

**IMPACT OF ASSISTIVE TECHNOLOGY ON THE ACADEMIC ACHIEVEMENT
OF STUDENTS WITH HEARING IMPAIRMENT IN OGUN STATE, NIGERIA**

BY

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RESEARCH PROPOSAL

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Background of the Study

The education of children with hearing impairment has over the years generated a lot of interest to experts in the field of special education. The concern is on the best approach to improve the education of children with hearing impairment all over the world (Ezema, 2013). Children with hearing impairment have the right to a quality education, with the same academic level and content as hearing children. They have the right to be educated especially in a language and environment that maximizes their potentials. The advent of assistive or hearing technology (AT) can play an essential part in the education of children with hearing impairment and as it has created the opportunity for students with different forms of disabilities particularly those with hearing impairment to overcome the various challenges they face in educational setting (Ann, 2012). With assistive technology, students with hearing impairment can study better and live independently. More and more assistive technologies are becoming available to help learners with hearing impairment to listen and communicate meaningfully, and participate fully in the classroom.

According to Agomoh and Kanu (2011), the ability to communicate and interact in one's environment largely depends on hearing. Loss of hearing ability, if occurs before or after birth can create difficulties in the person's communication and learning. Students with hearing impairment have at one point or the other in their lives, lost the ability to perceive sounds and use oral language for the purpose of communication or learning (Egaga and Aderibigbe, 2015). Abebe (2008) defined persons with hearing impairment as those in whom the sense of hearing is non-functional for the ordinary purpose of life or those of whom impute sound is meaningless for communicational purpose. Salaudeen (2015) stated that technology assist the persons with hearing impairment, by providing them aid to learning capacities and also increase their learning potentials. Assistive technology can make the children with hearing impairment proficient by providing them with the ability to access knowledge with the help of suitable assistive devices.

It also plays a very important role in helping them to communicate with peers, thereby promoting collaborative and social learning environment in addition to enhancing reading and writing through the hearing and seeing processes (Lasa, 2010).

Hearing impairment is the inability of the ear to receive and give meaningful interpretation to a message or sound. Okuoyibo (2006) stated that hearing impairment is an umbrella term used to describe all aspects of disorder affecting the auditory system. Therefore, students with hearing impairment are those that have problem that inhibit the effective functioning of their ears. Similarly, Okeke (2001), opined that hearing impairment is a serious sensory deprivation that has been noted to hinder the afflicted persons' development in general and their academic achievement in particular. Hearing impairment poses a challenge to the academic achievement of students with hearing impairment because it interferes with their ability to function without some type of assistive devices.

In Nigeria, thousands of students across cannot benefit fully from a traditional educational program because they have a disability that impairs their ability to participate in a typical classroom environment. Students with hearing impairment who struggle in school are often overly dependent on parents, siblings, friends and teachers for help with assignments. For these students, Assistive technologies can play an important role in towards their education attainment by using AT, they can experience success with working independently (Kristin and Marshall, 2017). Not only can assistive technology facilitate a broader range of educational activities to meet a variety of needs for students with hearing impairments, but adaptive technology now exists that can enable even those students with severe disabilities to become active learners in the classroom alongside their peers who do not have disabilities.

Technology has also enhanced the development of sophisticated assistive devices that can assist students with more severe disabilities in overcoming a wide range of limitations that hinder classroom participation—from speech and hearing impairments to blindness and severe physical disabilities (Ted and Candyce, 2000). However, many teachers are not adequately trained on how to use technology effectively in their classrooms, and the cost of the technology is a serious consideration for all schools. Thus, although assistive technology has the potential to act as an equalizer by freeing many students from their disabilities, the barriers of inadequate training and cost must first be overcome before more widespread use can become a reality.

Academic achievement represents performance outcomes that indicate the extent to which a person has accomplished specific goals that were the focus of activities in instructional environments, specifically in school. According to Chowdhury and Pati, in Awan et al. (2011), academic achievement is defined by examination marks, teachers' given grades and percentiles in academic subjects. Lee (2005) cited in Ezema (2013), academic achievement requires drives and in many cases single – mindedness. This means that when a child comes to school with a goal to achieve, he or she works towards such a goal. This is easier for children who can hear sound but for children with hearing impairment, it is going to be a difficult task because of their impairment in the use of sound. Learning outcomes have become a phenomenon of interest to all and this account for the reason why scholars have been working hard to untangle factors that militate against good academic achievement. Considering the importance of technology in promoting the education of persons with disabilities, it is necessary to investigate the impact of assistive technologies on the academic achievement of students with hearing impairment in Ogun State with a view to understand the correlation between the use of assistive technologies and the academic achievement of students with hearing impairment and to close the gap between students with hearing impairment and other learners. Okeke (2001),

Literature Review

The World Health Organization (W.H.O, 2010), defined hearing impairment as the complete or partial loss of ability to hear from one or both ears. About 360 million people in the world suffer from hearing loss and this constitutes a substantial 5.3% of the world's population (Saurabh, 2016). Hearing is the ability of the ear to receive and interpret sound or message. Hearing impairment is therefore the inability of the sense organ (ear) to receive and interpret message or sound. Hearing impairment cannot be seen and hence its effects are not visible to others, so deaf students suffers in silence.

