

## EFFECTS OF SIGN LANGUAGE INTERPRETERS' SERVICES ON ACADEMIC PERFORMANCE OF STUDENTS WITH HEARING IMPAIRMENT UNIVERSITY OF JOS.

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### ABSTRACT

*This study investigated interpreters' services and academic performance of hearing impaired students in university of Jos-Nigeria. This study adopted the positivism research philosophy and the correlational research design. The population of this study consisted of Six (6) 300 Level Undergraduate students with the same level of hearing loss in the Department of Special Education and Rehabilitation Sciences, Faculty of Education, University of Jos, Nigeria. Thus a census approach was adopted where four (4) males and two (2) females were used as respondents. To analyze the data, both descriptive and inferential statistics was used. While the inferential statistics of t-test and Analysis of Covariance (ANCOVA) was used to test all the hypotheses using Statistical Package for Social Sciences (SPSS) version 24.0 to analyze the data. It was found that there was no significant difference between the pretest and posttest mean score performance of students with hearing impairments who are affected by sign language interpreter's excess workload and those who are not. Also, there was no significant difference between the posttest mean score performance of students with hearing impairments from Poor and Good Sign Language Background. It was concluded that sign language interpreter's services has a significant effect on students' academic performance in university of Jos-Nigeria. While, factors such as the student's age, the type of curriculum, and the teacher's knowledge of sign language also seem to play a role in the effectiveness of sign language interpreter's services. It was then recommended that to maximize the effectiveness of sign language interpreter's services, stakeholders should be ensured that all educational materials are provided in an accessible format, providing training for teachers and staff on how to work with sign language interpreters, and establishing clear communication guidelines between the interpreter, the student, and the teacher. Additionally, it is important to consider the preferences of the student when choosing between on-site and video remote interpreters. With proper implementation, sign language interpreter's services can be a valuable tool in supporting the academic success of students with hearing impairment. Also, Sign language interpreters should not take up excess workload as this can lead to burnout and a decline in the quality of their work. The authority of the University of Jos, especially Department of Special Education and Rehabilitation Services should set time limit for the interpreters. Coherently, Agencies, organizations and the Federal Government at large that employ sign language interpreters should set reasonable limits on the hours and assignments that interpreters are expected to undertake.*

**Keywords: Academic Performance, Impaired hearing, Interpreters Services and Students**

### INTRODUCTION

Sign Language interpreting is the use of a sign language to convey the information contained in the programme audio (speech and other important sound) to viewers who are hearing impaired and for whom sign language is their first language, it is the use of hand, finger shapes, movement, body language and facial expressions to convey meaning by persons with hearing impairments. Sign language differs from country to country. For example, Irish deaf people use Irish sign language, in India people use Indian sign language in America they use American Sign Language (ASL). In Nigeria, the American Sign Language (ASL) is adopted as means of communication amongst persons with hearing impairment. Different sign languages have their own

unique grammar, semantics and vocabulary. Even within a country, there are often regional dialects and differences in some of the signs used by different cultural groups. Students with hearing impairments are those who have hearing loss that affects their ability and communication in a classroom setting. Babudoh (2021) sees hearing impairment as an umbrella term which refers to a condition where there is a decrease in the individual's ability to hear and discriminate sounds. Hearing impairment may be defined using three major criteria namely; time of onset, degree of loss, and the site of lesion. On the basis of time of onset, there are two types of hearing impairments. They are congenital and adventitious hearing impairments. Congenital hearing loss, is when an individual was either born hearing impaired or became hearing impaired before meaningful language was acquired. This is also known as pre-lingual hearing impairment. Adventitious hearing loss refers to a condition where by an individual becomes hearing impaired after acquiring the language of the society. This is also known as post-lingual acquired hearing impairment. On the basis of degree of loss, there are two types of hearing impairments identified as deafness and hard-of-hearing. According to WHO (2018) deafness is defined as a "hearing impairment that is so severe that a person is unable to understand speech even in the presence of amplification", and hard of hearing is a "hearing loss that is less severe than deafness". This means that people who are hard of hearing may still be able to understand speech when they are wearing hearing aids or using other assistive devices. However, their hearing loss may still cause them to have difficulty in understanding speech in certain situations, such as when there is background noise or when the speaker is speaking quickly. These type of hearing loss is measured in decibels (dB). Conductive hearing loss: refers to hearing impairment caused by the malformation or malfunctioning of the conductive apparatus of the ear. Sensorineural hearing loss is when the damage done in the ear is sited in the inner ear and the ear has become malfunctioned through the excessive use or misuse of drugs, exposure to excessive noise. Mixed hearing loss. This refers to simultaneous existence of a conductive and sensorineural hearing loss, it means that both the conductive as well as the inner part of the ear is impaired. Academic performance of students with hearing impairment is typically defined as the level of achievement that hearing impaired students demonstrate in school. This can be measured in a variety of ways including standardized test scores, grades, and teachers' assessments. National Center for Special Education Research (NCSER) 2011 defined academic performance of students with hearing impairment as the overall ability of students to perform in the core subject areas of reading, math, science.

