



Indonesian Journal of Community and Special Needs Education



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

Special Education Teachers' Readiness and Self-Efficacy in Utilization of Assistive Technologies for Instruction in Secondary School

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ABSTRACT

This study determined the Special Education Teachers' Readiness and Self-Efficacy in Utilization of Assistive Technologies for Instruction in Secondary School, Oyo State. The study adopted descriptive research of the survey type. The population for this study was made up of all special education teachers in Oyo State. Purposive sampling techniques were used to select 119 special education teachers in Oyo-state. Descriptive and Inferential statistics were used to answer the research question and test the stated hypotheses with the aid of statistical product and service solution (SPSS) version 20.0 at a 0.05 level of significance. The findings indicated that special education teachers are ready to use assistive technology for instruction and the teachers have high self-efficacy in the use of assistive technology for instruction. The study concluded that assistive technology can be used to facilitate teaching and stimulation if appropriately deployed. Therefore, it was recommended that special Education teachers should be encouraged to deploy assistive technology for learning irrespective of their gender.

ARTICLE INFO

Article History:

Submitted/Received 29 Dec 2021

First revised 21 Jan 2022

Accepted 01 Mar 2022

First available online 11 Mar 2022

Publication date 01 Mar 2023

Keyword:

Assistive technology,

Gender,

Readiness,

Self-efficacy.

1. INTRODUCTION

Education enlightens people to understand their rights and assist individual to claim the rights even where there is injustice. Education can be referred to as total experiences that individuals exposed to or had through lifetime occurrences or various training that individuals undergone under the guidance of someone for some 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. Köse and Güner-Yildiz (2021) expressed special education as an aspect of education that treats people as individuals and makes allowance for the use of special equipment and methods of teaching, according to their respective needs. Special education modifies, supplements, and refines the regular school program by employing the services of specially trained teachers and using special equipment, materials, and techniques (Ayvazo et al., 2021). Some researchers opined those human needs are necessary but how the various individuals acquire these needs through education should be paramount.

Special education is a complex enterprise, students are classified by disability categories and placed in settings that range from classrooms and resource rooms to self-contained classes and separate schools. Special education in teacher education is also complex. Special education teachers are prepared in specialized programs and often licensed to teach students with a particular disability. Also, how students with disabilities are served in schools has changed dramatically since the early 1980s, with implications for teachers' roles and teacher preparation (Lockwood, 2021). Due to some researchers, special education teachers provide instruction specifically tailored to meet individualized needs, making education available to students who otherwise would have limited access to education.

Special education teachers adapt general education lessons and teach various subjects, such as reading, writing, and mathematics, to students with mild and moderate disabilities. They 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 setting, students' disabilities, and teachers' specialties. 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 teachers teach students in small groups or on a one-on-one basis.

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 (Lawrence, 2021). Assistive Technologies are devices that could be used to alleviate the problems faced by students with disabilities. 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 the 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.

Effective educational outcomes from utilization of Assistive technology are dependent upon special education teachers' readiness, self-efficacy, and their Assistive Technologies skill level. Teachers have further recounted improvements in general academic behaviour such as work habits and productivity. Observing the overall benefits associated with the use of

Assistive Technologies for students with disabilities, parents, and teachers have recognized the capacity of Assistive Technologies to offer students new opportunities, reveal their potential, and provide such students with the tools to realize that potential (Van *et al.*, 2022). Special education teachers' readiness to use Assistive Technology will go a long way to ease the suffering or problems of students with disabilities. 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 programs for students with disabilities emphasized the central role of teachers in the day-to-day utilization of technology plans.

The effectiveness of teachers' teaching ability, their persistence in the face of frustration, their instructional behaviours, and the performance of their students is influenced significantly by teachers' self-efficacy (Iwuanyanwu *et al.*, 2022). Special education teachers' self-efficacy refers to teachers' beliefs or perceptions about such teachers' ability to teach students with various disabilities and to bring about desired changes in students' achievement. Studies have indicated that teachers' self-efficacy is one of the most pervasive factors that potentially distinguish teachers who teach effectively from those who usually struggle in teaching (Minghui *et al.*, 2021).

When examining teachers' self-efficacy, researchers discovered that one teacher may have different perceptions of efficacy when teaching different students or in varying situations. Teaching in a special education setting differs greatly from teaching students in a general education setting (McCarty, 2013). Therefore, special education teachers who have trained and certified in higher special education programs and has a good perception towards their profession can teach and work with students who have a wide range of physical, cognitive, language, learning, sensory, and/or emotional abilities that deviate from those of the general population in special education schools.

