INTEGRATION OF ASSISTIVE TECHNOLOGY FOR INSTRUCTION OF LEARNERS WITH DISABILITIES IN INCLUSIVE SECONDARY SCHOOLS IN KADUNA STATE

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ABSTRACT

This study appraised the integration assistive technology for instruction of learners with disabilities in inclusive secondary schools used descriptive research design with target populations of all the 4 secondary schools practicing inclusive education in Kaduna state and all 185 teachers across these 4 inclusive schools, 4 principals of these schools, as well as resource center personnel. A purposive sampling technique was used to select the sample size from the population of the students. Data for this study was gathered using questionnaires, observation schedule, interview and check lists. The instrument was validated by 2 experts from Department of Educational measurement as well as the reliability of the questionnaire in measuring the objectives of the study. Cronbach's Co-Efficient Alpha was used for testing internal consistency the research instruments. Since data were collected in both quantitative and qualitative forms, for quantitative which involved descriptive statistics data were organized, coded and entered into computer and then data were presented in frequencies, percentages, tables, graphs and mean using Statistical Packages for Social Sciences (SPSS). For qualitative which involved interview and open ended items on the questionnaires the data were transcribed in categories, coded, organized, summarized into themes identified and represented in tables and figures. Findings revealed that there are numerous problems affecting the integration of AT for instruction of learners with disabilities in inclusive secondary schools in Kaduna state Nigeria. the problem ranges from the scarcity of essential ATS for the instruction of learners with disabilities in the secondary schools to the lack of knowledge and the skills by both students, resource centre personnel and the teachers to use the available ATS for instructions, to this end, it can be concluded that the students with special needs do not get access to quality instruction in the secondary school in Kaduna state. The following recommendations were made that apart from that general laws governing all types of disabilities in all the schools, there should be establishment of specific legal framework and institutional policies; that since modern ATs is very expensive for schools to purchase .it was recommended that the government makes laws for support and partnership with non-governmental organization in the provision of ATs and other required services and canvass for these ATs devices and software from relevant donor agencies; that the government should partner with stakeholders, relevant non-governmental agencies, private organization and international agencies to come up with mechanisms and collaborative approach to improve the provision access to AT and training of the instructors in the area of AT; and This study also recommends that the ministry of education organizes in-service training for teachers in the area universal design for the learning which is the principal of best practice. in teaching

KEYWORDS: *Assistive Technology, Learners with Disabilities, Universal Design Learning*

INTRODUCTION

Globally, Education is recognized as an important tool for individual and national development (Yusuf & Fakomogbon, 2017). Educating learners with disabilities in the general classroom setting can enhance the learners' learning as well as enhancing their abilities in social interaction. This approach is commonly known as Inclusive Education. Inclusive Education (IE) is acknowledged as the best way of increasing access for education by learners with disabilities (LWDs). (Mukhopadhyay, 2016)

Meeting the EFA goals particularly for the exceptional students is a herculean task for many countries but must be achieved (Ahon, 2011). This is however not happening. For instance, (Karen, Jeni, Monique, Lindu and Molloe, 2011) observed that special education personnel shortage persists across the globe in

spite of strategic, forced recruitment and retention initiatives. They stress that the demand and supply of special education teachers and related personnel service providers has been the cause of concern among schools' administrators and state education officials for several decades.

Moreover, numerous studies over the years have attributed teacher preparation, recruitment and retention as a big challenge. The role of teachers in the successful integration of assistive technology in the inclusive school system cannot be over emphasized. In a UNESCO (2001) report that, "it is the work of government to set policies and objectives of inclusive education but it is individual person (teachers) who determines the success or failure of inclusive education" (p.33). Unfortunately, the teachers who should ensure that inclusive education does not fail in majority of developing countries are not trained. Indeed, one could argue that inclusive education has not been taken seriously in many parts of the world. Actually, globally there has been relatively scanty research on the appreciation of information communication technologies (ICTs) to support inclusive practice (BECTA, 2015).

Further, Hopkins (2004) posits that assistive technology assists several LDWs to access information, link up with others, and take part in ways that would not have been feasible without the use of the AT devices. In other words, AT is an instrument to unchain learners with disabilities and increase their horizons of learning.