### **STATEMENT OF THE PROBLEM**

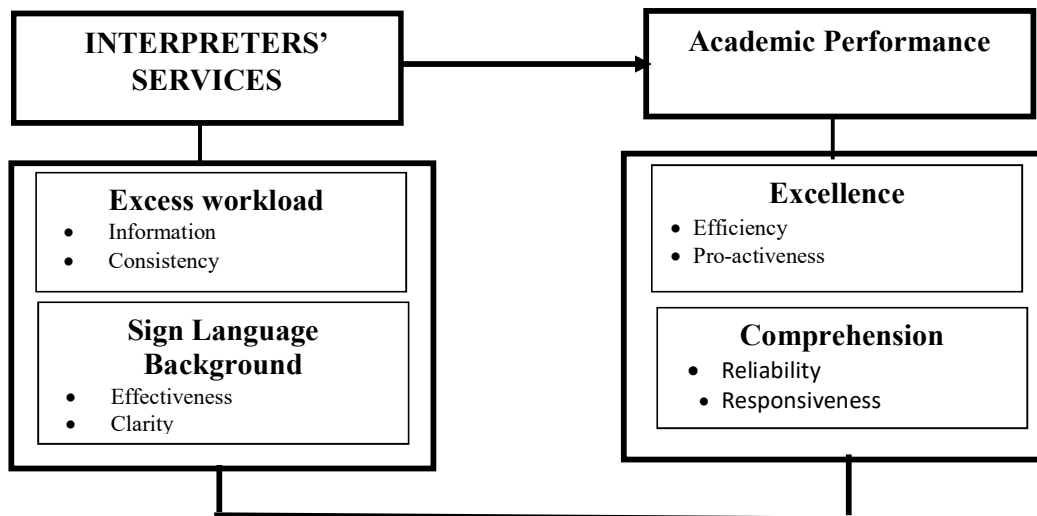
The hearing impaired students' academic performance in the University of Jos (UniJos) has been a major concern to students, lecturers, management, parents, and guardians. Sequel to poor grades and even carry-overs that results into student's probation the results of these students have not been encouraging. The ratio between sign language interpreter and hearing impaired students is about 1:100 in the class. Albeit, it may be due to inadequate or unqualified sign language interpreters which affects their performance in departmental and general courses in and outside the faculty. Although efforts have been made within and outside the university to address the issue, yet not much is achieved. For instance, inclusive education is one of the major issues examined at the 12<sup>th</sup> Annual National Conference of the National Council for Exceptional Children held in Abuja, 2002 concerned with the education of persons with special needs, in particular persons with hearing impairments which includes students of the University. This is with a view to improving the performance of students with hearing impairments in the University of Jos. The researcher now deems it fit that adequate and qualified sign language interpreters should be employed in the University so as to help improve the academic performance of students with hearing impairment.

The reason for carrying out this study is because students with hearing impairment academic performance have been low due to lack of effective sign language interpreting services. What motivated this study was because students with hearing impairment have not been passing their exams especially general studies and educational courses due to inadequate sign language

interpreters or unqualified sign language interpreters in the department of Special Education and Rehabilitation Sciences, University of Jos. Thus, it deemed necessary to use the presence of sign language interpreters' method in improving poor academic performance of students with hearing impairment for meaningful and productive learning.

### Conceptual Framework

The conceptual framework of this study as shown in Figure 1 below shows the linkage between the predictor variable (interpreter's Services) and criterion variable (Academic Performance). The dimensions of the independent variable are excess workload and sign language background while the measures for the dependent variable are excellence and comprehension.



**Figure 1:** Conceptual framework relating Interpreters' Services and Academic Performance of Hearing Impaired students in UniJos, Nigeria.