Assistive Technologies are found useful for students with disabilities based on availabilities, coordinated assessment of Assistive Technologies, and implementation process. Utilization of Assistive Technologies can be referred to as implementation of the method or process of using Assistive Technologies for instructing students with disabilities to attain educational potentials. Some researchers have shown the utilization of Assistive technologies in education has been seen as the method that would help students with disabilities realize their potential and bypass area of instructional difficulties through the new technological tools and revolutionize an outmoded educational system.

The utilization of Assistive Technologies helps the students to experience success while working independently. Most individuals utilize some form of Assistive Technology daily, when someone puts on glasses or contact lenses, listens to books on tape (instructional radio program), or uses a 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. Because they are designed for individual use, assistive technologies can be carefully engineered, fitted, and adapted to the specific strengths and functional limitations of an individual student (Rose *et al.*, 2022).

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 (Rwegoshora *et al.*, 2022). A

Comparative Study of Assistive Technologies for Physically challenged peoples for the usability of Powered Wheelchair Mobility Aid.). However, utilization of Assistive Technologies can also be influenced by special education teachers' qualifications and gender.

A 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 a paramount barrier for the effective usage and implementation of Assistive Technology. Therefore, to handle this concern, the grant money will need to be allocated for setting up a resource centre, hiring technical professionals, 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 the teacher could find information, software, hardware, and other Assistive Technologies for teaching/learning purposes (Parveen et al., 2021).

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 referred 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 a man or woman as a social being (Stock, 2022). It is accepted that illiteracy rates are higher among females than males in every part of the world.

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. Gender influence is also of importance in research on computer education. This is because gender differences with lower female participation, are widely documented for both science and technology, and particularly for computer education (Cobanoglu & Cobanoglu, 2021).

Assistive Technology devices cannot eliminate learning difficulties but can help students with disabilities attain the highest educational potentials because the devices allow 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 audiobooks and instructional radio. Also, some researchers stated that it supports students to access and enjoy their rights, do things they value, and bridge disparities between students with and without disabilities.

However, special education students are often denied their right to education. Students with disabilities are placed in the same classes as non-disabled students, this may impede the educational progress of students with disabilities. The inclusion of students with disabilities in mainstream classrooms with fellow normal students has been identified as a great problem because students with either hearing impaired or blind or mentally retarded cannot learn as normal students. Also, special education classes have not been functioning well because the use of Assistive Technologies for teaching the school contents was not included in the general school curriculum. Ellis, 2002 expressed that special education teachers do extra work in planning schemes of work using Assistive Technologies as tools for teaching the class contents due to closed curriculum (Ellis, 2002). Another problem is the non-availability and malfunctioning of Assistive Technologies in special schools. Some other identified challenges facing students with disabilities include 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 ascertain the availability and functionality of Assistive Technologies for instruction. Also, the inclusion of students with disabilities in the mainstream classroom is a great problem that can only be solved by investigating through special education teachers' self-efficacy, 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 the employment of low ICT skilled teachers that can cope well with students' learning deficiencies, as well as problems of the closed curriculum. Finally, utilization of Assistive Technologies is important for all special teachers, this study examined the teachers' gender as a factor in the use of the available and functional Assistive Technologies.

The main purpose of this study was to investigate the special education teachers' readiness and self-efficacy to utilize Assistive Technologies for instructing secondary school students with disabilities, in Oyo State. Specifically, the study was focused on:

- (i) Determining the special education teachers' readiness on the use of Assistive technologies for instruction,
- (ii) Examining special education teachers' self-efficacy on the use of Assistive technologies for instruction,
- (iii) Determining the special education teachers' readiness on the use of Assistive technologies for instruction based on gender, and
- (iv) Examining special education teachers' self-efficacy on the use of Assistive technologies for instruction based on qualification.

The following research hypotheses were formulated and tested at a 0.05 level of significance in this study:

- (i) **Ho1:** There is no significant difference in special education teachers' readiness to use Assistive technologies for instruction based on gender.
- (ii) **Ho2:** There is no significant difference between special education teachers' self-efficacy in the use of Assistive technologies for instruction based on qualification.

2. METHODS

The study is descriptive research of the survey type. Descriptive research describes, examines, and interprets events and ideas the way they are without any external manipulation. A survey design was chosen because it enables the researcher to collect a large amount of information from the respondents who are few people and considered as representative of the entire group who also described how such information was collected and analysed. The population for this study was all the special education teachers in secondary schools in Oyo State. The sample for the study comprises 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 technique 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 collecting the relevant data for this study is a researcher-designed questionnaire. The questionnaire items were structured to seek responses from the respondents with clear and straightforward instructions. The questionnaire was titled "Special Education Teachers' Readiness and Self-efficacy in Utilization of Assistive Technologies for instruction in Secondary Schools, Oyo State" and it was designed on a four-point Likert scale (Agree, Strongly Agree, Disagree and Strongly Disagree) and has four sections. Section A is for obtaining information of the respondent such as gender, teachers' qualification, and their ICT skill level. Section B sought for the respondents' readiness towards the use of Assistive technologies with the response mode of; Agree, Strongly Agree, Disagree, and Strongly Disagree. Lastly, Section C sought

information on respondents' self-efficacy in the utilization of Assistive technologies for instruction with the same response mode as Section C.

