Indonesian Journal of Community and Special Needs Education

Journal homepage: http://ejournal.upi.edu/index.php/IJCSNE/

Availability and Use of Assistive Technology for Learning Amongst Special Students in Kwara State School for Special Needs

Charles Olabode Olumorin, Ebenezer Omolafe Babalola, Barakat Kanyinsola Amoo*

Department of Educational Technology, University of Ilorin, Ilorin Nigeria

* Correspondence: E-mail: babalolaebenezer196@gmail.com

ABSTRACT

Assistive Technology (AT) is a technology used by individuals with disabilities to perform functions that might otherwise be difficult or impossible. ATs are integrated into teaching and learning procedures to overcome the challenges faced by students with disabilities in educational institutions. The population of this study consisted of all the special students in Ilorin, Kwara State School for special needs. A random sampling technique was employed to select 100 students who constitute the sample size of this study. The findings of the study showed that deaf, blind, physical disability, learning disability, and language disorder are being catered for in the school, assistive technologies are available for all the special students in the school, majority of the students used the assistive technologies for learning, there is a significant difference in the level of utilization of assistive technologies for learning among the special students based on gender, and there is a significant difference in the level of utilization of assistive technologies for learning among special students based on age. This study concluded that basic disabilities are being catered for in the sample special school with appropriate assistive technologies, and the technologies are found to be adequately available for the students. The study, therefore, recommended that the ministry of education should put in place, seminars, workshops, conferences, and training for special education teachers.

ARTICLE INFO

Article History:
Submitted/Received 30 Sep 2021
FIrst revised 31 Dec 2021
Accepted 02 Jan 2022
First available online 04 Jan 2022
Publication date 01 Sep 2022

Keyword:
Assistive technology,
Availability,
Special needs,
Utilization.

1. INTRODUCTION

Special education is an approach designed to serve exceptional students who either have physical disabilities, developmental disorders, or challenges with learning or who are gifted. Special education is for special needs in a way that addresses the students' differences and needs. He added that ideally special education as a process should involve individually plan and systematically mentioned arrangement of teaching procedures, adaptive equipment, and materials accessible settings and other interventions designed to help learners with special needs achieve a higher level of personal self-sufficiency and success in school and community that would be available. If the students are only given access to typical classroom activities.

Special education also known as special needs education is the practice of educating students with special educational needs in a way that addresses their differences and needs. Ideally, this process involves the individually planned and systematically monitored arrangement of teaching procedures, adapted equipment and materials, and accessible settings. Special education as an individually planned and systematically monitored arrangement of physical settings, special equipment materials, teaching procedures, and other interventions designed to help children achieve the greatest possible personal actualization and academic success. Inclusive education, more than mainstreaming the learners with special needs, is also concerned with identifying and overcoming all barriers for effective, continuous, and quality participation of all in education and also providing a 'Least Restrictive Environment' (LRE) to satisfactorily afford children with disabilities a meaningful educational benefit, together with others, in an accessible physical and human environment (Gal *et al*., 2010; Ramchand & Dummugudem, 2014; Ahmad, 2015) states that access to assistive technology can provide meaningful learning experiences to develop problem-solving and higher-order thinking skills to function in the world beyond the classroom. The form of technology that enables special needs students to benefit maximally from the goals of education in Nigeria is called assistive technology. Assistive technology refers to virtual tools that might be harnessed to compensate for the specific inabilities of students in the teaching-learning enterprise.

Assistive technology as any item, piece of equipment or product system, whether acquired commercially off the shelf, modified, or customized, that is to increase, maintain, or improve the functional capabilities of students or individuals with disabilities. Assistive technology has also been defined as devices, tools, equipment, and services that engender improvement in the capabilities of special needs students (Bryant & Seay, 1998). Given the importance of the availability of assistive technologies in the teaching-learning process, the available forms of assistive technologies must be functional and readily within the reach of special needs students. However, extant research indicates that several forms of assistive technology might not be readily available for special needs students, teachers, and other school personnel to use in Nigeria, due to a plethora of factors, which include the high costs of the imported forms of assistive technology and lack of funds to procure new forms of assistive technology (Wehmeyer *et al*., 2008; Yusuf *et al.,* 2012).