**Source:** Akmalia, et al. (2023); Abubakar, (2014); Benedict, et al; (2016); Cogen, & Cokely, (2015)

### AIM AND OBJECTIVES OF THE STUDY

The aim of this study is to examine the effects of sign language Interpreters Services on Academic Performance of Students with Hearing Impairment in University of Jos, Nigeria. Specifically, the objectives are to:

1. identify the extent to which sign language interpreter's excess workload affects the excellence or high academic performance of hearing impaired students.
2. explore the extent to which students' poor sign language background affects comprehension of sign language interpretation of hearing impaired students.

### RESEARCH QUESTIONS

The following research questions were formulated to facilitate the finding of this study:

1. To what extent would sign language interpreter's excess workload affect excellence or high performance of hearing impaired students?
2. To what extent would poor students sign language background affects comprehension of sign language interpretation of hearing impaired students?

### HYPOTHESES

The following null hypotheses were formulated to guide the study:

1. There is no significant differences between the pre-test and post-test mean score performance of students with hearing impairments who are affected by sign language interpreter's excess workload and those who are not.
2. There is no significant differences between the pre-test and post-test mean scores performance of students with hearing impairments who came from good sign language background (parent with hearing impairments) and those who are not; Parents who are not hearing impaired (hearing parents).

**Implication of the study:** The findings from this study will benefit the major stakeholders like the students with hearing impairments, lecturers, sign language interpreters, parents of persons with hearing impairment, and researchers who may found the result of the work as research base for further studies. Students with hearing impairments will benefits from the findings of this study when completed because having sign language interpreters services available can greatly improve the quality of education of students with hearing impairment.

## **REVIEW OF RELATED LITERATURE**

### **Theoretical Framework**

This work anchored on the theory of classical conditioning as propounded by Ivan Pavlov in (1904). According to Ivan Pavlov, learning takes place because of association which is established between a previously natural stimulus and a natural stimulus. In other words conditioning places a natural stimulus before the naturally occurring reflexes. The focus of classical conditioning therefore is on automatic and naturally occurring behavior. The key principles of this theory involve accusation, extinction spontaneous recovery, stimulus generalization, and stimulus discrimination. The theory of classical conditioning, applies to this research work, by helping to build a positive and the highly motivated classroom environment for helping students with hearing impairments to overcome their fear and deliver their best performance that will invariably lead to overall achievement in school.

### **Conceptual Review**

#### **Categories of Sign Language**

Sign language, like the spoken word, takes many different forms. According to Kawak (2021), there are more than 300 different sign languages in use around the world. They vary from nation to nation. Even in countries where the same language is spoken, sign language can have many different regional accents that bring subtle variations to people's use and understanding of signs. While there are similarities between some of the most common sign languages, there are also many differences. And it is not just the signs that vary. The speakers facial expressions, gestures, and body language can all have a significant bearing on how a sign language is communicated, which is why there are so many different forms of sign language, not just in the Nigeria but around the world. Like spoken language, different groups and cultures develop their own ways of communicating unique to where they live. For example, British and American natives both speak English as their primary verbal language. However, American Sign Language and British Sign Language differ significantly. This is where many schools and organizations continue to struggle to communicate with hearing impaired communities. However, most professional sign language interpreters have the skills and knowledge to understand and translate the subtle differences in sign language to a local audience, to make education more accessible and support their hearing impaired students

**American Sign Language (ASL)** developed in the United States and Canada but has spread around the world. Local varieties have developed in many countries but there is little research on which should be considered dialects of ASL (such as Bolivian Sign Language) and which have diverged to the point of being distinct languages (such as Malaysian Sign Language). American Sign Language (ASL) is a manual language that serves as the predominant sign Language of Deaf

communities in the United States of America and most of Anglophone Canada. ASL is a complete and organized visual language that is expressed by employing both manual and non-manual features. Besides North America dialects of ASL-based creoles are used in many countries around the world, including much of West Africa and parts of south East Asia where ASL is also widely learned as a second language, serving as a lingua franca. ASL is most closely related to French Sign Language (LSF). It has been proposed that ASL is a creole language of LSF, although ASL shows features a typical of creole languages such as agglutinative morphology.

