies they can get for their children with disabilities (Shikden, 2015). On the other hand, Ezenwafor, Onokpaunu and Nwadiuko (2017) posited that utilization is the effective usage of assets, inputs and raw resources to achieve desirable outcomes. According to the Shikden (2015), the utilization of assistive technologies will encourage teachers to acquire the necessary skills that will facilitate the selection and use of these technologies for different instructional interventions.

In order to ascertain the awareness and utilization of assistive technologies in business education programme in tertiary institutions in Delta State, the years of teaching experience and location of institutions of business educators are taken into consideration. It is believed that the more years, a business educator spend in teaching, the more he or she will be more aware and should know how to utilize assistive technologies. But this assertion needs to be supported by empirical evidence. Given the socio-economic gap observed between urban and rural areas, one may assumed that business educators working in tertiary institutions in urban areas may be exposed and should know how to utilize assistive technologies than their counterparts in rural areas. Again this assertion needs to be supported by empirical evidence. It is against this background that this study was carried out to business educators' level of awareness and utilization of assistive technologies in business education programme in tertiary institutions in Delta State.

Statement of the Problem

Assistive technologies are integrated into teaching and learning procedures to overcome the challenges faced by students with disabilities in educational institutions. Despite the numerous developments of assistive technologies in recent times, the awareness and utilisation of these technologies by business educators in developing nations such as Nigeria is the focus of this study. From literature gathered, there seems to be paucity of empirical studies on business

educators' level of awareness and utilization of assistive technologies in business education programme in tertiary institutions in Delta State. In order to fill this huge gap in knowledge, this study was conceived.

Purpose of the Study

The main purpose of the study is to determine business educators' level of awareness and utilization of assistive technologies in business education programme in tertiary institutions in Delta State. Specifically, the study sought to determine:

1. Business educators' level of awareness of assistive technologies in business education programme in tertiary institutions in Delta State
2. Business educators' level of utilization of assistive technologies in business education programme in tertiary institutions in Delta State.

Research Questions

The following research questions guided the study:

1. What is the level of business educators' awareness of assistive technologies in business education programme in tertiary institutions in Delta State?
2. What is the level of business educators' utilization of assistive technologies in business education programme in tertiary institutions in Delta State?
3.

Hypotheses

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

1. Business educators do not differ significantly in their mean ratings on their level of awareness of assistive technologies in business education programme in tertiary institutions in Delta State based on their years of teaching experience (0-5, 6 – 10, above 10 years)
2. Urban and rural business educators do not differ significantly in their mean ratings on their level of awareness of assistive technologies in business education programme in tertiary institutions in Delta State
3. Business educators do not differ significantly in their mean ratings on their level of utilization of assistive technologies in business education programme in tertiary institutions in Delta State based on their years of teaching experience (0-5, 6 – 10, above 10 years)
4. Urban and rural business educators do not differ significantly in their mean ratings on their level of utilization of assistive technologies in business education programme in tertiary institutions in Delta State

Method

This study adopted a descriptive survey research design. The entire population of one hundred and twenty-four (124) business educators in the four public-owned Colleges of Education and one university offering business education programme in Delta State was studied without sampling. The instrument for the data collection was a validated questionnaire titled