Assistive technology can be referred to as any item, piece of equipment, or product system, whether acquired commercially or off the shelf, modified or customized that is used to increase, maintain or improve functional capabilities of individuals with disabilities. This can also be referred to as the devices and services that are used to increase, enhance and maintain, the abilities of a student with a disability. Yusuf *et al.* (2012) and Fredric (2021) opined that certain ICT applications have been shown to have positive effects on the educational development of students exhibiting a great variety of special needs (blind, deaf, learning disabled students, and

DOI: https://doi.org/10.17509/ijcsne.v2i2.42776
p- ISSN 2775-8400 e- ISSN 2775-9857

so on). Technology is a method of skillful utilization of ideas for the benefit of humanity. It is widely used in this current society, most especially for teaching and learning (Bingimlas, 2017).

Hearing-impaired children are more inclined to use assistive technology than children with other disabilities. Medical measures of curing hearing impairment also rely on assistive technologies. Considerations in the use of assistive technologies revolve around the need, use, age, cost, level, and disability of an individual. Assistive devices are helpers and necessary for each individual with a disability according to his/her use and settings. Assistive technology is a lifelong partner and supporter for the person who uses it, to make some things possible at any level of intellectuality. Assistive technology can be grouped into low technology and high technology devices. Low and high technology assistive devices have been used by persons with disabilities for years. Low technology and high technology interventions are used for the persons to overcome their social and educational gaps (Gitlow *et al.*, 2011). Assistive Technology for Students with Hearing Impairments Word processing and educational software may help hearing-impaired students in developing writing skills. Alternatives to audio output can assist the hearing-impaired computer user, in place of using a standard keyboard and mouse. Advanced speech synthesizers may act as substitute voices, providing a compensatory tool for students who cannot communicate verbally (Ewa, 2013).

In the statement of the problem, teaching and learning processes involve individuals from different backgrounds, hence it stands imperative to entertain the diverse backgrounds of the learners. Effective and efficient teaching depends greatly on the teachers' ability to acknowledge the differences among the learners by ensuring that none of them is left behind. As background differs, learners are also not the same. Among the learners are the special ones who deserve special treatment. Educating the special students effectively is not limited to the provision of qualified teachers but also by providing them with some tools that could enhance their learning. In line with this, this study sought to investigate the availability and use of assistive technology for learning among special students in Kwara state school for special needs.

The following research questions were raised to guide the conduct of this study.

(i) What are the different types of disabilities being catered for at the Kwara state school for special needs?
(ii) What are the available assistive technologies for learning among special students in Kwara state school for special needs in Oyun?
(iii) How adequate are the available assistive technology in Kwara school for special needs?
(iv) What is the level of utilization of assistive technologies for learning among special students?

The following hypotheses are postulated and tested in the study:

(i) Ho_1: there is no significant difference in the level of utilization of assistive technologies for learning among special students in Kwara state school for special needs in Oyun based on gender.
(ii) Ho_2: there is no significant difference in the level of utilization of assistive technologies for learning among special students in Kwara state school for special needs in Oyun based on age.

2. METHODS

2.1. Methodology

Descriptive research of the survey type was adopted for this study. This method was considered the most suitable design for this study because it involves selecting a chosen sample from a large population. This research is targeted at the special Aneed's students in special

DOI: https://doi.org/10.17509/ijcsne.v2i2.42776
p- ISSN 2775-8400 e- ISSN 2775-9857

needs schools in Ilorin Metropolis. The sample was drawn from the population using multi-stage sampling techniques. This involves using stratified random sampling techniques to divide the population into strata. Then, proportional sampling techniques and simple random sampling techniques were used to select respondents from each of the strata. Specifically, 100 special students were selected to constitute the sample of this study. Responses from the questionnaire were analyzed using descriptive statistics of frequency counts and percentage while inferential statistics of t-test and Analysis of Variance (ANOVA) were used to test the stated hypotheses at 0.05 level of significance.