**Black American Sign Language (BASL)** or Black Sign Variation (BASV) is a dialect of American Sign Language (ASL) used most commonly by deaf African Americans in the United States. The divergence from ASL was influenced largely by the segregation of schools in the American South. Like other schools at the time, schools for the deaf were segregated based upon race thereby creating two language communities among deaf black signers at white schools and white deaf signers at black schools. As of the mid 2010s, BASL is still used by signers in the South despite public schools having been legally desegregated since 1954. Linguistically, BASL differs from other varieties of ASL in its phonology, syntax, and vocabulary. BASL tends to have a larger signing space, meaning that some signs are produced further way from the body than in other dialects. Signers of BASL also tend to prefer two-handed variants of signs, while signers of ASL tend to prefer one-handed variants. Some signs are different in BASL as well, with some borrowings from African American English.

**Deaf-community Sign Language.** A deaf community or urban sign language is a sign language that emerges when deaf people who do not have a common language come together and form a community. This may be a formal situation, such as the establishment of a school for deaf students, or informal, such as migration to cities for employment and the subsequent gathering of deaf people for social purposes. An example of the first is Nicaraguan Sign Language, which emerged when deaf children in Nicaragua were brought together for the first time, and received only oral education, Bamako Sign Language, which emerged among the tea circles of the uneducated deaf in the capital of Mali. Deaf-community sign languages contrast with village sign language in that they tend to be used only by the deaf, at least at first, and for most communication between deaf people. Village sign languages, on the other hand, develop in relatively isolated area with high incidences of congenital deafness, where most hearing people have deaf family such that most signers are hearing. These differences have linguistic consequences. Urban deaf communities lack the common knowledge and social context that enables village signers to communicate without being verbally explicit. Deaf-community signers need to communicate with strangers, and therefore, must be more explicit, it is true this may have the effect of developing or at least speeding up the development of grammatical and other linguistic structures in the emerging language. For example, only deaf-community sign languages are known to make abstract and grammatical use of sign space. Both types of deaf sign language differ from speech-taboo languages such as the various Aboriginal Australian sign languages, which were developed by the hearing community and only used secondarily by the deaf, and are not independent languages. Deaf-community languages may develop directly from home sign, or perhaps from idioglossia sign (in families with more than one deaf child), as was the case with Nicaraguan Sign Language or they may develop from village sign languages, as appears to have been partially the case with American Sign Language, which arises in a school for the deaf where French Sign Language was the language of instruction, but seems to have derived largely from two or three village sign languages of the students.

**International Sign (IS)** is a pidgin sign language which is used in a variety of different contexts, particularly as an international auxiliary language at meetings such as the World Federation of the Deaf (WFD) congress, in some European Union settings, and at some UN conferences, at events such as the Deaflympics, the Miss and Mister Deaf World, and Eurovision, and informally when travelling and socializing.

**Manually Coded Languages (MCLs)** are a family of gestural communication methods which include gestural spelling as well as constructed languages which directly interpolate the grammar and syntax of oral languages in a gestural-visual form that is, signed versions of oral languages that have evolved naturally in deaf communities. These manual codes are the conscious invention of deaf and hearing educators, and as such lack the distinct spatial structures present in native deaf sign languages. MCLs mostly follow the grammar of the oral language or, more precisely, of the written form of the oral language that they interpolate. They have been mainly used in deaf education in an effort to “represent English on the hands” and by sign language interpreters in K-12 schools, although they have had some influence on deaf sign languages where their implementation was widespread.

**Fingerspelling (or dactylogy)** is the representation of the letters of a writing system, and sometimes numeral systems using only the hands. These manual alphabets (also known as finger alphabets or hand alphabets) have often been used in deaf education and have subsequently been adopted as a distinct part of a number of sign languages. There are about forty manual alphabets around the world. Historically, manual alphabets have had a number of additional applications-including use as ciphers, as mnemonics and in silent religious settings.

**Ghanaian Sign Language** is the national sign language of deaf people in Ghana, descended from American Sign Language. It was introduced in 1957 by Andrew Foster, a deaf Africa-American missionary as there had been no education or organizations for the deaf previously. Foster went on to establish the first school for the deaf in Nigeria a few years later, and Nigeria Sign Language shows influence from GSL. GSL is unrelated to indigenous Ghanaian sign languages such as Adamorobe Sign Language and Nanabin Sign Language. There are currently 14 schools for the deaf in Ghana, 13 primary school and one secondary school in Mampomg-Akisapem. GSL is supported by the Ghana National Association of the Deaf (GNAD) which has their headquarters in Accra.