In essence AT is an important part of an inclusive classroom since it increases, sustains or develops the efficient capabilities of a learner with a disability. For instance, the situation in Nigeria indicates that studies on the accessibility of ATs as well as application of ICT for instruction of LWDs in the country are very few. (Farell and Shafiaka, 2017; Yusuf & Fakomogbon, (2012). Owing to the growing needs of ATs in all aspects of instruction and life of individual with education challenges, it is imperative that learners with disabilities have access to quality instructions where assistive technology is integrated. This study will be limited to only three (3) types of disabilities that is visual impair/blind, hearing impair and physical disability.

STATEMENT OF THE PROBLEM
Despite increasing access to technology, the academic performance of learners with disabilities in Nigerian secondary schools still falls far below expectation. This is because Learners with Disabilities (LWD) in secondary schools do not have the opportunity to access effective instruction. In spite of the detail information of well-known established relationship between what teachers trust and what they do, generally the views on inclusion of LWDs in regular schools "has been clearly absent from deliberations of changes in policy and practices" (Soodak, Podell and Lehman, 2011). Also Wong & Cohen, (2011) reveals that the post primary schools have been facing challenges of demand for inclusion, changes in instructional practices and incorporating

assistive technologies into curriculum is a matter of concern. Also, anxiety amongst the instructors and others using ATs is on how to use these new or 'strange' technologies. Their inability to use them due to lack of training consequence upon this, the students lag behind their able- bodied in the schools. This is particularly so in the developing countries in which Nigeria is included.

Upon all the benefits attached to the use of ATs for instruction of LWDs in genera schools' system in terms of its flexibility in method and materials that can enrich the lesson of LWDs is elusive in Nigeria. To this end the study examined the extent to which the Assistive technology is being used for instruction for learners with disabilities in the secondary schools.

OBJECTIVES OF THE STUDY
i)   To establish Government policies put in place on the use of ATs to guarantee quality of instructions for learners with disabilities in the inclusive secondary setup in Kaduna state.
ii) To ascertain the availability of the assistive technology for teaching learners with disabilities in an inclusive secondary schools in Kaduna state.
iii) To find out ways in which the teachers in the inclusive secondary schools' design and conduct their instruction to ensure that learners with disabilities learn effectively.
iv) To establish how Assistive Technology is being employed for use to ensure quality instruction.
v)   To investigate challenges experienced by teachers while integrating ATs into instructions in inclusive schools.

To assess the attitude of teachers toward integration of assistive technology in teaching learners with disabilities in inclusive settings in secondary schools in Kaduna state.

LITERATURE REVIEW OF THE STUDY
Educating learners with disabilities in the general classroom setting can enhance the learners' learning as well as enhancing their abilities in social interaction. This approach is commonly known as Inclusive Education. According to Mukhopadhyay, (2018), Inclusive Education (IE) is acknowledged as the best way of increasing access for education by learners with disabilities (LWDs). However, teaching learners who have disabilities among many without disabilities in the inclusive setting poses an instructional problem for teachers (Mugo, 2017). This instructional setting requires teachers to employ diverse set of special instructional approaches and methods. In essence, inclusive theory emphasizes that mainstream schools should respond positively to all learners. The theory states that inclusion is about the learner's rights to partake fully instructional processes in the general school setting and it is the duty of the teachers to accept the learner and offer them the necessary educational support (Mntmal: file: if:/new folder encyclopedia. Mint).

Indeed, since Education Round-table meeting held in Dakar, Senegal in 2000 resolved for action and declaration on Education for All (EFA) and Nigeria inclusive. EFA pronouncement implies that all learners irrespective of socio- economic status and exceptionality should have had access to basic education by 2015, and special learning needs of learner should have been considered; (Dakar frame work of Action, 2000). However, meeting the EFA goals particularly for the exceptional students is a herculean task for many countries but must be achieved (Ahon, 2016). This is however not happening. For instance, (Karen, Jeni, Monique, Lindu and Molloe, 2016) observed that special education personnel shortage persists across the globe in spite of strategic, forced recruitment and retention initiatives. They stress that the demand and supply of special education teachers and related personnel service providers has been the cause of concern among schools' administrators and education officials internationally for several decades. Also numerous studies over the years have attributed teacher preparation, recruitment and retention as a big challenge and indeed, the problem of shortages of personnel in special education has been identified as a universal challenge around the world.