2.1. Validation of the Research Instrument

The face and contents validity of the instrument was conducted by the researcher's supervisor and other three experts in the Department of Educational Technology, University of Ilorin. It was checked for clarity, appropriateness, and correctness of the questions with the research topic and other necessary criteria of the instrument. Their comments were used to modify the questionnaire to produce the final draft. 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 the pilot study were analysed at a 0.05 significance level using Cronbach's Alpha. Readiness on the use of Assistive technologies, 0.71 on special education teachers' self-efficacy on the use of Assistive technologies. All these results showed high internal consistencies of the items in the research instrument. Because of this, the instrument is considered reliable.

2.2. Procedure for Data Collection

A letter of introduction was collected from the head of the Department, Educational Technology, introducing the researcher to the principals in the selected special schools. The researcher sought 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 back 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' identities and results from the research will be treated confidentially. All corrections and other instructions from the experts in the department were handled with ethical confidentiality.

2.3. Data Analysis Techniques

The data collected from the respondents through the 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 was tested using One-Way-Analysis of Variance (ANOVA) at 95% confidence interval and 0.05 level of significance to between variables and respondents' background information.

3. RESULTS AND DISCUSSION

3.1. Results

3.1.1. Research Question 1: How are the Special Education Teachers' Readiness to Use Assistive Technologies for Instruction.

Table 1 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 a 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 videotape 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.

Table 1. Mean and Rank Ordering of Special Education Teachers' Readiness on the Use of Assistive Technologies for Instruction

S/N	Questionnaire Items	Mean	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 them.	3.74	3 rd
2	I am interested in receiving training on professional development in the area of Assistive technologies.	3.78	1 st
3	I will feel more competent when I make use of a computer set with an on-screen keyboard reader to teach blind students	3.70	6 th
4	Using wireless radio / instructional radio for teaching students with disabilities is very interesting, I will love to use it.	3.71	4 th
5	I can help deaf students in my class with the use of V.H.S. or videotape with television.	3.76	2 nd
6	Most of the time I spent preparing for the use of Assistive technologies to teach students with disabilities is a waste.	1.70	8 th
7	If my school is provided with Assistive technologies, I will use them for teaching students with disabilities.	3.71	4 th
8	I have prepared my mind for the use of Braille translation packages to translate the printed text of an electronic document for blind students.	3.31	7 th
Grand Mean		3.43	

3.1.2. Research Question 2: What are the Special Education Teachers' Self-Efficacy on the Use of Assistive Technologies for Instruction?

Table 2 reveals the analysis of the special education teachers' self-efficacy on the use of Assistive Technologies for instruction. Based on the benchmark of 2.50, of a 4-point Likert scale, items 1, 2, 4, and 6 have a mean score greater than the benchmark.

Table 2. Mean and Rank Ordering of Special Education Teachers' Self-Efficacy on the Use of Assistive Technologies for Instruction

S/N	Questionnaire Items	Mean	Rank
1	I believed that Assistive technologies can help students with disabilities to learn easier and assimilate faster, I love their usage.	3.88	1 st
2	If Assistive technologies were provided in my school, it will relieve my lesson delivery for students with disabilities.	3.83	2 nd
3	I feel nervous while using Assistive technologies for teaching students with disabilities, I prefer the use of textbooks and chalkboards for my teaching.	1.83	6 th
4	I believe that Assistive technologies can relieve and ease the work of interpreters in lesson delivery for students with disabilities.	3.55	3 rd
5	I learned that I might do something wrong while using Assistive technologies for teaching students with disabilities.	1.95	5 th
6	I believe that I have a special talent for the use of Assistive technologies for teaching students with disabilities.	3.37	4 th
7	Using Assistive technologies requires so much extra time and slows the pace of learning for the class.	1.40	7 th
8	If students with disabilities learned through the use of Assistive technologies, it would negatively affect their skills development.	1.23	8 th
Grand Mean		2.63	

Significantly, special education teachers: believed that Assistive Technology can help students to learn easier and assimilate faster (3.88); claimed to use Assistive Technologies if they are provided in their school (3.83), and proof to have special talents towards the use of Assistive Technologies (3.37). Cumulatively, a grand mean of 2.63 > 2.50 indicated that few special education teachers have the strong ability, belief, and positive perception towards the use of Assistive technologies for instruction because the grand mean (2.63) from the table is greater than the benchmark 2.54.