**Nigeria Sign Language**, NSL is the national sign language of deaf people in Nigeria, however, Nigeria does not have a national sign language yet. ASL (with a possible mix of Signed English) was introduced in 1960, a few years after Ghanaian Sign Language by Andrew Foster, a deaf African-American missionary, thereby raising a signing system some scholars have referred to as a direct descendent of ASL. Deaf education in Nigeria was based on oral method and existing indigenous sign languages were generally regarded as gestural communication prior to Andrew Foster’s arrival. The conventional “Nigerian Sign Language” today has been described as the “School Language” and is listed as NSL on the repository of languages of the world by SIL International. There is a Ghanaian Influence in NSL; both are based on American Sign Language. The school Sign Language has little relationship with the various indigenous Nigeria sign languages such as Hausa Sign Language, Yoruba Sign Language, and Bura Sign Language. The Save the Deaf and Endangered Languages Initiative and Nigeria National Association of the Deaf have been working to document indigenous and national varieties of NSL both for research and reference for the Nigerian deaf population. Chadian and Congolese teachers for the deaf are trained in Nigeria. There are deaf schools in Chad in N’Djamena, Sarth, and Moundou.

### **Sign Language Interpreter and its Role**

A sign language interpreter plays important roles in the educational learning of students with hearing impairment. According to the National Institute for the Deaf (2021); an interpreter’s role is to act as a communication tool between deaf people and hearing people. Interpreters are not meant to participate or give their own opinions on what is said. They are trained professionals that only sign what is spoken and vice versa and must be qualified to do so. Interpreters frequently work in pairs, taking turns to ensure effective communication and to make sure the correct information is being conveyed. The interpreter’s job does not start and ends in the classroom. The

interpreter must become familiar with the course content that will be discussed. A good American Sign Language interpreter does not start interpreting immediately after a person begins communicating rather the interpreter makes sure he/she understands the content and message being delivered before interpreting. Consequently, interpreters follow at a pace approximately one or two sentences behind the person who is actively communicating. This is true whether the communicator is hearing impaired or hearing. The interpreter converts the spoken language of the normal hearing person to the hearing impaired individual into a written or printed form without any loss in content but putting it in a different format. This method is also referred to as "Transcribing".

### **SIGN LANGUAGE INTERPRETERS**

Sign language interpreting is the process of conveying spoken language into Sign Language and vice versa. Sign Language interpreters are bilingual and can communicate conversationally with people who are deaf or hard of hearing. They are bound by a Code of Professional Conduct that has been established to protect the rights of all consumers of interpreting services. Interpreting involves more than just signing, an interpreter must accurately convey messages between two different languages. It is a skill that takes time to develop, and prospective interpreters will be tested on their expressive and receptive signing, sign-to-voice and voice to sign skills. A qualified interpreter is one who can, both receptively and expressively, interpret accurately, effectively and impartially, using any necessary specialized vocabulary. Deaf interpreters (DIS) are deaf individuals who provides interpreting services, translation, trans-linguaging and transliteration services in signed languages, including American Sign Language (ASL) , other signed languages, and various forms of visual and tactile communication for deaf individuals. The registry of interpreters for Deaf (RID) is the national certifying body of sign language interpreters and is a professional organization that fosters the growth of the interpreting profession.

Metzger (2016) developed a set of four principles for sign language interpretation. His principles are: Cultural/historical frame, Emotional frame, Visual frame, Linguistic frame. According to Metzger, these four principles help interpreters to understand the full context of a sign language conversation which is essential for effective interpretation. The cultural/historical frame helps interpreters to understand the cultural context of the signs being used, while the emotional frame helps them to understand the emotional feeling of the speaker. Sign language has some parameters. They are the smallest units of sign language. Without any of these parameters, you have no sign, a sign word can result in a different meaning when one of these parameters (or primes) changes. If a word is pronounced incorrectly, it may distort its meaning like "misspelling" or meaningless word or sentence. Vicars and Enatz (2014) developed the four parameters. These parameters are: i). Palm orientation/hand position, ii). Body movement, iii). Location and iv). Facial expression. These four parameters are essential for sign language communication, and they can help people to understand the meaning of a sign more clearly. By understanding these parameters, sign language learners become more effective communicators.