2.2. Research Instruments

A questionnaire and checklist were used for data collection. The checklist was used to measure the available assistive technologies for learning, while a questionnaire titled "Availability and use of assistive technology for learning among special students in Ilorin Kwara State, Nigeria" was used to measure the level of utilization of the technologies for learning by the special students including their demographic information, such as gender and age. The instrument consists of three sections A, B, and C: Section A deals with the respondents' demographical data; Section B used a checklist to determine the availability of assistive technologies for students with special needs in Ilorin Kwara State with a response mode of Available (A), Not Available (NA), Adequately Available (AA), Not Adequately Available (NAA); and Section C addressed the utilization of Assistive technology for learning among special students in Ilorin Kwara State, Nigeria with the response mode of Strongly Agree (SA), Agree (A), Disagree (D) and Strongly Disagree (SD).

2.3. Validity and Reliability of the Instruments

The instrument was validated for face and content validity by three lecturers within the Department of Educational Technology, University of Ilorin, Ilorin, Nigeria. Following the lecturers' validation reports, some items of the research instrument were corrected, adjusted, and modified as directed to reinforce the validity. Reliability concerns the extent to which a measurement of a phenomenon provides a stable and consistent result. For example, a scale or test is claimed to be reliable if repeat measurement made under constant conditions will give the same result. A pilot study was administered from a specific school in Oyo State for the reliability of the research instrument. The research instrument was reliable at 0.85 at 0.05 level of significance, using Cronbach Alpha SPSS statistical tool.

2.4. Procedure for Data Collection

Permission of the selected school was sought via a letter of introduction from the Department of Educational Technology, University of Ilorin, Nigeria to seek permission from the acceptable authority within the sampled schools to facilitate easy administration of the questionnaires. We read and explained the aim of the study to the participants. The respondents got sufficient time to answer the questionnaire. After which the answered questionnaire was retrieved for further analysis. Ethical consideration was maintained, we ensured that respondents were not coerced to fill the questionnaire and respondents were allowed to participate voluntarily. Also, utmost confidentiality and secrecy of the respondents were maintained during the administration, collation, and report of research findings.

DOI: https://doi.org/10.17509/ijcsne.v2i2.42776
p- ISSN 2775-8400 e- ISSN 2775-9857

2.5. Data Analysis Techniques

The data presented in **Table 1** and **Table 2** were based on the demographic characteristics of the respondents using frequency counts and percentages. The tables were based on respondents' gender, and age.

Table 1 reveals that out of the 100 respondents that participated in the study, 42 representing (42%) of the respondents were females, while 58 representing (58%) of the respondents were males. This revealed that there were more male respondents than females in this study.

Table 1. Distribution of the Respondents by Gender.

Gender	Frequency	Percentage (%)
Female	42	42
Male	58	58
Total	**100**	**100**

Table 2 reveals that out of the 100 respondents that participated in the study, 39 representing (39%) of the respondents were within the age range of 10-15 years, 45 representing (45%) of the respondents were within the age range of 16-20 years, while 6 representing (6%) of the respondents were within the age range of 21 years and above. This revealed that the majority of the respondents were within the age range of 16-20 years.

Table 2. Distribution of the Respondents by age.

Age	Frequency	Percentage (%)
10-15 years	39	39
16-20 years	45	45
21 years and above	6	6
Total	**100**	**100**

3. RESULTS AND DISCUSSION

3.1. Research Question 1: What are the different types of disabilities being catered for at the Kwara state school for special needs?

Table 3 presents the participants' responses to items that sought information on the types of disabilities being catered for in the school. The result on the table indicated that disabilities such as deaf, blind, physical disability, learning disability, and language disorder are being catered for in the school.

