Availability-And-Readiness of Special Education Teachers in Utilization of Assistive Technologies for Instruction in Oyo State Secondary Schools

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Abstract- This study tries to find out the availability of Assistive Technologies in Oyo state Secondary schools and the readiness of special education teachers in the utilization of Assistive Technology for instructions in Oyo state secondary schools. Assistive technologies are any devices, pieces of equipment or system that help or assist students with disabilities to overcome learning deficiencies. Such devices includes; On-screen reader, text-speech software, tape recorder, instructional radio, audio books, reading glass among others. Despite the numerous benefits of Assistive technologies to students with disabilities, it was found out that school curriculum was not designed alongside the use of Assistive technologies for teaching such students. The objectives of this study were to: (i.) ascertain the availability and functionality of Assistive technologies for instruction; (ii.) determine the preparedness of special education teachers in the use of Assistive technologies for instruction; (iii.) determine special education teachers' ICT skill level on the use of Assistive technologies; (iv.) examine the influence of gender of special education teachers on the use of Assistive technologies; and (v.) determine the influence of special education teachers' qualification on the utilization of Assistive technologies for instruction. The study adopted descriptive research design of the survey type. A researcher-designed instrument was used to elicit responses from one hundred and nineteen (119) special education teachers, who were purposively sampled in all special secondary schools in Oyo State. Answers were provided to five research questions and three research hypotheses were tested at 0.05 level of significance. The findings of the study revealed that: (i.) some of the Assistive technologies for instruction were not available at all (47.33%), 12.20% were available and functional, while 40.36% available are not functional. (ii.) majority of the special education teachers (62.83%) are ready and willing to utilize Assistive technologies for instruction. (iii.) no significance difference between special education teachers' gender and their self-efficacy on the use Assistive technologies for instruction (Sig.=0.405). (iv.) no significance difference existed between special education teacher's readiness and their ICT skill level in the use of Assistive technologies for instruction (F =0.532), (Sig. =0.661). (vi.) no significance difference existed between special education teacher's qualification and their readiness to use Assistive technologies for instruction (F =0.726). The study concluded that most of the Assistive technologies needed for instruction were not available and the available devices are not functional except few. It was also deduced that majority of the respondents were ready and prepared to use Assistive technologies and believed that Assistive technologies are part of integrating tools for instruction delivery. This implies that there would be rapid improvement in special education students, and easy instructional delivery, especially, if quality and required Assistive technologies were provided for special secondary schools. The study was limited to special education teachers' readiness and the availability of Assistive Technologies in special secondary schools in Oyo state. Thus, the study recommended that, there should be development, assessment, improvement and distribution of Assistive technologies to every special secondary schools in Oyo state. Also, special education teachers' attitude should be geared towards the acquisition of Assistive technologies skills and its mode of application for instruction through seminars or training, and easy access to the available Assistive Technological devices.

I. INTRODUCTION

Assistive Technology in education refers to a set or range of tools, equipment, and devices, (software and hardware) designed to support or help and enhance the learning experience of students with disabilities. Ahmed (2024), opines that Assistive Technology applies to any specialized software, device or equipment that support individuals with disabilities in overcoming educational challenges related to learning difficulties. Also, Micheal (2019) states that Assistive Technologies were designed specifically to accommodate diverse needs and provide equal access to educational opportunities. Assistive Technologies can be used to address various types of physical,

cognitive, and other learning disabilities, such as dyslexia, autism, attention deficit hyperactivity disorder (ADHD) and other conditions. Assistive Technologies support diverse learning styles and abilities, leading to improved academic performance and heightened students' classroom engagement (Raskind, 2019).The places available in special schools are declining as more students with disabilities are educated in mainstream schools. However, some of the students, whose learning needs cannot be appropriately met in a regular classroom setting require specialized education and resources to achieve more level of support they require for learning. Some major examples of a disability that may require a student to attend a special school are intellectual disability / emotional imbalance, deaf/hearing impaired, and low vision/blindness

Special education schools are equipped with teachers and specialists to help students in many different areas. Since the teachers are trained in special education, they know about and have experience in teaching students with unique learning abilities. Students attending special schools generally do not attend any classes in mainstream schools. Special schools provide individualized education, addressing specific needs. Student to teacher ratios are kept low, often 6:1 or lower depending upon the needs of the students. Special schools will also have other facilities for students with disabilities such as soft play areas, sensory rooms, or swimming pools, which are necessary for treating students with certain conditions (Turnbull, 2002)[97].

An alternative is a special unit or special classroom, also called a self-contained classroom, which is a separate room or rooms dedicated solely to the education of students with disabilities within a larger school that also provides general education. Self-contained classrooms, because they are located in a general education school, may have students who remain in the self-contained classroom full-time, or students who are included in certain general education classes (Turnbull, 2002)[97].

There are three major types of special education school for students with disabilities, which are; a mainstream class, a special class and a special school with a lower pupil-teacher ratio. A mainstream class: is a general primary or post-primary school where the class or subject teacher has primary responsibility for the progress of all students in the class, including students with disabilities. Additional teaching support from a learning support or resource teacher may be provided, where appropriate.