"Awareness and Utilization of Assistive Technologies Questionnaire (AUATQ)"was used for data collection. The questionnaire contained 14 items on a five-point rating scale of Very High Level (VHL), High Level (HL), Moderate Level (ML), Low Level (LL) and Very Low Level (VLL). Face validity of the instrument was determined by three experts; one in the field of Business Education, Educational Technology and the other from Measurement and Evaluation all from Nnamdi Azikiwe University, Awka. A pilot test was conducted to establish the reliability of the instrument by administering it to 20 business educators in Anambra State which were not part of the study and the data collected were analysed using Cronbach alpha to obtain reliability coefficients of 0.81 and 0.73, respectively, for the two clusters of the instrument. The researcher administered the instrument to the respondents in their offices with the help of five research assistants. Mean and standard deviation were used to answer the research questions and determine the homogeneity or otherwise of the respondents' views. Decisions on the research questions were based on the grand mean in relations to the real limits of numbers. Therefore, items with mean ratings of 1.00 - 1.49 are rated Very Low Level, those with 1.50 - 2.49 are Low Level, items with mean ratings of 2.50 - 3.49 are rated Moderate Level, those with 3.50 – 4.49 are High Level and items with 4.50 - 5.00 are rated Very High Level. T-test and Analysis of Variance (ANOVA) were used to test the null hypotheses at 0.05 level of significance. A null hypothesis was accepted where the p-value is equal to or greater than the alpha level of 0.05 ($p > 0.05$), at a degree of freedom; otherwise, the null hypothesis was rejected. The analysis was carried out using SPSS version 23.0.

Results

Research Question 1:

What is the level of business educators' awareness of assistive technologies in business education programme in tertiary institutions in Delta State?

Data collected in respect to this research question were analyzed and the results are presented in Table 1.

Table 1

Mean and standard deviation of respondents'level of awareness of assistive technologies.

(N= 113)

S/N	Businesseducators' levelof awareness of assistive technologies	$\overline{X}$	SD	Remarks
1	Proof-reading technology	3.76	1.02	HL
2	Speech synthesizers software	2.32	0.85	LL
3	Speech recognition software	3.90	0.64	HL
4	Word prediction programme	2.03	0.59	LL
5	Closed-circuit television magnification	1.85	0.48	LL
6	Screen readers devices	2.27	0.70	LL
7	Braille note-takers devices	3.64	0.98	HL

8	Tape recorders	4.11	0.68	HL
9	Variable Speech Control (VSC)	1.29	0.83	VLL
10	Optical Character Recognition (OCR)	1.18	1.07	VLL
11	Word processors	1.46	0.64	VLL
12	Graphic organizer software	1.05	0.49	VLL
13	Ergonomickey board	1.10	0.91	VLL
14	Signaling devices	4.04	0.80	HL
	Grand Mean	**2.43**		**LL**

Data in Table 1 show that out of the 14 items listed on assistive technologies, business educators were aware of five (items 1, 3, 7, 8 and 14) to a high level with mean ratings ranging from 3.64 to 4.11. Respondents were aware of four (items 2, 4, 5, and 6) to a low level with mean ratings ranging from 1.85 to 2.32 and the remaining five (items 9, 10, 11, 12, and 13) with mean ratings ranging from 1.05 to1.46 to a very low level. The grand mean score of 2.43 means that business educators are aware of assistive technologies in business education programme in tertiary institutions in Delta State to a low level. The standard deviations for all the items are within the same range (i.e.; 0.48 to 1.07) showing that the respondents are not wide apart in their ratings.

Research Question 2:

What is the level of business educators' utilization of assistive technologies in business education programme in tertiary institutions in Delta State?

Data collected in respect to this research question were analyzed and the results are presented in Table 2.

T**able 2**

Mean and standard deviation of respondents'level of utilization of assistive technologies.

(N= 113)

S/N	Business educators' level of utilization of assistive technologies.	$\overline{X}$	SD	Remarks
1	Proof-reading technology	1.06	0.63	VLL
2	Speech synthesizers software	1.19	0.41	VLL
3	Speech recognition software	1.02	0.26	VLL
4	Word prediction programs	1.14	0.53	VLL
5	Closed-circuit television magnification	1.05	0.19	VLL
6	Screen readers devices	1.01	0.61	VLL
7	Braille note-takers devices	1.23	0.80	VLL
8	Tape recorders	1.36	0.24	VLL
9	Variable Speech Control (VSC)	1.09	0.59	VLL
10	Optical Character Recognition (OCR)	1.08	0.13	VLL
11	Word processors	1.25	0.60	VLL
12	Graphic organizer software	1.17	0.44	VLL
13	Ergonomickey board	1.20	0.86	VLL