However, this problem of lack of qualified personnel and specialists to handle education for Learners with Disabilities in Inclusive Education schools is not only unique to developed countries. This predicament is more severe in the developing countries Nigeria inclusive. In Nigeria, the state of IE is not different from that of other developing countries. Although there are internationally well laid down laws to support the inclusive education, the law does not guarantee quality instruction for learners with disabilities. For example, despite the Nigeria's National Policy of Education NPE (2004: 49) ruling that all essential amenities, resources and learning material that guarantee straightforward access to quality education shall be made available to schools, complaints about inaccessibility especially for quality instruction for learners with disabilities still prevails (Olutokun, 2019).

. In many developing countries Nigeria inclusive and even in some developed countries, the learners are provided with AT to just address their basic needs. Hopkins, (2015) posits that having realized that learners with disabilities require AT devices both at the individual and at the school level, the focus should be towards increasing the ability of learners with special needs to participate effectively in instruction.

However, Teachers on training require advocacy as well as to be equipped with knowledge on how to utilize modern ATs which bridge many of the gaps for LWDs" (Nelson, 2006). The role of teachers in the successful integration of assistive technology in the inclusive school system cannot be over emphasized. In a UNESCO (2001) report that, "it is the work of government to set policies and objectives of inclusive education but it is individual person (teachers) who determines the success or failure of inclusive education" (p.33). Unfortunately, the teachers who

should ensure that inclusive education does not fail in majority of developing countries are not trained. Indeed, one could argue that inclusive education has not been taken seriously in many parts of the world. Literature in the field of effective inclusion is still scarce. Indeed, it has been observed that there has been very little study on the use of AT in instruction for learners with disabilities in less developed countries. Actually, globally there has been relatively scanty research on the appreciation of information communication technologies (ICTs) to support inclusive practice (BECTA, 2015). For instance, the situation in Nigeria indicates that studies on the accessibility of ATs as well as application of ICT for instruction of LWDs in the country are very few. (Farell and Shafiaka, 2014; Yusuf & Fakomogbon, (2015). Owing to the growing needs of ATs in all aspects of instruction and life of individual with education challenges, it is imperative that learners with disabilities have access to quality instructions where assistive technology is integrated. A pertinent question one may be prompted to ask at this point is whether learners with disabilities in Nigeria are accessing quality instruction. This study therefore endeavored to establish how assistive technology was being integrated in instruction for learners with disabilities in inclusive secondary schools in central senatorial district of Kaduna state in Nigeria.

METHODOLOGY
This study will use descriptive research design. The target populations of this study will be all the 4 secondary schools practicing inclusive education in Kaduna state and all 185 teachers across these 4 inclusive schools, 4 principals of these schools, as well as resource center personnel who provide assistive technology services to these students. Because of the peculiarity and uniqueness of these students' purposive sampling technique was used to select the sample size from the population of the students. Data for this study was gathered using questionnaires, observation schedule, interview and check lists. These instruments include: Questionnaire for teachers' comprised mixture of question that were employed to elicit responses from the teachers on how they use ATs and challenges facing them in using the ATSs for instruction of LWDs. Also interview was conducted through the use of interview schedule guide to seek for information from LWDs, principals and resource center personnel which was arranged prior to time.

The instrument was validated by 2 experts from Department of Educational measurement the reason of this process will further established clearness and accurateness, correctness as well as the reliability of the questionnaire in measuring the objectives of the study. Cronbach's Co-Efficient Alpha was used for testing internal consistency the research instruments. Since data will be collected in both quantitative and qualitative forms, for quantitative which involved descriptive statistics data were organized, coded and entered into computer and then data were presented in frequencies, percentages, tables, graphs and mean using Statistical Packages for Social Sciences (SPSS). For

qualitative which involved interview and open ended items on the questionnaires the data were transcribed in categories, coded, organized, summarized into themes identified and represented in tables and figures.

PRESENTATION OF FINDINGS, INTERPRETATION AND DISCUSSION

The teachers' demographic data sought included their sex, age, working experience and academic qualification. The result indicated that out of 185 respondents 193(57%) were male and 147(43%) were female. on the level of the teacher's academic qualifications result presented revealed that 110(59.4%) of the respondents have Nigeria Certificate of Education (NCE) as their highest education qualification, while 60(32.4%) respondents were B.sc holder, a total number of 15 (8.2%) of the respondents were master's degree holder while there were no respondents with doctorate degree.

