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Full Length Research

Effects of assistive technology on the academic performance of pupils with disabilities in inclusive schools in Jos, Plateau State.

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Abstract

The study examined the effects of assistive technology on the academic performance of pupils with special needs in inclusive schools in Jos, Plateau State. The descriptive survey research design was adopted for the study. The sample of the study comprised of all primary school teachers of Ganaka Inclusive School Jos, Plateau State. The total number of 25 teachers of pupils with special needs made up the sample of the study. The instrument used for this study was the Teachers of Pupils with Special Needs Questionnaire. It is a five point attitude scale questionnaire where respondents will be required to tick the option (strongly agree, agree, undecided, disagree and strongly disagree). The research questions were answered using mean. Among the major findings of the study indicates that the use of assistive technology devices will influence the performance of pupils with disabilities in inclusive classrooms. It was however recommended teachers of pupils with special needs should employ the use of assistive technology devices for teaching and learning to ensure that pupils with disabilities benefit maximally for instruction

Keywords: Inclusive Education, Special Needs Education, Pupils with Disabilities, Inclusive Classrooms.

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INTRODUCTION

Modern Technology is a major catalyst where advancement in the field of education is hinge. Educational institutions these days craves toward ensuring that teachers and learners are well rooted and conversant with modern trends in science and technology so as to produce positive result that will evolve our generation. Elewkere (2007) asserts that over 80% of the world's teeming populations of individuals with disabilities live in developing countries. In Nigeria, only 2% of them out of this number are receiving any form of educational services. However, the Nigerian policy on

education acknowledged the importance of inclusive education in the country which has remained at the theory level due to challenges in its implementation. McCarthy (2000) asserts that inclusive education ensures that all students are part of the school regardless of their strengths or weaknesses in any area, thereby becoming part of the school community. The uniqueness of inclusive education is one that is responsive to the diverse to the diverse needs of learners, one which accommodates different styles and rates of learning as well as different language needs.

However, providing educational services to pupils with special needs is bedeviled with several challenges.

Among these challenges is the poor academic achievement of pupils with special needs in inclusive settings. This consistent poor performance is largely due to the inadequate instructional materials utilized by teachers in teaching pupils with special needs. Therefore training for inclusion will alert teachers to better understand the goals, objectives and implementation strategies for various support services available for children with special needs. (Nugaret, Scruggs & Mastropieri, 2005). Among these forms of training is the effective use of assistive technology devices in teaching and learning for pupils with special needs. In other words, to meet the educational demands of these students, support service providers will likely rely on assistive technology for teaching and learning processes.

Academic performances of children in any school setting are vital parameters that are used to enable specialist assess the progress of individuals on a programme. In special needs education Assistive Technologies plays vital roles in augmenting the various grabs that existed in the various disabling conditions that children with disabilities find themselves in. These Technologies enhances their efficiency, interest and output in the classroom, home and the general inclusive environment.

Assistive Technology (A.T.) is one of such devices that had been of high premium in the area of Science and Technology in the 21st Century. Assistive technology is a term that describes any products whose primary purpose is to maintain or improve an individual's functioning, independence and promote their well-being. Assistive Technologies are software or hardware tools which help people with disabilities when they use technology (Muller, 2010). Moreso according to Kazaure (2011), assistive technology includes a variety of devices or tools that enable individual with disabilities to be more independent, self-confident, productive, and better integrated into the mainstream. Assistive technology implies appropriate technology which today is referred to as totally the way of life evolved by people in an attempt to meet the challenges of living in their environments. In other words, assistive technology is a generic term that includes assistive, adaptive and rehabilitative devices for people with disabilities and includes the process used in selecting, locating, and using them (Mark, 2002).

As outlined by Areej (2010) these devices are categorized as follows: high technology and low technology devices. The high-tech devices are more complicate, cost more and also the user requires training or guidance in order to use effectively. Such devices include voice recognition software, or word prediction software (Johnston & Watson, 2007). In contrast, low-tech is low-priced equipment, as it costs less than high-tech, it is simply designed, and requires limited or no training. Examples of low-tech devices include but are not limited to talking watches, pencil grips, highlighting marker tape, eyeglasses, and ear plugs to reduce

distraction. Similarly, apart from these two categories of assistive technology there are some other sets of device and equipment that falls into mid-tech such as overhead projectors, tape recorders, Voice Output Communication Aids (VOCAs) (Klee 2012).