14	Signaling devices	2.44	0.27	LL
	Grand Mean	**1.24**		**VLL**

Data in Table 2 show that out of the 14 items listed on assistive technologies, business educators were aware of one (item 14) to a low level with a mean ratings of 2.44. Respondents were aware of the remaining 13 items to a very low level with mean ratings ranging from 1.01 to 1.36. The grand mean score of 1.24 means that business educators utilized assistive technologies in business education programme in tertiary institutions in Delta State to a very low level. The standard deviations for all the items are within the same range (i.e. 0.13 to 0.86) showing that the respondents are not wide apart in their ratings.

Testing of Hypotheses

Hypothesis 1

Business educators do not differ significantly in their mean ratings on their level of awareness of assistive technologies in business education programme in tertiary institutions in Delta State based on their years of teaching experience (0 - 5, 6 – 10, above 10 years).
Data obtained in respect of hypothesis one are analyzed and presented in Table 3.

Table 3
ANOVA summary of business educators' mean ratings on their level of awareness of assistive technologies based on years of teaching experience

Source of Variance	Sum of Squares	Df	Mean Square	F-value	P-value	Inference
Between Groups	431.10	2	24.07	0.658	0.291	Accepted
Within Groups	610.43	110	38.63			
Total	1041.53	112				

Data on Table 3 show that the F-value of 0.658 with p-value of 0.291 at degree of freedom of 2 and 110 is greater than the criterion value of 0.05 ($p>0.05$). This means that business educators do not differ significantly in their mean ratings on their level of awareness of assistive technologies in business education programme in tertiary institutions in Delta State based on years of teaching experience. Therefore, the null hypothesis is accepted.

Hypothesis 2

Urban and rural business educators do not differ significantly in their mean ratings on their level of awareness of assistive technologies in business education programme in tertiary institutions in Delta State.

Data obtained in respect of hypothesis two are analysed and presented in Table 4.

Table 4

Summary of t-test analysis of urban and rural business educators' mean ratings on their level of awareness of assistive technologies based on experience

Location	N	Mean	SD	df	P-value	Remark
Urban	81	63.14	6.98			
				122	0.366	Not Significant
Rural	32	51.08	4.13			

The result presented in Table 4 show that the calculated p-value of 0.366 is greater than the criterion value of 0.05 ($p>0.05$) at 122 degree of freedom. This means that there is no significant difference in the mean ratings of urban and rural business educators on their level of awareness of assistive technologies in business education programme in tertiary institutions in Delta State. Therefore, the null hypothesis is accepted.

Hypothesis 3

Business educators do not differ significantly in their mean ratings on their level of utilization of assistive technologies in business education programme in tertiary institutions in Delta State based on their years of teaching experience (0 - 5, 6 – 10, above 10 years)

Data obtained in respect of hypothesis three are analyzed and presented in Table 5.

Table 5

ANOVA summary of business educators' mean ratings on their level of utilization of assistive technologies based on years of teaching experience.

Source of Variance	Sum of Squares	Df	Mean Square	F-value	P-value	Inference
Between Groups	99.23	2	10.66	0.227	0.165	Accepted
Within Groups	286.09	110	22.94			
Total	385.32	112				

Data on Table 5 show that the F-value of 0.227 with p-value of 0.165 at degree of freedom of 2 and 110 is greater than the criterion value of 0.05 ($p>0.05$). This means that business educators do not differ significantly in their mean ratings on their level of utilization of assistive technologies in business education programme in tertiary institutions in Delta State based on years of teaching experience. Therefore, the null hypothesis is accepted.

Hypothesis 4

Urban and rural business educators do not differ significantly in their mean ratings on their level of utilization of assistive technologies in business education programme in tertiary institutions in Delta State.

Data obtained in respect of hypothesis four are analysed and presented in Table 6.