On whether inclusive education legal framework document, the finding indicates that secondary schools neither had their own set of legal frameworks nor even policy documents for people with disabilities. In the Ministry of Education, the document on inclusive education was not available. The strength of these laws in terms of ensuring equality and the right to educate people with disabilities has been generating some contending issues and challenges. Such challenges include poor implementation of Acts establishing IE due to lack of legal backing for such Also in ascertaining availability AT, the finding indicated that all the 4 schools sampled had a 120 total of slates and stylus which were accessible to blind and visually impaired students. Also there 2 tape recorders which considered in adequate, while 8 brail books, 1 brail ruler, 6 non foldable canes, 2 graphic kits and 5felt pens were available across the 16 schools sampled and these were low/medium tech ATs which were grossly inadequate compared to number of students. For high tech ATS such as brail embossers, note taker, hand held magnifying mirror, brail writer, I phone, CCTV systems, screen readers, JAWs, NVDA and optical tactual converters were not available in all the 16 schools sampled.

As well for Hearing Impairment the finding shows that electronic hearing aid, accele-glove, and telecommunication devices for deaf, adopted doorbell, audiometer and typanometer were not available in all 4 schools sampled. While only 6 computers were available in all the 4 schools sampled and only 4 computers were functioning as at the time of the study and 2 of the computers were not functioning, also there are 6 motion films out of which only 2 were functioning this considered inadequate compared to number of students in the schools.
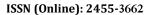
So also on Availability of functional ATs for learners with Physical Disability the study revealed that there a total of 10 wheel chairs, 10 walking sticks and 5 crutches which are locally fabricated were available. While ATs, such as head pointers, joysticks, corner chairs, adopted chairs, adopted tables and

talking books were not available in all the 16 schools sampled. Despite the scarcity of ATs in the schools there were no teacher professional development programs to give the teachers adequate skills to integrate ATs in the instructions of LWDs in the inclusive set-up. The finding reveals that 60 out of 340 (17.6%) respondents indicated they had no experience in teaching LWDs in inclusion classes. About140(41.1%) indicated that they had taught in inclusive classes for less than 5 years. Also 110(32.3%) of teachers indicated they had taught in inclusive classes for upward of 5to 9 years, while a total of 30(8.1%)respondents indicated that they had taught in inclusion classes between 10 to 20 years. Assistive Technology cannot be useful without effective instructional methods, without present's information on the instructional methods the teachers commonly used in inclusive classrooms. It is evidence that the teachers mostly used lecture method for instruction for learners with disabilities. This is clear that there is less learner participation in the teaching and learning process via this method. The findings presented that 154(45%) of the respondents said that they organized students in a whole group while using the assistive technology, 94(28%) respondents indicated that they organized the students in a small group while using the assistive technology and 92(27%) of the respondents indicated that they organized the student in mixed ability groups. presents information on whether teacher used the ATs or not in their lessons, finding shows that 110(32.4%) of the respondents indicated they had not used assistive technology in teaching, while 230(67.6%) indicated to have used assistive technologies for instruction even though they were old.

While on challenges, the finding revealed that 35(10%) of the respondents indicated that their challenges were inadequate budgetary allocation to procure recent ATs, while 85(25%) of the respondents indicated that the constraints encountered in using ATs were mostly inadequacy of these devices, also 65(19%) revealed that the challenges were due to lack of knowledge of ATs and 80(24%) of the respondents attributed the challenges to inadequacy of skills by teachers to use ATs. While 75(22%) of the respondents said that lack of capacity building training on use of ATs were part of the challenges facing them. The teachers complained that the ATs were very rare or not at all in the schools and that were they not trained at all to use the ATs. These findings Concur with Grabe and Grabe, (1998) stresses that teacher preparation and teacher training in terms of technology integration continues to pose a big challenge to education, institutions have not been responsive to the expectation that new teachers will come into classrooms prepared to use the resources the schools have purchased, consequently many teachers graduate but still feel either not prepared or poorly prepared to use technology in their lessons.