Pupils with special needs are described as those who have physical or mental impairment which significantly restricts them from performing daily activities either continuously or periodically for extended period, which as a result require unique substantial assistance (Dommak & Paul, 2013). They are those categories of individuals who needs augmentation in either- educational, social, physical and other aspects of livelihood to strive well within their environment. Without any iota of doubt the advancement in today's technology has much to offer to the students in question both as tools for instruction and as independent tools that is capable of compensating for any specific impairment. These devices offer several functions ranging from assessment, lesson planning, lesson presentation, record keeping and classroom management as well. Therefore the appropriate selection of devices and technology, and subsequent training on the use of the devices is crucial for ensuring proper use of such devices (Carney, Engbretson, Scammell, & Sheppard, 2003).

There has been an emerging trend in recent years is the place of Information and Computer Technology in the education of students with special needs globally. Assistive technology is of great benefit to pupils with special learning needs. Learning requires necessary facilities to communicate in depth fads and it must result in achievements that have relevance beyond school environment. Therefore for authentic learning to take place in an inclusive school setting, technological device are inevitable to enhance and motivate learning.

Statement of the Problem

The achievement crisis in the performance of pupils with special needs is very discouraging. The teaching and learning process for pupils with special needs has been challenging over the years. This is largely due to the fact that teachers do not adequately utilize relevant resources such as assistive technology for instruction. Despite the global attention given to the production and provision of assistive technology in our schools, there are still challenges children with special needs experience in inclusive schools especially in Jos-North LGA of Plateau State. The academic performances of these children are not encouraged as assumed. This is characterized by the inability of most of these children to properly read the content on the computer screen. A large percentage of them can hardly hear or respond correctly on assignments in the classroom when teaching is going on, thereby disrupting the process.

These issues are disheartening as to why they still exist

looking at the various efforts put in place by government, individuals, philanthropic organization and also international bodies like World Health Organization (WHO), United Nations Educational Social Cultural Organization UNESCO, to mention but a few. Questions that often come to our minds included: Are these specialists up to date in the use of these technological devices? Are these devices inadequate for use or should one blame these children for not being serious in the process? The assumptions are that; the poor academic performance is as a result of inadequate provision of assistive technology, little or no knowledge on the part of teachers using these assistive technologies among others. Although the use of assistive technology in teaching and learning process of students with special needs in Nigeria is yet to gain popularity as it is obtainable in advanced countries of the world. However, this scenario can be changed if teachers will be trained and encouraged to effectively use assistive devices for instruction in inclusive classroom settings. The use of assistive technology in teaching students with special needs will not only improve the teaching-learning process but will also expose them to modern technological trends.

REVIEW OF RELATED LITERATURE

The mandate to provide assistive technology to children with special needs is grounded in the moral concern protected by the United State (U.S) constitution and its amendment (IDEA, 2004). In their view, children must have specific interventions designed to mainstream them back into regular education. Without the intervention, this body believed that children will be doomed to continue and more significant failure experience. Technology can level the gap for children with mobility, hearing or vision impairments (Behrmann, 1998). This, the author said has opened many educational doors for children with disabilities. The writer added that alternative solutions from the world of Technology are accommodating physical, sensory or cognitive impairment in many ways.

In the view of Lauren and Brider (2019), children with disabilities often feel better about themselves as a result of using Assistive Technology. The authors alleged that technology can be great equalizer for individuals that might prevent fall participation in school, work and the community. From the above submissions it is pertinent to note that assistive technologies inspire, motivate and build-up their hidden potentials. It implies that lessons must be more practical and related to the child's experiences.

With Assistive technologies, individuals with disabilities can communicate with spoken Language, discern between one object and the other, move from one place to another to perform one task or the other etc. When this is effectively done in the inclusive class, there are bound

to be better performances in their academic pursuit. In the view of Sallivan (2019) ,“free or low-cost tools can help children with and without learning differences better access to course content by teachers putting a lot of time and efforts into designing classroom activities that encourage children to read, write and socialize with others as the child with disability is part of the community. Anson (2018) opined that Assistive technology can be used in two ways to help individuals with disabilities do things that people without disabilities can do and to improve access to everyday technology that is designed for individual with disabilities.

In the submission of Iloanusi and Osagwa (2009) education has found the place of integrating Assistive technology in every stage of the school system. They submitted that assistive technology enhances the delivery and access to knowledge, improves the breadth and scope of the curriculum, increase learning rates, encourage critical thinking and offers unlimited means of achieving educational goals among others.

Purpose of the Study

The purpose of this study is to determine the effects of assistive technology on the academic performance of pupils with special needs in inclusive schools in Jos, Plateau State. The specific objectives of the study are to:

1. Identify the forms of assistive devices used by pupils with special needs.
2. Ascertain the extent to which pupils with special needs utilize assistive devices
3. Ascertain the extent to which teachers use assistive devices in teaching pupils with special needs.
4. Determine what extent to which assistive devices are available for use in inclusive schools.
5. Determine the extent to which assistive devices will improve the academic performance of pupils with special needs

Research Questions

In order to achieve the above objectives, the study was guided by the following research questions.