Table 6

Summary of t-test analysis of urban and rural business educators' mean ratings on their level of awareness of assistive technologies based on experience

Location	N	Mean	SD	df	P-value	Remark
Urban	81	31.02	3.17			
				122	0.985	Not Significant
Rural	32	19.31	1.89			

The result presented in Table 6 shows that the calculated p-value of 0.985 is greater than the criterion value of 0.05 ($p>0.05$) at 122 degree of freedom. This means that there is no significant difference in the mean ratings of urban and rural business educators on their level of utilization of assistive technologies in business education programme in tertiary institutions in Delta State. Therefore, the null hypothesis is accepted.

Discussion of Findings

Result of the study disclosed that business educators are aware of assistive technologies in business education programme in tertiary institutions in Delta State to a low level. This finding is in agreement with Yusuf and Fakomogbon (2008) which discovered that educators are aware of assistive technologies to a low extent. The finding that business educators are aware of assistive technologies in business education programme in tertiary institutions in Delta State to a low level is in tandem with Chiang and Jacobs (2010) on the premise that educators are not familiar with assistive technologies. This finding could be attributed to business educators' lack of exposure to assistive technologies in teacher training institutes and tertiary institutions in Delta State. However, the findings of this study disagree with that of Shikden (2015) who discovered that educators are aware of how assistive technologies could be used in the classroom for instructional delivery. In addition, the study showed that business educators do not differ significantly in their mean ratings on their level of awareness of assistive technologies in business education programme in tertiary institutions in Delta State based on years of teaching experience and location. This implies that business educators' irrespective of their years of teaching experience and location have the same opinion on their low level of awareness of assistive technologies.This supports the views of Eteokleous (2008) who asserted that teachers' lack of awareness of assistive technologies is as a result of their lack of positive attitude towards assistive technologies.

Furthermore, outcome of the study indicates that business educators utilized assistive technologies in business education programme in tertiary institutions in Delta State to a very low level. This finding is in consonance with that of Maraizu (2014) who reported that teachers do not regularly use assistive technologies to teach because of the insufficiency in the supply of assistive technologies in educational institutions. Perhaps, the failure of business education programme to cater for students with disabilities could be responsible for business educators' low level of utilization of assistive technologies. This finding agreed with the studies of Onivehu, Ohawuiro, and Oyeniran (2017) and Ghazi (2018) which reported that educators are not using assistive technologies to teach because of their high-tech nature and these technologies were not adequately available and accessible. More so, the study indicated that business educators do not differ significantly in their mean ratings on their level of utilization of assistive technologies in business education programme in tertiary institutions in Delta State based on years of teaching experience and location. The non-significant difference in the mean ratings of business educators on their level of utilization of assistive technologies in business education programme on the basis of their gender and years of experience agrees with the finding of Ajuwon and Chitiyo

(2016) on the premise that lack of training in the use of assistive technologies in the classroom and irregular electricity supply are the biggest challenges regarding the use of assistive technologies in Nigeria.

Conclusion

Undoubtedly, the adoption of assistive technologies by business educators will give business education programme an inclusive description in the society. Effective adoption of these technologies provide a robust support system for students with disabilities and learning needs to participate effectively in teaching and learning activities in the classroom. Based on the findings of the study, the researcher concluded that the necessary technological, infrastructural, instructional and motivational frameworks that will facilitates the integration of assistive technologies are missing in tertiary institutions running business education programme in Delta State.

Based on the findings of this study, the following recommendations are made. Curriculum developers should design inclusive education concepts in order to facilitate the provision, awareness and utilisation of assistive technologies in business education programme across all levels of tertiary institutions. Also, ggovernment and information communication and technologies companies should provide tertiary institutions across all levels with the necessary assistive technologies to encourage the use of these technologies by business educators in their instructional delivery in order to meet the needs of students with disabilities in the classroom. Heads of Business Education Departments in tertiary institutions should equally subject business educators' to professional hands-on seminar and workshop programme that will not only expose them to the various types of assistive technologies but also enhance their competency on how to utilize them in their instructional delivery in the classroom.

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