A special class: is a mainstream primary or post-primary school with a lower pupil-teacher ratio specified according to category of disability. This means that classes have small numbers of pupils, for example, a special class for children with autistic spectrum disorder has one teacher for every six pupils. The last one is a special school with a lower pupil-teacher ratio specified according to category of disability. This means that classes have small numbers of pupils, for example a special school for children with moderate general learning disability has one teacher for every eight pupil (National Council for Special Education, 2002).

Comparison of the effects of mainstream and special school on National Curriculum outcomes have been view through many literature. The literature dealing with the inclusion of students with autism spectrum disorder (ASD) in mainstream schools has increased over recent years, propelled by the argument that it will improve the quality of life, educational performance and social development of included children. The inclusion of students with autism spectrum disorder (ASD) into mainstream schools has been argued to improve their quality of life, educational performance and social development (Kurth and Mastergeorge, 2010) The gradual development of education for exceptional children was born out of evolutionary process of Nigeria into nationhood. The African child especially the exceptional children such as children that have physical defects, emotional disturbances, intellectual sub-normality and other forms of disabilities were protected and was given traditional form of special education before this time, in which the parents, siblings and other members of the community were fully engaged in the education of the child. Furthermore, the children were taught to the limit of their abilities through practical demonstration which involves the art of cooking, fishing, weaving, and farming. This professional field activity of the exceptional children or special education is not new in

Nigeria (WENR, 2017). Special education begins during preliminary and early military periods.

Special education is the form or type of education provided for the classes of students with disabilities such as: deafness or hearing impaired, blindness or low vision, Autism, spectrum disorder, sensory impairment, physical disabilities, mobility impaired, gifted and talented. students with disabilities are the individuals who are suffering from physical ailments or health impairments. Physical ailment or impairment includes those disabilities caused by congenital abnormality, while health impairments include virus or diseases results from chronic illness. As indicated by the United States Department of Education, IDEA (2004). Individuals with disabilities Education Act, a physical and health impairment is sorted under "orthopaedic hindrance" and characterized as a severe impairment that adversely affects a child's education performance (UNESCO, 2004).

The term orthopaedic includes impairments caused by a congenial anomaly, impairments caused by diseases (e.g. poliomyelitis, bone tuberculosis, and others), and impairment from other causes (e.g.cerebral palsy, amputations, fractures, or burns that cause contractions). Physical impairment is physical limitations or health problems that interfere with school attendance or learning to such an extent that special services, training, equipment, materials, or facilities are required. The major classifications of disabilities includes neurological conditions, muscular skeletal conditions and other health impairments (Mettah & Kauffman, 2018).

Furthermore, Lake (2015), itemized some types and categories of physical and health impairments which includes; diabetes, tourer syndrome, epilepsy, leukaemia, autism, emotional imbalance, language disorder, and lead poisoning. Aruma & Ford (2019) adds to categories and types of physical and health impairments; Acquired brain injury, Traumatic brain injury, spinal cord injury, muscular dystrophy, spinal biddable, cerebral palsy, cystic fibrosis, multiple sclerosis, and sensory disorder. Special education teachers adapt general education lessons and teach various subjects, such as reading, writing, and mathematics, to students with mild and moderate disabilities. Special education teachers also teach basic skills, such as literacy and communication techniques, to students with severe disabilities. Special education teachers' duties vary by the type of classroom settings, students' disabilities, and teachers' specialists. Some special education teachers work in classrooms or resource centres that include only students with disabilities. In these settings, teachers plan, adapt, and present lessons to meet each student's needs. Special education teacher teach students in small groups or on a one-on-one basis. (Bureau of Labor Statistics, 2018).

Special education teachers are directly responsible for providing appropriate educational interventions for students who have speech disorders, cognitive deficiencies, attention deficit/hyperactivity disorder, or other behavioural problems, such educational interventions are regarded as Assistive Technologies (Skuller, 2011). Assistive Technologies are devices that could be used to alleviate the problems faced by students with disabilities. Development in special education includes the use of Information and Communication Technologies (ICTs) materials to assist students during after and schooling.

Information and Communication Technology is considered a bridge that fill gaps between different group of people with educational challenges and people without educational challenges. Moreover, there have been a growing number of researches that supports the fact that, ICTs and Assistive technologies more generally, enables people with special educational needs to live more fulfilled life. ICT is also recognized as tools which ensure access to knowledge and learning resources. The use of ICT has also played a major part in shaping the knowledge and skills of school staff, therapists, and special educators (Stevens, 2004; Williams, Jamali, & Nicholas, 2006). There are forms of Information and Communication Technology designed to help all special students, including those with learning difficulties and improve their academic performance, such as instructional software which is used to teach specific academic skills (like reading and writing) or subject matter content (such as history and science). ICT differs from Assistive technology because it provides instruction rather than bypassing areas of difficulty.

Assistive Technology is defined as any device, piece of equipment or system that helps bypass, work around

or compensate for students with specific learning deficiencies. Students who struggle in school are often overly dependent on parents, siblings, friends and teachers for help with assignments. Assistive Technology is also expressed by International Classification of Functioning, Disability and Health (ICF) as any product, instrument, equipment or technology adapted or specially designed for improving the functioning of a person with a disability (World Health Organization, 2014). Effective educational outcomes from utilization of Assistive technology depends on special education teachers' readiness, and their Assistive Technologies skill level. Special education teachers' readiness to use the Assistive Technology will go along way to ease the suffering or problems of students with disabilities (Mustapha, 2021).