1. What are the forms of assistive devices used by pupils with special needs?
2. To what extent do pupils with special needs utilize assistive devices?
3. To what extent do teachers use assistive devices in teaching pupils with special needs?
4. To what extent are assistive devices available for use in inclusive schools?
5. To what extent will assistive devices improve the academic performance of pupils with special needs?

METHODOLOGY

The descriptive survey research was adopted for this study. The study population comprised of teachers of pupils with special needs. The sample of the study comprised of all primary school teachers of Ganaka Inclusive School Jos, Plateau State. The total number of 25 teachers of pupils with special needs made up the sample of the study. The instrument used for this study was the Teachers of Pupils with Special Needs Questionnaire. It is a five point attitude scale questionnaire where respondents will be required to tick the option (Strongly Agree (SA), Agree (A), Undecided (U), Disagree (DA) and Strongly Disagree (SD). The Teachers of Pupils with Special Needs Questionnaire comprised of 23 items and two sections. Section A sought the responses of teachers' personal data while section B sought responses on the effects of effects of assistive technology on the academic performance of pupils with special needs in inclusive schools. The questionnaires were given to all teachers of students with special needs in Ganaka Inclusive School Jos in order to get their response.

Results and Discussion

The data gathered were analyzed and presented in the tables below:

Research Question One: What are the forms of assistive devices used by pupils with special needs?

Table 1. Responses on forms assistive devices used by pupils with special needs

S/N	QUESTION	SA	A	U	D	SD
1	Talking calculators are often used teaching specific subjects to pupils with disabilities in inclusive schools	4 (16%)	7 (28%)	3 (12%)	9 (36%)	5 (20%)
2	Pupils with disabilities use portable note-taking device in the classroom	-	-	2 (8%)	11 (44%)	12 (48%)
3	Computers software's eg. JAWS Word prediction softwares as well as other softwares are readily available in the school for use by teachers and students.	-	-	-	14 (56%)	11 (44%)
4	Talking Spell-checkers and Electronic Dictionaries are available and used by pupils with disabilities	-	-	-	10 (40%)	15 (60%)
5	Low tech devices such as talking watches, pencil grips, highlighting marker tape, eyeglasses, and ear plugs to reduce distraction, adapted pencil etc. are available and used by pupils with disabilities	4 (16%)	7 (28%)	-	5 (20%)	9 (36%)

In table 1 above, 55% of teachers disagreed with the assertion that talking calculators are often used in teaching specific subjects to pupils with disabilities while 44% agreed. More so, 100% of teachers are of the view that computer softwares such as JAWS word prediction softwares, electronic dictionaries etc. are not readily available. 44% of respondents agree that low tech devices such as talking watches, pencils, hand grips, eyeglasses, adapted pencils etc. are used by pupils with disabilities while 56% of respondents disagree to this assertion.

Research Question Two: To what extent do pupils with special needs utilize assistive devices?

Table 2. Responses on extent do pupils with special needs utilize assistive devices

S/N	QUESTION	SA	A	U	D	DA
6	Pupils with disabilities use technological assistive devices on daily basis	-	-	-	14 (56%)	11 (44%)
7	Pupils with disabilities use technological assistive devices on quarterly basis	4 (16%)	4 (16%)	-	8 (32%)	9 (36%)
8	Pupils with disabilities use technological assistive devices only when the need arises	5 (20%)	4 (16%)	-	10 (40%)	6 (24%)
9	Pupils with disabilities do not use technological assistive devices in the classroom	10 (40%)	6 (24%)	-	6 (24%)	3 (12%)
10	Only few pupils with disabilities use technological assistive devices in the classroom	13 (52%)	12 (48%)	-	-	-

As indicated in table 2, all (100%) respondents are of the view that technological assistive devices are not used by pupils with disabilities on daily basis. 32 % agreed that pupils with disabilities use technological assistive devices on quarterly basis while 68% disagree to this. However, 64% of teachers agree that pupils with disabilities use assistive technology devices in the classroom while 36 agree. All teachers agree to the fact that only few pupils with disabilities use assistive technology devices in the classroom.

Research Question Three: To what extent do teachers use assistive devices in teaching pupils with special needs?