Table 3. Distribution of the Respondents' types of disabilities being catered for

Item No	Items	Decision
1.	Deaf	Available
2.	Blind	Available
3.	Physical Disability	Available
4.	Learning Disability	Available
5.	Language Disorder	Available

DOI: https://doi.org/10.17509/ijcsne.v2i2.42776
p- ISSN 2775-8400 e- ISSN 2775-9857

3.2. Research Question 2: What are the available assistive technologies for learning among special students in Kwara state school for special needs?

Table 4 presents the participants' responses to items that sought information on the available assistive technologies. The result on the table indicated that visual alert systems and accessible telephones are the available assistive technologies for the deaf. Large print books, reading stands, Low vision lamps, and Screen reader software are the available assistive technologies for the blind. Crutches, walkers, and wheelchairs are the available assistive technologies for physical disability. Videotaped social skills and electronic worksheets are the available assistive technologies for the learning disability, while remote microphones, TV streamers, and amplified telephones are the available assistive technologies for language disability. This implies that assistive technologies are available for all the special students in the school.

Table 4. Distribution of the Respondents' available assistive technologies.

Item No	Assistive Technologies	Decision
	Deaf	Reponses
1	Hearing Aids	Not Available
2	Cochlear implants	Not Available
3	Visual alert system	Available
4	Loop system	Not Available
5	Accessible telephones	Available
6	Videophones	Not Available
	Blind	
1	Large print books	Available
2	Typoscope	Not Available
3	Reading stand	Available
4	Low vision lamps	Available
5	Screen reader software	Available
	Physical Disability	
1	Wheelchair	Available
2	Walker	Available
3	Crutches	Available
4	Prosthetic	Not Available
	Learning Disability	
1	Electronic worksheet	Available
2	Videotaped social skills	Available
3	Variable speed recorders	Not Available
4	Phonetic spelling software	Not Available
	Language Disorder	
1	Amplified telephones	Available
2	TV streamer	Available
3	Remote microphones	Available
4	Loop system	Not Available

3.3. Research Question 3: How adequate are the available assistive technology in Kwara school for special needs?

Table 5 shows the participants' responses to items that sought information on the adequacy of the available assistive technologies. The result on the table indicated that the available technologies are adequately available.

DOI: https://doi.org/10.17509/ijcsne.v2i2.42776
p- ISSN 2775-8400 e- ISSN 2775-9857

Table 5. Distribution of the Respondents' adequacy of available assistive technologies.

Item No	Assistive Technologies	Decision
	Deaf	Reponses
1	Hearing Aids	Not Adequate
2	Cochlear implants	Not Adequate
3	Visual alert system	Adequate
4	Loop system	Not Adequate
5	Accessible telephones	Available
6	Videophones	Not Adequate
	Blind	
1	Large print books	Adequate
2	Typoscope	Not Adequate
3	Reading stand	Adequate
4	Low vision lamps	Adequate
5	Screen reader software	Adequate
	Physical Disability	
1	Wheelchair	Adequate
2	Walker	Adequate
3	Crutches	Adequate
4	Prosthetic	Not Adequate
	Learning Disability	
1	Electronic worksheet	Adequate
2	Videotaped social skills	Adequate
3	Variable speed recorders	Not Adequate
4	Phonetic spelling software	Not Adequate
	Language Disorder	
1	Amplified telephones	Adequate
2	TV streamer	Adequate
3	Remote microphones	Adequate
4	Loop system	Not Adequate

3.4. Research Question 4: What is the level of utilization of assistive technologies for learning among special students?

To answer this research question, respondents' responses on the level of utilization were collated. The data collected from the sampled teachers were summed. The summary of the results is shown in **Table 6**.

Table 6 presents the participants' responses to items that sought information on the level of utilization of assistive technologies for learning among special students. The result on the table indicated that 48 representing (48%) of the students used the technologies, 42 representing (42%) of the students used the technologies, while 10 representing (10%) of the students either not used it at all or a low rate. This implies that the majority of the students used assistive technologies for learning.