Special education teachers' readiness is referred to the rate at which the teachers have prepared themselves and their willingness to utilize Assistive technologies for students with disabilities. Special education teachers are the pivot to carry out the usefulness of Assistive technologies in instructing students with disabilities. Much of the literature dealing with Assistive technologies programmes for students with disabilities emphasized the central role of teachers in the day-to-day utilization of technology plans. Special education teachers' preparedness is required as training on the use of Assistive Technologies which special teachers have undergone to make themselves ready and their willingness has to do with such teachers' views on application of these training for instruction.

There are some factors which may influence the preparedness of special education teachers, a theory by (Carey, 1994, Parker et al., 1990, Hutinger et al., 1994 & Sale, 1994) has shown that, special education teachers' readiness can be influenced by availability of Assistive technologies, its easy access, inadequate follow-up support and on-site assistance from consultants and device suppliers has been reported as constraints, leading to lack of familiarity with the equipment, incomplete awareness of applications that may assist students, and an inability to troubleshoot when the device does not function as expected. Assistive Technologies are found useful for students with disabilities based on availability, coordinated assessment of Assistive Technologies, and implementation process. Utilization of Assistive Technologies can be referred to as implementation or the method or process of using Assistive Technologies for instructing students with disabilities to attain educational potentials.

The utilization of Assistive technologies in education has been seen as the methods that would help students with disabilities realize their potentials and bypass area of instructional difficulties through the new technological tools and to revolutionize an outmoded educational system (Albrini, 2006). Utilization of Assistive Technologies helps the students to experience success while working independently. Most individuals utilize some form of Assistive Technology daily, when someone put on glasses or contact lenses, listen to books on tape (instructional radio programme), or use headset, the use of automatic cars, such people are in essence utilizing Assistive Technology. Also, there are certain Assistive Technologies which can help students who have difficulty processing and remembering spoken language. Such devices can be used in various settings, such as; a class lecture, or a meeting with multiple speakers (Kristin & Marshall, 2009).

Utilizing Assistive Technologies does not mean that students cannot also receive remedial instruction aimed at alleviating deficits (such as software designed to improve poor phonic skills). A student could use remedial reading software as well as listen to audio books. In fact, Assistive Technologies can improve certain skill deficits (such as; reading and spelling) and help to facilitate decoding, reading fluency, and comprehension. These advantages and many more are the benefits that students with disabilities can gain from Assistive Technology when the technology is properly utilized (Stevens, 2004; Williams, Jamali, & Nicholas, 2006).

In Nigeria, there are many levels of applying Assistive Technology, Judd-Wall (1999) express that it can be used personally, developmentally, and instructionally. Personal use of Assistive technology refers to the use of an individual students to enables the learners to function well in their environment (Yusuf, 2004). If Assistive Technology is used to help individual students to achieve their educational needs based on

developmental delay, then such device is used developmentally.

Instructively used of Assistive devices means that the device is used to modify instructional process. Universal Design for Learning (UDL) is a philosophy that encompasses learning models, methods and products to enhance the educational experience of diverse learners (whether or not they have learning disabilities). In this approach, Assistive technology is often built into educational materials and can be customized to help students with disabilities be successful with the general curriculum (Rose & Meyer, 2002).

Many countries around the world are focusing on approaches to utilize Assistive technologies in learning and teaching to improve the quality of education by emphasizing competencies such as critical thinking, decision-making, handling of dynamic situations, working as a member of a team, and effective communication (Anderson & Baskin, 2002). However, utilization of Assistive Technologies can also be influenced by special education teachers' qualifications and gender.

Teacher's qualification is referred to the ability, aptitude or level of education attained to teach students. Special education Teachers' qualification towards the use of Assistive technology has been of paramount barrier for the effectiveness usage and implementation of Assistive Technology. Therefore, to handle this concern, grant money will need to be allocated for setting up a resource centre, hiring technical professional, and training instructor on how to employ Assistive Technologies within their instructions and methods of teaching students with disabilities. The technology resource centre would be a space within the school where teacher could find information, software, and hardware and other Assistive Technologies for teaching/learning purposes.

Special education teachers' gender is also an important factor in utilizing Assistive Technologies for instructing students with disabilities. Human beings are generally classified into two biological groups which can be refers to as gender. Gender refers to the biological condition of being male and female, (boy and girl, man and woman). In the light of this gender refers to man or woman as a social being (Tunde-Awe, 2003) cited in Issa, (2009). It is accepted that illiteracy rates are higher among females than males in every part of the world (Yusuf, 2005). At times, some male teachers are not ready to utilize Assistive Technologies for instruction while many female teachers have prepared for the use of Assistive Technologies, vis-à-vis.