Table 3. Responses on extent to which teachers use assistive devices in teaching pupils with special needs

S/N	QUESTION	SA	A	U	D	SD
11	I am aware of certain technological assistive devices that are used by pupils with disabilities	10 (40%)	12 (48%)	-	3 (12%)	-
12	I am conversant with some forms of technological assistive devices that are used in teaching pupils with disabilities	2 (20%)	4 (16%)	-	10 (40%)	6 (24%)
13	I have undergone extensive training in the use of technological assistive devices for pupils with disabilities.	-	-	-	11 (44%)	14 (56%)
14	As a classroom teachers, I have computer software in teaching pupils with disabilities in the classroom.	-	-	-	6 (24%)	19 (76%)
15	I have come in contact with technological assistive devices eg. talking watches, pencil grips, highlighting marker tape, eyeglasses, and ear plugs to reduce distraction, adapted pencil etc	2 (8%)	2 (8%)	1 (4%)	10 (40%)	10 (40%)
16	I have never used any technological assistive device in teaching pupils with disabilities in the classroom.	11 (44%)	14 (56%)	-	-	-

Table 3 shows that 80% of teachers are aware of certain assistive technology devices that are used by pupils with disabilities. More so, 64 % are conversant with some forms of assistive technology devices while 36% are not. All 100% of the teachers asserts that they have never undergone any extensive training in the use of assistive technology devices and also do not have computer software for teaching pupils with disabilities in inclusive schools. 80% also have not come in contact with assistive technology devices while 20% have come in contact. In addition all teachers have never used any assistive technology devices in teaching pupils with disabilities in the classroom.

Research Question Four: To what extent are assistive devices available for use in inclusive schools?

Table 4. Responses on extent to which assistive devices available for use in inclusive schools

S/N	QUESTION	SA	A	U	D	SD
17	Technological assistive devices are not available in the school despite the fact that teachers and pupils with disabilities need them	18 (72%)	7 (28%)	-	-	-
18	I will utilize the use of technological assistive devices in teaching students with disabilities if they are made available	25 (100%)	-	-	-	-
19	I will not utilize the use of technological assistive devices in teaching students with disabilities even if they are made available	-	-	-	20 (80%)	5 (20%)
20	I always use technological assistive devices in teaching pupils with disabilities in the classroom.	-	-	-	14 (56%)	11 (44%)

In table 4, all 100% of the teachers agree that assistive technology devices are not available in inclusive schools. Similarly, all teachers strongly agree that they will always utilize the use of assistive technology devices in teaching students with disabilities if they are made available in inclusive schools.

Research Question Five: To what extent will assistive devices improve the academic performance of pupils with special needs?

Table 5. Responses on extent to which assistive devices improve the academic performance of pupils with special needs

S/N	QUESTION	SA	A	U	D	SD
21	The use of technological assistive devices is essential in teaching pupils with disabilities in inclusive schools	16 (64%)	7 (28%)	2 (8%)	-	-
22	Pupils can benefit maximally from instruction even without the use of technological assistive devices.	-	-	8 (32%)	2 (8%)	15 (60%)
23	Technological assistive devices are not necessary in teaching pupils with disabilities	-	-	-	20 (80%)	5 (20%)
24	Teachers cannot effectively use technological assistive devices in teaching pupils with disabilities	-	-	-	-	25 (100%)
25	Technological assistive devices will improve the academic achievement of pupils with disabilities in inclusive schools	20 (80%)	5 (20%)	-	-	-

Table 5, indicates that 92% of teachers agree that they the use of assistive technology devices is essential in teaching pupils with disabilities inclusive school. 60% of teachers are of the view that pupils cannot benefit from instruction without the use of assistive technology devices while 32% are undecided on this assertion. All teachers disagreed with the assertion that assistive technology devices teachers cannot effectively use assistive technology devices in teaching pupils with disabilities. More so, all teachers agree that assistive technology devices will improve the academic performance of pupils with disabilities in inclusive schools.

Discussion of findings

The findings of this study indicate that the use of assistive technology devices will influence the performance of pupils with disabilities in inclusive classrooms. It is however recommended that teachers of pupils with special needs should employ the use of assistive technology devices for teaching and learning to ensure that pupils with disabilities benefit maximally for instruction. This study will be of utmost relevance to the implementation of the inclusive policy in the education of pupils with disabilities alongside pupils without special needs in inclusive classrooms. . In addition the findings of this study agree with findings (Mohanty, 2013; Mstan, 2003) which revealed that students using assistive devices scored higher on posttests than students receiving more traditional types of instruction.

CONCLUSION

Learners with disabilities can compete favourably with their non-disabled counterparts in this dynamic jet world through a realistic and functional use of assistive technology devices due to it great potential in providing access for all the learners including students with learning disabilities. With the use of a variety of assistive

technological devices available (high tech and low tech) students with disabilities can have access to the general curriculum because of multiple means of getting their work completed and increasing their interest in the learning material when assistive technology is appropriately integrated into inclusive classrooms

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