3.1.3. Hypotheses One: There is No Significant Difference in Special Education Teachers' Readiness to Use Assistive Technologies for Instruction Based on Gender.

Table 3 indicates that Sig (0.405) is greater than the p-value at a 0.05 level of significance. This implies that there is no significant difference between special education teachers' gender and their self-efficacy on the use of Assistive Technologies for instruction. Therefore, the hypothesis which states that there is no significant difference between special education teachers' gender and their self-efficacy on the use of Assistive Technologies for instruction does not reject.

Table 3. T-test on the Influence of Gender on Special Education Teachers' Readiness

Gender	N	Mean	SD	DF	T	Sig. (2 tailed)	Remark
Male	47	20.85	2.22	117	-0.83	0.40	Do not reject
Female	72	21.18	2.02				

Significant at 0.05 alpha levels

3.1.4. Hypotheses Two: There is No Significant Difference in Special Education Teachers' Self-Efficacy in the Use Assistive Technologies for Instruction Based on Qualification.

Based on Table 4, it could be seen that the F- values have (0.661) significance which is higher than the alpha value of 0.05. This implies that there is no significant difference in special education teachers' self-efficacy in the use of Assistive technologies for instruction based on qualification.

Table 4. ANOVA Statistical on the Special Education Teachers' Self-Efficacy Based on Qualification

Test	Sum of Squares	Df	Mean Square	F	Sig.
Between Groups	8.492	3	2.831	0.532	0.661
Within Groups	612.331	115	5.325		
Total	620.824	118			

3.2. Discussion

This study investigated special education teachers' readiness and self-efficacy to utilize Assistive Technologies for instructing secondary school students with disabilities, in Oyo state. Research question one seeks to examine special education teachers' readiness on the use of Assistive technologies for instruction. Different items were tested and from the data gathered, it was revealed that special education teachers are ready to utilize Assistive Technologies for instructing secondary school students with disabilities. These findings agreed with the previous findings of some researchers whose findings asserted that special education teachers' teachers have prepared themselves and their willing to utilize Assistive

technologies for students with disabilities. Research question 2 determined the special education teachers' self-efficacy on the use of Assistive technologies for instruction. This sought to check whether special education teachers have a high self-efficacy for using assistive technology for teaching. From the data analysed, it was revealed that special education teachers have high self-efficacy to use assistive technology for instruction. This is seen in the grand mean score. researchers discovered that one teacher may have different perceptions of efficacy when teaching different students or in varying situations. Teaching in a special education setting differs greatly from teaching students in a general education setting (McCarty, 2013).

The influence of males and females on special education teachers' readiness to use Assistive technologies for instruction was research question 3 and hypothesis 1. From the analysed data, it was deduced that there is no significant difference between males and females there is no significant difference between special education teachers' gender and their self-efficacy on the use of Assistive Technologies for instruction. It showed that male and female special education teachers utilize assistive technologies equally. This finding contradicts the previous study of 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. Gender influence is also of importance in research on computer education. This is because gender differences with lower female participation, are widely documented for both science and technology, and particularly for computer education (Cobanoglu & Cobanoglu, 2021).

Research question 4 and hypothesis 2 sought to determine the influence of qualification and its significant difference in special education students' utilization of assistive technology for instruction. The findings in this study revealed no significant difference There is no significant difference in special education teachers' self-efficacy in the use of Assistive technologies for instruction based on qualification. This finding does not conform with the findings of Parveen *et al.* (2021), whose study affirmed that special education teachers' qualification towards the use of Assistive technology has been the paramount barrier for the effective usage and implementation of Assistive Technology.

4. CONCLUSION

This study discussed the Special Education Teachers' Readiness and Self-Efficacy in Utilization of Assistive Technologies for Instruction in Secondary School, Oyo State. The study adopted descriptive research of the survey type. The population for this study was made up of all special education teachers in Oyo State. Purposive sampling techniques were used to select 119 special education teachers in Oyo-state. Descriptive and Inferential statistics were used to answer the research question and test the stated hypotheses with the aid of statistical product and service solution (SPSS) version 20.0 at a 0.05 level of significance. The findings indicated that special education teachers are ready to use assistive technology for instruction and the teachers have high self-efficacy in the use of assistive technology for instruction. The study concluded that assistive technology can be used to facilitate teaching and stimulation if appropriately deployed. Therefore, it was recommended that special Education teachers should be encouraged to deploy assistive technology for learning irrespective of their gender.

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.

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