For effective use of Assistive Technology there must be collaborative teaching which involves commitment by the teachers who will be working together, by the school administrators, by the school system, and by the community. It involves time, support, resources, monitoring, and, above all, persistence. In a collaborative model the general education and special education teachers each bring their skills, training, and perspectives to the team. Resources are combined to strengthen teaching and learning opportunities, methods, and effectiveness (Dieker & Barnett, 1996). The most important point which can be clearly coined out from collaborative teaching is that both the general education and special education teachers had expertise in many areas, and combining skills made both teachers more effective in meeting the needs of all students. Through collaborative model, the problems that can impede the utilization of Assistive technologies for instruction can be addressed: students with disabilities placed in normal classroom can bypass learning deficiencies, special education teacher with little knowledge of ICT skills can benefit a lot from other colleagues, some teachers who are not ready to use Assistive Technologies can be motivated and by this method, special education teachers' readiness towards the use of Assistive Technologies for students would be properly structured.

II.   STATEMENT OF THE PROBLEM

Assistive Technology devices cannot eliminate learning difficulties, but can help students with disabilities attain highest educational potentials, because the devices allows such students to capitalize on their strengths and bypass areas of difficulty. For example, a student who struggles with reading but has good listening skills might benefit from listening to audio books and instructional radio. Also, it supports students to access and enjoy their rights, do things they

value, and bridge disparities between students with and without disabilities (Bouck, et al. 2012, Ground, 2010, & W.H.O. 2011).

However, special education students are often denied their right to education. Students with disabilities are placed in the same classes with non disabled students, this may impede the educational progress of students with disabilities. Also, special education classes have not been functioning well because the use of Assistive Technologies for teaching the school contents was not included in general school curriculum. Ellis, 2002 expressed that special education teachers does extra works in planning scheme of work using Assistive Technologies as tools for teaching the class contents due to closed curriculum (Ellis, 2002). Another problem is non availability and malfunctioning of Assistive Technologies in special schools. Some other identified challenges facing students with disabilities includes special education teachers' readiness, self-efficacy, qualification and ICT skill level on the use of Assistive Technologies for instructing students with disabilities.

Based on the stated issues, the study was carried out to ascertained the availability and functionality of Assistive Technologies for instruction. Also, inclusion of students with disabilities in mainstream classroom is a great problem which can only be solved by investigating through special education teachers' readiness, teachers' qualification and their ICT skill level on the use of Assistive Technologies. These variables were determined to address the issues of non availability of Assistive Technologies in schools and employment of low ICT skilled teachers that can cope well with students' learning deficiencies, as well as problems of closed curriculum. Finally, utilization of Assistive Technologies is important for all special teachers, this study examined the teachers' gender as a factor on the use of the available and functional Assistive Technologies.

III.   PURPOSE OF THE STUDY

The main purpose of this study was to investigate the availability and readiness of special education teachers' readiness towards the use of Assistive Technologies for instructing secondary school

students with disabilities, in Oyo State. Specifically, the study:

1. ascertained the availability and functionality of Assistive technologies for instructing students with disabilities;
2. determined the special education teachers' readiness on the use of Assistive technologies for instruction;
3. determined special education teachers' ICT skill level on the use of Assistive technologies for instruction;
4. examined the gender difference of special education teachers in utilization of Assistive technologies for instruction; and
5. determined the influence of special education teachers' qualification in the use of Assistive technologies for instruction;

IV.   RESEARCH QUESTIONS

The following research questions were answered in this study:

1. what are the available and functional Assistive technologies for teaching the students with disabilities?
2. how are the special education teachers ready to use Assistive technologies for instruction?
3. what are the ICT skill level of special education teachers in the utilization of Assistive technologies for instruction?
4. what is the gender difference of special education teachers in the use of Assistive technologies for instruction? And
5. how does special education teachers' qualification difference from the use of Assistive technologies for instruction?

V.   METHODOLOGY

The study is a descriptive research of the survey type.
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The population for this study were all the special education teachers in secondary schools in Oyo State. The sample for the study comprises of all special education teachers in all the special secondary schools in Oyo State. The research coverage was selected due to their small population. Census of all the special education teachers in these secondary schools were

purposively selected as a sampling techniques for the study. Census was employed because the target population is limited. The teachers were also stratified through gender, qualification and ICT skill level.

The research instrument used for this study was a researcher-designed questionnaire. The questionnaire items was structured in order to seek responses from the respondents with clear and straight forward instruction. The questionnaire was titled "availability-and-readiness of special education teachers in the utilization of Assistive Technology for instructions in Oyo state secondary schools." and it was designed on a four point Likert scale (Agree, Strongly Agree, Disagree and Strongly Disagree) with four sections. Section A is for obtaining information of the respondent such as gender, teachers' qualification and their ICT skill level.

Section B, Assistive technologies for instructing students with disabilities were listed categorically for the respondents to choose the available ones in their school, the response mode for the listed items was Available and Functional, Available but not Functional, Not Available at all. Lasly, Section C, sought for the respondents' readiness towards the use of Assistive technologies with the response mode of; Agree, Strongly Agree, Disagree and Strongly Disagree. Validity of the instrument was done by two professors and a senior lecturer in Educational Technology department, and the reliability of the instrument was determined by pilot testing with special education teachers in Kwara State for Special Needs (the school for handicapped), Ilorin, Kwara State which is out of the sample for the study. The data gathered from pilot study was analysed at 0.05 significance level using Cronbach's Alpha. The results were 0.83 on availability of Assistive technologies for blind/visually impaired students, 0.73 on availability of Assistive technologies for deaf/hearing impaired students, 0.73 on availability of Assistive technologies for mentally retarded & learning disability students, 0.62 on availability of Assistive technologies for physically handicapped students, 0.60 on special education teachers' readiness on the use of Assistive technologies. All these results showed high internal consistencies of the items in the research instrument. In view of this, the instrument is considered reliable. The researcher sought for permission from the principals in the selected special secondary schools in Oyo state, to administer the questionnaire and after the respondents have completed the questions it was collected with two research assistants and the researcher himself in such schools.