Table 6. Distribution of the Responses on the Level of Utilization of Assistive Technologies.

Level of utilization	Frequency	Percentage (%)
High	48	48
Average	42	42
Low	10	10
Total	**100**	**100**

DOI: https://doi.org/10.17509/ijcsne.v2i2.42776
p- ISSN 2775-8400 e- ISSN 2775-9857

3.5. Hypotheses Testing

3.5.1. Hypothesis One: There is no significant difference in the level of utilization of assistive technologies for learning among special students in Ilorin, Kwara State School for special needs based on gender

As shown in **Table 7**, the female had a mean score of 2.10 with a standard deviation of 0.21, while the male had a mean score of 2.20 with a standard deviation of 0.30, the calculated t-value was 2.13 while its calculated significance value is 0.04 with the alpha level of 0.05. On this basis, the null hypothesis one was therefore rejected. This means that there is a significant difference in the level of utilization of assistive technologies for learning among special students in Kwara state school for special needs in Oyun based on gender. The reason was that the calculated significance value (0.04) is less than the alpha level of 0.05.

Table 7. Mean, Standard Deviation, and t-value of the responses on the difference in the level of utilization of assistive technologies for learning based on gender.

Gender	N	Mean	SD	Df	Cal. t-value	P-value	Decision
Female	42	2.10	0.21	98	2.13	0.04	**Rejected**
Male	58	2.20	0.30				

3.5.2. Hypothesis Two: There is no significant difference in the level of utilization of assistive technologies for learning among special students in Ilorin, Kwara State School for special needs based on age

Table 8 presents the responses on the difference in the level of utilization of assistive technologies for learning among special students in Kwara state school for special needs in Oyun based on age. The table shows that an F-value of 3.85 with a calculated significant 0.03 at 0.05 alpha level. Since the calculated significance of 0.000 is less than the alpha level of 0.05, hypothesis two is thus rejected. This implies that there is a significant difference in the level of utilization of assistive technologies for learning among special students in Kwara state school for special needs in Oyun based on age.

Table 8. Analysis of Variance (ANOVA) showing the responses on the difference in the level of utilization of assistive technologies based on age.

Source	Sum of Squares	Df	Mean Square	Cal. F-ratio	P-value	Decision
Between Groups	0.54	1	0.27	3.85	0.03	**Rejected**
Within Groups	6.80	97	0.10			
Total	7.34	98				

3.6. Discussion of Findings

Findings revealed that deaf, blind, physical disability, learning disability, and language disorder are being catered for in the sample school. The finding corroborates the report of Ahmed (2018), who found that special schools in Nigeria mostly cater to deaf, blind, and some other physical disabilities. We reported that most schools in the contemporary Nigerian settings now acknowledge the presence of some special students, and are being given the deserved attention. This is against the survey conducted by Yusuf *et al.* (2012), which aimed at finding out the availability of assistive technology in Nigerian educational institutions. The result indicated that the majority of the institutions surveyed do not have the required assistive technologies for students with disabilities. Most of the existing pieces of equipment are

DOI: https://doi.org/10.17509/ijcsne.v2i2.42776
p- ISSN 2775-8400 e- ISSN 2775-9857

outdated. The study also discovered that some of the schools that have computers use them for administrative purposes, not for instruction. This result indicated that most of the students who need assistive technology did not have them.

Also, it was discovered that assistive technologies are available for all the special students in the sample school. This finding corroborates the reports of the earlier reports (Ewa, 2013) showed that the provision of basic assistive technologies for meeting the pedagogical needs of special students of the 21st century is being taken seriously by the government. Findings further showed that there is a significant difference in the level of utilization of assistive technologies for learning among special students in Ilorin, Kwara State School for special needs based on gender. Many other studies found that females are less confident in using technology and more anxious to use it for learning (Patricia *et al.*, 2020). The researcher stressed further that the reason for this variation is likened to the fact that the female students are naturally accorded more attention and treatment than their male counterparts. Finally, it was found that there is a significant difference in the level of utilization of assistive technologies for learning among special students in Ilorin Kwara State School for special needs based on age.