Overall, sign language interpretation can play a crucial role in ensuring that students with hearing impairment have equal access to education and communication. Interpreters are highly trained professionals who adhere to a code of professionals conduct with strict standards of practice. Smith-Knoche and Allen (2017). Note that students who have access to sign language interpretation reported feeling more comfortable asking questions and participating in class discussions. They also feel more confident and motivated to learn. These benefits are likely due to the fact that sign language interpretation provides a clear and direct form of communication. The students are able to receive information in a way that is accessible to them, which allows them to fully engage in the classroom. This improved engagement leads to improved academic performance and a more positive educational experience overall.

## STUDENTS WITH HEARING IMPAIRMENTS

The term "students with hearing impairment" refers to students who have an impairment in hearing whether fluctuating, that adversely affects their educational performance. Malauna et al (2022), refers to such students as individuals with hearing loss who require special educational programs and services. These students have unique learning needs that must be addressed through individualized education plans. According to IDEA (2004), these students are those who are hearing impaired or hard of hearing, with or without other disabilities, and who require special education and related services; Bradly (2015) said that, students with hearing impairment can be anyone who has difficulty hearing and understanding speech and other linguistic information due to a hearing loss. This could include students who are deaf, hard of hearing, or have any degree of hearing loss that impacts their ability to communicate.

The educational need of students with hearing impairment vary depending on the individual but may include the use of assistive technology, accommodations in the classroom, and specialized instructions. Ferri (2006) defines deaf students as those who have hearing loss that are severe enough to interfere with the acquisition and use of spoken language and the perception of sound. Deafness is a spectrum and not all deaf students have the same experiences or needs. Individuals with hearing impairments can be subdivided into two groups. The first group includes those described as **hard-of-hearing**. These are individuals who have hearing problems but who can still be expected to develop communication skills through the use of the auditory channel. They can use their hearing ability to understand speech and to develop their own appropriate speech and language skills. The second group are those who are considered **deaf**. These once have hearing problems that are so severe that speech cannot be understood when it is transmitted through the ear (Moores, 1987). Whereas hard-of-hearing individuals can still use the auditory channel as their major avenue for speech and language development, deaf individual must rely on the visual channel (Ross, et al., 1982).

## ACADEMIC PERFORMANCE OF HEARING IMPAIRED STUDENTS

When it comes to academic performance, students with hearing impairment face a unique set of challenges. They tend to have lower reading and language skills than their hearing peers, which can negatively impact on their academic performance. Ritter (2005) opined that students with hearing impairment may have trouble accessing the curriculum, communicating with their teachers and classmates, and participating in classroom discussions. They often require additional support and accommodations in order to achieve academic success.

ASHA, (2001). Explained that despite the challenges which is communication barrier that exist between hearing students and hearing impaired students in the educational setting and difficulties accessing curriculum, there are many ways to support their academic performance. For example, schools can provide them with assistive technology to help them assess the curriculum, teachers can use strategies like group discussion, individualized instruction, and visual aids to help students with hearing impairment better understand and retain information, schools can also help provide extracurricular activities and social opportunities which can help them feel more connected to their school community and improve their overall academic performance. Students with hearing impairment have been found to have poor academic performance. Migehe (2015) carried out a study to analyze the academic performance of students with hearing impairment in schools. The findings indicate that a large number of students with hearing impairment had poor academic performance for various reasons including lack of trained teachers, lack of common medium of communication as well as shortage of learning materials and specialized equipment for them, lack of in-service training, and motivation for teachers of students with hearing impairment. It is typically measured through various academic metrics, such as test scores, grades, and course completion rates. However, academic performance can also be influenced by a variety of factors beyond test scores, including a student's motivation, social and emotional development, and classroom environment. It is also

important to consider that students have different strengths and learning styles. So academic performance can vary from one student to another.

### **REVIEW OF EMPIRICAL STUDIES**

Relevant empirical studies conducted by individuals or collective scholars were reviewed viz: Oghoeneonaye (2021), conducted a research on Effects of Manual Communication on Reading Comprehension of Children with Pre-Lingual Hearing Impairment in Madona School for Special Education, Delta State. The study adopted quasi experimental research design. More explicitly the study adopted the non-equivalent group. Pre-test/post-test design where two groups comprised the experimental group and the other control group. The total population of the study was the total number of children with pre-lingual hearing impairment in junior secondary school (JSS1, JSS2, and JSS3) at the Modana School for Special Education, Oshilimi South Local government area of Delta State. The sample for this study consisted of 20 students who were randomly selected from Madonna School for Special Education, Oshimili Delta State. 10 students from JSS2A which formed the experimental group and 10 students from JSS 2B which formed the control group. Purposive sampling technique was used in selecting the students based on the degree of the hearing loss, age at onset, and chronological age was deployed to draw 10 students in JSS 2A and JSS2B to constitute the experimental and control group. Data was analyzed using table of frequency to find answers to the research questions. It was observed that significant relationship do exist between the use of manual communication of and reading comprehension of children with pre-lingual hearing impairment. The gap between the empirical study and this study is that the empirical study was carried out on secondary school students and it focused only on pre-lingual hearing impairment and it used only manual communication while this study focused on Effects of Sign Language Interpreting Services on Academic Performance of Students with Hearing Impairment at the Department of Special Education and Rehabilitation Sciences University of Jos and it used sign language to communicate with the students.