The respondents were allowed to participate voluntarily. All cited works were acknowledged to avoid plagiarism. Respondents identity and result from the research were treated confidentially.

VI. DATA ANALYSIS TECHNIQUES

The data collected from the respondents through questionnaire was subjected to descriptive statistics (Frequency counts, mean score and percentage) and inferential statistics to analyse the responses to the research instrument given. Hypotheses 1 was tested with the use of inferential statistics (independent t-test) while hypotheses 2 and 3 were tested using One-Way-Analysis of Variance (ANOVA) at 95% confidence interval and .05 level of significance to analyse the difference between variables and respondents' background information through the use of Statistical Product and Service Solution. Each table from the data analysis was interpreted accordingly. All these were done using Statistical Package for Social Science version 23.0 for windows.

VII. DATA ANALYSIS AND RESULTS

Data were collected from respondents with the use of designed questionnaire by the researcher. The questionnaire was administered to the purposively selected respondents that is, 119 special education teachers (47 male and 72 female) in all special secondary schools in Oyo State, which is the population study area. The statistical tool used for analysing the collected data is Statistical Package for Social Science (SPSS). In analysing the data, the researcher employed the use of frequency counts, mean, percentage, t-test and ANOVA statistical method. The formulated hypotheses were tested at 0.05 level of significance.

Analysis of background parameters based on gender.

Table 1: Distribution of Respondents based on Gender

Gender	Frequency	Percentage
Male	47	39.5
Female	72	60.5
Total	119	100

Analysis of background parameters on special education teachers' ICT skill level.

Table 2: Distribution of Respondents based on ICT Skill level

ICT Skill Level	Frequency	Percentage
None	17	14.3
Basic	81	68.1
Intermediate	19	16.0
Advance	2	1.7
Total	119	100

Table 3: Frequency and Percentage Distribution on the availability of Assistive Technologies for Blind/Visually Impaired Students

S/N	Questionnaire Items	Available and Functional		Available but not Function		Not Available at all	
		F	%	F	%	F	%
1.	Audio books and Publications	5	4.2	72	60.5	42	35.3
2.	Programmable keyboard / Audio keyboards	4	3.4	69	58.0	46	38.7
3.	Enhance keyboard / on screen keyboard	6	5.0	57	47.9	56	47.1
4.	Electronic dictionary with in-built speech synthesizer	6	5.0	57	47.9	56	47.1
5.	Video with screen reader and alternative mouse	7	5.9	56	47.1	56	47.1
6.	Video of a refreshable Braille display	9	7.6	51	42.9	59	49.6
7.	Wireless radio/ instructional radio	11	9.2	58	48.7	50	42.0
8.	Reading glass or Contact Lenses	7	5.9	58	48.7	54	45.4
9.	Talking calculator	4	3.4	67	56.3	48	40.3
10.	Touch pad with speech synthesizer / Talking computer	4	3.4	55	46.2	60	50.4
11.	Braille embossers	10	8.4	57	47.9	52	43.7
12.	Joysticks / Trackballs	9	7.6	52	43.7	58	48.7
13.	Computer set, projector with On screen reader	9	7.6	81	68.1	29	24.4
14.	Audio tape and video recorder	9	7.6	81	68.1	29	24.4
15.	Speech recognition / Synchronized Headset	6	5.0	72	60.5	41	34.5
	Total	106	5.9	943	52.8	736	41.2

Table 3, indicates the available Assistive Technologies for the blind or visually impaired students. The table 3 above, shows that 52.8% of special education teachers claimed that Assistive Technologies for blind or visually impaired students is available but not functional. Significantly, Assistive Technologies such as computer set, projector with on screen reader, audio tape and video recorder (68.1%); audio books and publication, speech recognition or synchronized headset (60.5%); programmable or on screen keyboard (58%); talking calculator (56.3%); were widely available but not functional, while touch pad with speech synthesizer or talking computer (50.4%); and a Video of a refreshable Braille display (49.6%) were not available at all.