Ezema (2013) conducted a study on the “effect of total communication (T.C) on academic achievement of pupils with hearing impairment in Enugu State. She made use of pre-test-post-test quasi-experimental design with treatment and control group of students selected from two primary schools for the deaf in Enugu State. Mean and standard deviation were used to analyze

the data collected from the study while Analysis of Covariance (ANCOVA) was used to test the hypotheses. The findings showed that pupils with hearing impairment exposed to T.C performed better than the control group. The study was limited to effect of Total Communication on the academic achievement of pupils with hearing impairment in Enugu State, Southeast Nigeria with no regards to the impact of other assistive technology particularly in states in Southwest Nigeria. This study will fill that gap.

Egaga and Aderibigbe (2015), conducted a study to examine the Efficacy of Information and Communication Technology in Enhancing Learning Outcomes of Students with Hearing Impairment in Ibadan. The target population for the study comprised all students with hearing impairment in senior secondary school two in Ibadan, Oyo State. The study adopted a pretest, post-test, control group quasi-experimental research design and Data were generated using self-constructed Economics Achievement Test (EAT) administered to thirty participants with hearing impairments. The result showed that there is a significant main effect of ICT on the participants' learning outcomes in economics. However, the study did not specify the type of ICT used by the respondents. This study would specify the assistive technology used in the study area and its impact on the academic achievement of the students with hearing impairment.

Sarah (2017) examined assistive technology for students with hearing impairments. The results shows that Technology strongly impacts the ability of the Hearing impaired students to access the material being taught in the classroom and that various types of assistive technology are now available to students with Hearing Impairments. However, the study did not assess the impact of Assistive technology on the academic achievement of students as it only identified some assistive technologies for students with hearing impairment. This study intends to fill that gap.

Ann (2012) conducted a study on “assistive hearing technologies among students with hearing impairment: factors that promote satisfaction”. The study included 153 deaf and hard of hearing students who communicated orally and were in inclusive schools from grades 5-10. The results shows that male students view hearing technology more positively than the females while having and that severe hearing loss also promoted positive attitudes towards hearing aids and cochlear implants but not towards microphones while the main factors promoting the use of hearing aids were severe hearing loss, positive attitudes towards hearing aids and the sound

quality of hearing aids. The study did not include the effects of the identified assistive (hearing) technologies on the academic achievement of the students. This study is aimed to fill that gap. From the review of previous studies, there seems to be a gap on the effects of assistive technology on the academic achievement of students with hearing impairment in Ogun State, Nigeria. Thus, this study intends to fill that gap.

Statement of the Problem

Education has become a right for all children including those with hearing impairments. Hearing impairment poses a challenge to the academic achievement of students with hearing loss since it interferes with their ability to function without some type of assistive devices. The review of literatures has also shown that there are several Assistive (hearing) technologies that play an important role towards the education of children with hearing impairment. Despite the use and adoption of these assistive devices by educators and students with hearing impairment to aid their academic activities, there is seems to be a gap in literature on the impact of assistive (hearing) technology on the academic achievement of students with hearing impairment. Consequently, this study is aimed at investigating the impact of Assistive (Hearing) technology on the academic achievement of students with hearing impairment in Ogun State, Nigeria.

Aim/Objectives of the Study

The aim of this study is to investigate the impact of assistive (hearing) technology on the academic achievement of students with hearing impairment in Ogun State.

Specifically, the study intends to:

- i. determine the effect of assistive technology on academic achievement of students with hearing impairment in Mathematics.
- ii. determine the influence of gender on academic achievement of students with hearing impairment exposed to assistive devices
- iii. identify barriers to usage of assistive technologies by students with hearing impairment.

Research Methodology

The study would adopt a pretest, post-test, control group quasi-experimental research design. Purposive sampling techniques would be used for the selection of sixty participants comprising of (30 males and 30 females) from two primary schools for the deaf in Ogun State. The researcher would construct a test known as Achievement Test on Mathematics (ATM) to be used to generate data for the study. Data would be analyzed using descriptive statistics while Analysis of Covariance (ANCOVA) would be used to test the hypotheses at 0.05 level of significance.

Justification of the Study

The study would provide information regarding the impact of assistive or hearing technology on the academic achievement of students with hearing impairment. The outcome of the study will also go a long way to help the parents, school administrators, curriculum planners, policy makers and all stakeholders to know the type of information and assistive or hearing technology resources to be made available to schools in the study area in order to facilitate better and faster teaching and learning process of students with hearing impairment.

The study will be of immense value to the society to understand the importance of using assistive technology for education of persons with hearing impairment. Finally, the study would also provide materials for other researchers with interest in related area. Such researchers will use the findings as reference in situating their own research. By implication, the study would have contributed in the growth of human knowledge.

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