CONCLUSION

According to the finding of this study, there are numerous problems affecting the integration of AT for instruction of learners with disabilities in inclusive secondary schools in

Nigeria. the problem ranges from the scarcity of essential ATS for the instruction of learners with disabilities in the secondary schools to the lack of knowledge and the skills by both students, resource centre personnel and the teachers to use the available ATS for instructions, to this end, it can be concluded that the students with special needs do not get access to quality instruction in the secondary school in Kaduna state and as such the desire of student with disabilities to access quality instruction and the students does not arise.

RECOMMENDATIONS

This study has inferred that the students with disabilities do not have access to quality instruction in inclusive secondary schools in Nigeria. This study therefore recommends the following;

1. This study recommends that apart from that general laws governing all types of disabilities in all the schools, there should be establishment of specific legal framework and institutional policies.

2. Since it is expensive for schools to purchase modern ATs it therefore recommends that the government makes laws for support and partnership with non-governmental organization in the provision of ATs and other required services and canvass for these ATs devices and software from relevant donor agencies.

3. This study recommend that the government should partner with stakeholders, relevant non-governmental agencies, private organization and international agencies to come up with mechanisms and collaborative approach to improve the provision access to AT and training of the instructors in the area of AT

4. This study recommends the ministry of education organizes in-service training for teachers in the area universal design for the learning which is the principal of best practice. in teaching.

REFERENCES

1. Ahon, A.T (2011) achieving the education for all Goals: the place of special needs conference of international association of special education. Windhoek, Namibia – July 10-14,roll

2. Altman, B.M. (1981). Studies of Attitudes towards the handicapped: The Need for a new direction, Social problems, 28.321-337.An overview. Retrieved from http://www.Idonline.Orglarticle/learning disabilities 3% An overview? Theme=print.

3. Bacon, E.H., & Schultz, J.B. (1991).A survey of Mainstreaming Practices, teacher Education and Special Education, 14 (2), 144-149.

4. Becta (2004). What the research says about ICT supporting special educational needs (SEN) and inclusion, Becta Publication ID: BEC 1-15009, retrieved June 15, 2014 from http://www.becta.org.uk/page documents/research/wtrs ictsupport.pdf

5. Dakar,(2000).Framework of Action. World education forum Accessed from www.innesco.org.efa

6. Farrell,G. & Shafika,I. (2007). Survey of ICT and education in Africa: a summary report, based on 53 country surveys. Washington, DC: info Dev. world bank. Retrieved on 15 may 2014 from http://www. Infordev: org/en/publication 353htm

7. Hopkins,J. (2004) assistive technology to support students with special needs. Accessed from www. curriculum. Org http://www.childinfo.org/disability resources. Html. Retrieved June 6, 2014. http://www.ada.gov/pubs/ada.htm

8. Mugo, B.C. (2013). Assistive technology and access to quality instruction for blind and visually impaired students: A comparative study of Kenyatta University Kenya and Syracuse University USA. The Kenyatta University: unpublished PHD thesis. UNESCO 2002a. "Understanding and Responding to the Children's Needs of Inclusive Classrooms. http://www.unescobkk.org/file admin/user upload/appeal/IE/publications and reports/understanding needs.pdf; retrieved June 4, 2014.

9. Mukhopadhyan,S., Molosiwa, S.M. & Moswela, I. (2009) Teachers Trainee's level of preparedness for inclusive education international; Journal of Science Research in education, @(2),ST- 58

10. Federal Republic of Nigeria (FRN), (2004). National Policy on Education (4th Ed,) Lagos: NERDC.

11. Grabe, M. & Grabe, C. (1998).Integrating Technology for Meaningful Learning. Boston: Houghton Mifflin Co.

12. UNESCO 2002 "Understanding and Responding to the Children's Needs of Inclusive Classrooms. http://www.unescobkk.org/fileadmin/user upload/appeal/IE/publications and reports/understanding needs.pdf; retrieved June 4, 2014.

13. Wong, M. E., & Cohen, L. (2011). School, family and other influences on assistive technology use: Access and challenges for special school students with visual impairments in Singapore. British Journal of Visual Impairment, 29(2), 130–144. doi:10.1177/0264619611402759

14. Yusuf, M.O.& Fakomogbon, M.A (2008) availability, teaches awareness and attitude towards the use of assistive technology in special schools in Kwara state Nigeria: world conference on educational multimedia, hypermedia and telecommunications, June, 30, 2008 in Vienna, Australia ISBW 978-1-880094-65-5.