4. CONCLUSION

Assistive technology can be defined as any item, piece of equipment, or product system, whether acquired commercially or off the shelf, modified or customized that is used to increase, maintain or improve the functional capabilities of individuals with disabilities. Assistive technology can be classified into three, according to their levels, are low-tech assistive technology: assistive technology devices that fall under this level are usually very easy to use, cost less and have no need for electricity to work, mid-tech assistive devices: these types of devices are easy to operate but require electricity to work. They cost more than the low-tech devices, and high-tech assistive devices: these devices are usually complex and programmable and include items that require computers, electronics, or microchips to perform a function. The study, therefore, recommended that government should provide teachers with the necessary technologies that could facilitate their teaching, and learning of the special need's students.

5. AUTHORS' NOTE

The authors declare that there is no conflict of interest regarding the publication of this article. Authors confirmed that the paper was free of plagiarism.

6. REFERENCES

Ahmad, F. K. (2015). Challenging exclusion: Issues and concerns in inclusive education in India. *Researchpaedia, 2*(1), 15-32.

Ahmed, A. (2018). Perceptions of using assistive technology for students with disabilities in the classroom. *International Journal of Special Education, 33*(1), 129-139.

Bingimlas, K. A. (2017). Barriers to the Successful Integration of ICT in Teaching and Learning Environments: A Review of the Literature. *Eurasia Journal of Mathematics, Science and Technology Education, 5*(3), 235-245.

Bryant, B. R., and Seay, P. C. (1998). The technology-related assistance to individuals with disabilities act: Relevance to individuals with learning disabilities and their advocates. *Journal of Learning Disabilities, 31*(1), 4-15.

DOI: https://doi.org/10.17509/ijcsne.v2i2.42776
p- ISSN 2775-8400 e- ISSN 2775-9857

Ewa, J. A. (2013). Understanding the myth of inclusion: Teachers' preparation. *Journal of Exceptional People, 2*(3), 95-100.

Fredric, I. L. (2021). The Evolving Technology-Augmented Courtroom Before, During, and After the Pandemic. *Vanderbilt Journal of Entertainment and Technology Law, 23* (2), 301-339.

Gal, E., Schreur, N., and Engel-Yeger, B. (2010). Inclusion of Children with Disabilities: Teachers' Attitudes and Requirements for Environmental Accommodations. *International journal of special education, 25*(2), 89-99.

Gitlow, L., Dininno, D., Choate, L., Luce, R. A., and Flecky, K. (2011). The provision of assistive technology by occupational therapists who practice in mental health. *Occupational Therapy in Mental Health, 27*(2), 178-190.

Patricia, T., Rachel, M., David, A. B., and Brittany, L. H. (2020). Educating Students with Disabilities During the COVID-19 Pandemic: Commerce Independent School District. *Rural Special Education Quarterly, 39*(4), 201-210.

Ramchand, B. and Dummugudem. (2014). Inclusion Education as Solution to Barriers of CWSN and Answer for their Success. *International Journal of Humanities and Social Science Invention, 3*(8), 97-107.

Wehmeyer, M. L., Palmer, S. B., Smith, S. J., Davies, D. K., and Stock, S. (2008). The efficacy of technology use by people with intellectual disability: A single-subject design meta-analysis. *Journal of Special Education Technology, 23*(3), 21-30.

Yusuf, M. O., Fakomogbon, M. A., & Issa, A. I. (2012). Availability of Assistive Technologies in Nigerian Educational Institutions. *International Journal of Social Sciences and Education, 2*, 44-51.

DOI: https://doi.org/10.17509/ijcsne.v2i2.42776
p- ISSN 2775-8400 e- ISSN 2775-9857