Table 4: Frequency and Percentage Distribution on the Availability of Assistive Technologies for Deaf /Hearing Impaired Students

S/N	Questionnaire Items	Available and Functional		Available but not Functional		Not Available at all	
		F	%	F	%	F	%
1.	V.H.S/ Video tape	12	10.1	70	58.8	37	31.1
2.	Motion film/ pictures	10	8.4	77	64.7	32	26.9
3.	Slide projector	20	16.8	54	45.4	45	37.8
4.	Television / On screen display	16	13.4	70	58.8	33	27.7
5.	Remedial reading software	14	11.8	39	32.8	66	55.5
6.	Amplification	19	16.0	55	46.2	45	37.8
7.	Toggle keys / Repeat key	13	10.9	55	46.2	51	42.9
8.	Free form Database software	15	12.6	27	22.7	77	64.7
9.	Abbreviation Expanders	12	10.1	45	37.8	62	52.1
	Total	131	12.2	492	45.93	448	41.8

Table 4, indicates the available Assistive Technologies for the deaf or hearing impaired students. Table 4 above reveals that, special education teachers claimed that Assistive Technologies for deaf or hearing impaired students is available but not functional. Significantly, Assistive Technologies such as motion film or pictures (64.7%); V.H.S. video tape and television or on screen display (58.8%); while free form database software (64.7%); reading remedial software (55.5%); and abbreviation expanders (52.1%) were not available at all.

Table 5: Frequency and Percentage Distribution on the Availability of Assistive Technologies for Mentally Retarded & Learning Disability

S/N	Questionnaire Items	Available and Functional		Available but not Functional		Not Available at all	
		F	%	F	%	F	%
1.	Disc recorder	13	10.9	52	43.7	54	45.4
2.	Graphic organizers and outlining	7	5.9	21	17.6	91	76.5
3.	Computer set and Video with	33	27.7	37	31.1	49	41.2

alternative mouse						
Total	53	14.8	11.0	30.8	194	54.3

Table 5, shows the available Assistive Technologies for the mentally retarded and learning disability students. As indicated from table 5, special education teachers claimed that Assistive Technologies for mentally retarded and learning disability students were not available at all. Significantly, Assistive Technologies such as graphic organizers and outlining (76.5%); is widely not available at all, disc recorder (45.4%); Computer set and Video with alternative mouse (41.2%) were sparsely not available.

Table 6: Frequency and Percentage Distribution on the Availability of Assistive Technologies for Physically Handicapped

S/N	Questionnaire Items	Available and Functional		Available but not Functional		Not Available at all	
		F	%	F	%	F	%
1.	Writing gadgets	14	11.8	46	38.7	59	49.6
2.	Page Tuner	14	11.8	35	29.4	70	58.8
3.	Slants board	28	23.5	18	15.1	73	61.3
4.	Internet / Communication satellite	14	11.8	56	47.1	49	41.2
5.	Electronic Maths software	2	1.7	20	16.8	97	81.5
6.	Generator and other sources of electricity supply	42	35.3	53	44.5	23	19.3
	Total	114	15.9	228	31.9	371	52.0

Table 6, shows the available Assistive Technologies for the physically handicapped students. As indicated from table 6, special education teachers claimed that Assistive Technologies for physically handicapped students were not available at all. Significantly, Assistive Technologies such as Electronic Maths software (81.5%); slants board (61.3%); page tuner (58.8%) were widely not available at all, but writing gadgets (49.6%); and internet or communication satellite (41.2%) were sparsely not available.

Table 7: Mean and Rank Ordering of Special Education Teachers' Readiness on the Use of Assistive Technologies for Instruction

S/N	Questionnaire Items	Mean $\bar{x}$	Rank
1.	Joystick, light pen, Iris pen word predications slant boards, computer set, disc recorder and hearing aids are good for teaching students with disabilities, I am fully prepared to use it.	3.74	3rd
2.	I am interested in receiving training on professional development in the area of Assistive technologies .	3.78	1st
3.	I will feel more competent when I make use of computer set with on screen keyboard reader to teach blind students	3.70	6th

4.	Using wireless radio / instructional radio for teaching students with disabilities is very interesting, I will love to use it .	3.71	4th
5.	I can help deaf students in my class with the use of V.H.S. or video tape with television.	3.76	2nd
6.	Most part of the time I spent in preparing for the use of Assistive technologies to teach students with disabilities is a waste.	1.70	8th
7.	If my school is provided with Assistive technologies I will use them for teaching students with disabilities.	3.71	4th
8.	I have prepared my mind for the use of Braille translation packages to translate printed text of an electronic document for blind students.	3.31	7th
	Grand Mean	3.43	

Table 7 above presents the analysis of the special education teachers' readiness on the use of Assistive Technologies for instruction. Based on the benchmark of 2.50, of a 4-point Likert scale, items 1, 2, 3, 4, 5, 7 and 8 have mean score greater than the benchmark. Significantly, special education teachers are: interested to develop themselves through training on Assistive Technology (3.78); ready to help deaf students in their class with the use of V.H.S. or video tape with television (3.76); prepared and accepted to use Assistive Technologies to students with disabilities (3.74); among others. Cumulatively, a grand mean 3.43>2.50 and this implies that special education teachers are ready to use Assistive Technologies for instruction.

VIII. SUMMARY OF THE FINDINGS

From the gathered data, which has been thoroughly analysed and interpreted above, it was obvious that:
1. Majority of special education teachers in Oyo state who are the respondents, are female while few of the respondents are male teachers. (Table 1)
2. Most of the special education teachers in Oyo state special secondary schools had little knowledge about the utilization of Assistive Technologies for instruction purposes.
3. Assistive Technologies for instructing students with disabilities were not available at all and some of the devices available were not functional.
4. Most of the respondents have prepared themselves to utilize Assistive Technologies for instruction

and accepted to receive training on development of the devices.
5. Few of the respondents strongly adhered to utilize Assistive Technologies for instruction in their schools.

IX. DISCUSSIONS OF THE FINDINGS

As previously stated, a well-designed and structured questionnaire which was based on the stated research question was used to obtained necessary information from the special education teachers in all special secondary schools in Oyo state. The analysis of the data collected was based on the use of appropriate statistical technique; the use of frequencies, mean score and percentage statistical distribution were used to analysis the data obtained.

However, from the findings, the analysed data showed that: Students with disabilities have categories; blind or visually impaired, deaf or hearing impaired, mentally retarded, physically handicapped among others. This is in line with Bolanle (2003), who expressed that learners who are different from average students are referred to as exceptional students and are commonly categorized as blind or visually impaired, deaf or hearing impaired, mentally retarded, physically handicapped, speech impaired gifted and talented. Female special education teachers dominate large portion than male teachers, this findings is in line with Issa (2009) whose findings reported that male teachers view teaching profession as stepping stone onto more earning profession.

Some special education teachers claimed that Assistive Technologies for the students with disabilities were available but not functional while in most of schools the devices were not available at all. This findings agreed with the earlier findings of Ozioma and Ozioma (2012) whose study posited that many schools lack essential Assistive technological devices, hindering the effectiveness of special education delivery. It is reveal from the findings (research questions 2, 3, 4, and hypothesis 2) that Special education teachers are fully prepared to receive training on Assistive Technology use and have the believe that the use of Assistive Technologies for instruction is the best method to help students with disabilities to obtain educational goals. This findings is in line with the earlier study of Olaniyi and Omotayo (2022) whose result of a study highlighted that teachers' confidence in the utilization of Assistive Technologies for students with disabilities, is closely linked to the quality and extent of professional development the teachers had. The findings is also in line with diffusion of Innovation Theory by Roggers, (2003) who categorized individuals based on their readiness to adopt new technologies, ranging from innovators to laggards.

In the findings (research question five and hypothesis one), it is revealed that gender of special education teacher is not a barrier to their ability use of Assistive technology for instruction, that is women with developmental disabilities are very skilled in using technologies for communication, mobility, learning and the performance of daily tasks. This findings was in support of the report from National Women's Health Information Centre, (2012) on the proverbial Catch-22 situation stated that without technologies, women with disabilities cannot perform tasks independently or without fatigue or enervating pain (Schultz, 2002).

Lastly, from the findings (research question six and hypothesis three), special education teachers proofed that qualifications is different from their readiness towards the use of Assistive Technologies for instruction. This findings agreed to the report of a research from Issa (2009) who stated that out of many special institutions in Nigeria especially primary and secondary schools, many special education teachers in

such schools are N.C.E. holder and have good attitudes towards the utilization of Assistive Technologies.

X. IMPLICATION OF THE FINDINGS

Based on the findings of this study, the following implications can be drawn: the findings have strong implications for effective teaching and learning process in special secondary schools in Nigeria. It is an indication that the teaching and learning at special education schools would tremendously improved, if Assistive Technologies were adequately provided for the special education teachers in order to assist the students with disabilities, because without the available and functional Assistive Technologies, such students would not learn at the same rate to their non disabled counterpart.

The result in the study also shown that there is no significance difference between special education teachers' gender and their ability to utilize Assistive Technologies for instruction. The implication of this is that male and the female special education teachers have holds the beliefs that utilization of Assistive Technologies for teaching students with disabilities is the best way to help the students to obtain educational goals.

CONCLUSION

Based on the findings of this study these conclusions were drawn: most special education teachers had little knowledge about the use of Assistive Technologies and this will significantly arouse their interest in gaining more knowledge, skills and the use of new technology and other pedagogical approaches in their profession. It was discovered also that, there was gross inadequacy of Assistive Technologies for instruction special secondary schools in Oyo state. The study also revealed that most special education teachers in all special secondary schools in Oyo state are female, many male teachers considered teaching profession as stepping stone for attaining better paid jobs. Also, it was noted that many special education teachers are most ready to adopt and adapt Assistive Technologies as technology of good innovation and they are not ready to be left out in this modern technological days.

LIMITATIONS OF THE STUDY

This study was limited to special secondary schools in Oyo state which is a part from many state in Nigeria, efforts to replicate this study in special primary schools and other states should be supported. Comparison of such findings would authenticate their validations. This study is also limited to special teachers, availability and functionality of Assistive Technologies and the teachers' readiness. Efforts could be made to investigate special education teachers' self-efficacy in the use of Assistive Technologies for students with disabilities and even accessibility to Assistive Technologies.

RECOMMENDATIONS

Based on the results obtained from the study, the following recommendations were stated:

1. Federal, state, and stake holders in education should organize training workshop for special education teachers to discuss, and investigate many developments on Assistive Technologies.
2. Special schools and ministry of education should keep and update Assistive Technology devices where and when necessary for smooth utilization of the devices for instructional delivery.
3. Curriculum planner should adequately review syllabus to ease the special education teachers' job in instructing students with disabilities.
4. There should be development, assessment, improvement, and distribution of Assistive Technologies to every special secondary schools in the state.
5. Students with disabilities should be encouraged to engage themselves in the use of web and other Assistive Technologies as a source of research material which will build their critical literacy skills and support such students' studies
6. Through the awareness program, students with disabilities will realize that there is opportunity for them to retain more knowledge as Assistive Technologies allows them to learn and relearn as many time as they wish.

REFERENC**Error! Reference source not found.Error! Reference source not found.Error! Reference source not found.Error! Reference source not found.Error! Reference source not found.Error! Reference source not found.Error! Reference source not found.Error! Reference source not found.**ES

[1] Ahmed, F. K. (2024). Use of Assitive in education:making rooms for diverse learning needs. Transcience, 6(2), 62-77

[2] Aruma, R., & Ford, K., (2019) How other Countries do disciplines of individual with disabilities, Education Leadership Forum. Pages 56-60.

[3] Anderson, N. & Baskin, C. (2002) Can we leave it to chance? New learning technologies and the problem of professional competence. *International Educational Journal, 3(3)*. Archived from the original on 2016-03-04. Retrieved 2016-07-07.

[4] Bouck, Flanagan S., & Miller B., Bassette L. (2012) Rethinking everyday technology as Assistive Technology to meet students IEP goals. *Journal of Special Educational Technology:27(4):47-57.*

[5] Bureau of Statistics 2018 Retrieved from @great schools.net/LD/Assistive-technology

[6] Dieker, L. A., & Barnett, C. A. (1996). Effective co-teaching. TEACHING Exceptional Children, 29(1), 5-7. EJ 529 433 Friend, M. & Cook, L. (1996). Interactions. White Plains, New York: Long man.

[7] Ellis, Edwin (2002). Watering up the curriculum for adolescents with learning disabilities, part1: Goals of the knowledge dimension. WETA. Retrieved 2010-04-21.

[8] Edyburn, D. L. (2001).: Scholarly endeavours: Conducting a comprehensive review of the literature using digital resources. *Journal of Special Education Technology, 16(1), 49-52.*

[9] Issa, A. I. (2009). Teachers' awareness of and attitude to Assistive technologies for special education in Nigeria.Unpublished Ph.D. Thesis.

University of Ilorin, Nigeria. Educational Technology department.

[10] Lake, J. (2005). Information and resources for Students with Disabilities. Sourced from https://disabilities-informationresources.weebly.com/physical-and-other-health-impairment.html.

[11] Micheal, A. (2019). Augmentative and Assistive Technology. *Encyclopaedia of Autism Spectrum Disorders,* 427-433

[12] Mettah, J. & Kauffman, M. (2018). Education of Individuals with disabilities-Types and Causes of Physical Disabilities. The Basic and History of Special Education, Trends and Controversies. StateUniversity.com https://education.stateuniversity.com/pages/232/ physical-Disabilities-Education-Individuals with. htmlixzz6fg3wzpfO

[13] Mustapha, A.O. (2021). Special Education Teachers' readiness and self-efficacy in Utilization of Assistive Technologies for instruction in Secondary School, Oyo state. Unpublished Master Detestation. University of Ilorin, Nigeria. Educational Technology department.

[14] Raskind, N. J. (2019). Underpinning implications of instructional strategies on Assistive Technology for learning disability: *a meta-synthesis review, Disability and Rehabilitation: Assistive Technology* 18(4), 423-431.

[15] Scherer, M. J. (2003). *Connecting to learn: Educational and assistive technologies for people with disabilities*. Washington, DC: American Psychological Association Books.

[16] Schultz, T. P. (2002). Why Governments should Invest More to Educate Girls World Development, 30(2), 207 – 225.

[17] Stevens, C. (2004). Information and communication technology, special educational needs and schools: a historical perspective of UK government initiatives. In: Florian, L., Hegarty, J. (eds.) ICT and Special Educational Needs: a Tool for Inclusion, 21–34. Open University Press, Buckingham.

[18] Todis B, & Walker H. M. (1993). User perspectives on Assistive technology in educational settings. Focus on Exceptional Children 26(3), 1–16.

[19] United Nations Educational Scientific and Cultural Organization. (UNESCO, 2008). *ICT competency standards for teachers: Policy framework.* Retrieved November 11, 2013, fromhttp://portal.unesco.org/ci/en/ev.phpurl_id= 25740&url_do=do_topic&url_section=201.html

[20] Williams, P., Jamali, H. R., & Nicholas, D. (2006) Using ICT with people with special education needs: what the literature tell us. Aslib Proceedings 58(4), 330–345.

[21] World Health Organisation (2014). ICF browser. Chapter 1 products and technology: World Health Organisation; (June 9, 2014). Available from http://apps.who.Int/classification/;cfbrowser

[22] WENR, 2017 "Education in Nigeria - WENR". WENR. 2017-03-07. Retrieved 2017-11-13

[23] Yusuf, M. O. (2004). Internet browsing for teaching, learning and research. Paper delivered the Two-day Workshop on the use the internet to enhance lecturers' productivity, Faculty of Education, University of Ilorin.

[24] Yusuf, M. O. (2005). Integrating information and communication technologies (ICTs) in Nigeria tertiary education. The African symposium: An on-line *Journal of African Educational Research Network*, 43-50.