Dean, et al., (2008) conducted an experiment in which they investigated the relationship between reading and signing skills. They administered a vocabulary task and a story comprehension task Sign Language of the Netherlands and written in Dutch to a group of 37 deaf children with bilingual education program. Dean et al, (2008) found a strong and positive correlation between the scores obtained in the sign vocabulary task and the reading vocabulary task, when age, short term memory scores and non-verbal intelligence were controlled. In addition, a correlation was observed between the scores in the story comprehension task in Sign Language skills of the Netherlands and written in Dutch but when written vocabulary scores for words and signs were not taken into count. This empirical study is related to this work but the gap here is that no sampling technique was recorded, and the researcher did not state how the data were collected and analyzed and the type of research design that was used in this research but in this study, sampling technique was carried out and the researcher states how data was analyzed and gave the type of research design that was used in this study.

In a study conducted by Adam et al, (2005) using a hierarchical multiple regression analysis, the relationship of age of ASL exposure, ASL fluency and finger spelling skill on reading fluency in deaf college age persons with hearing impairment were all examined. After controlling for ASL fluency, fingerspelling skill significantly predicted reading fluency, revealing for the first-time that fingerspelling above and beyond ASL skills, contributes to reading fluency in persons with hearing impairment. It was suggested that both fingerspelling – in – the – visual – manual – modality – and reading – in – the – visual – orthographic modality – are manually facilitating because they share common underlying cognitive capacities of word decoding accuracy and automaticity of word recognition. The findings provided support for the hypothesis that the development of English reading proficiency may be facilitated through strengthening of the relationship among fingerspelling, sign language and orthographic decoding in route to reading mastering and may also reveal optimal approaches for reading instruction for deaf and hard of hearing children. The gap

between the empirical study and this study was that the type of research design that was used was not given, number of sample and sampling technique was not stated but this study stated the type of research design that was used, number of samples and sampling technique were also stated.

Istifanus (2021) conducted a research on studies of signaling Device on Social Adjustment of Persons with Hearing Impairment in Jos Metropolis. The researcher adopted a survey research design. The population for this study consisted of all 60 students with hearing impairment of the Department of Special Education and Rehabilitation Sciences, University of Jos. A total of 10 students were used as sample and simple random sampling technique was used in selecting the sample. The data was organized in a tabular form and then analyzed with the use of frequencies and simple mean. These took care of the likert scale. It was found that signaling Device has a positive and significant effect on Social Adjustment of Persons with Hearing Impairment in Jos Metropolis. From the findings of this study, it was concluded that adequate assistive signaling devices are needed to make life social for persons with hearing impairment. The empirical study is related to this study but the gap here is that, the researcher used simple random sampling technique in choosing the sample while this study used purposive sampling technique and it was a quasi experimental research design (there was no randomization).

Amanda (2018) conducted a research on Characterization of Conference Interpreting by Sign Language Interpreters in St Chatherine University. The study was conducted using mixed methods approach each type of data. Creswell (2009) describes mixed methods research as that which uses both quantitative and qualitative data in order to harness the strengths of each type of data, noting that the combination of both types of research can yield more insight than either alone. The research design included quantitative data collected via a survey instrument, and qualitative data collected via interviews. These methods were connected (Creswell, 2009), meaning that analysis of the quantitative data from the first phase of the research (the survey) informed the data collection of the qualitative data in the second phase of the research (the interviews) by creating the pool of interview participants. The survey was piloted with a group of approximately 13 interpreters before being disseminated nationally. Participants were recruited using network sampling. A Qualtrics survey was used to collect instrument. The data from this study were analyzed using a variety of methods. Qualitative data. It was found that Characterization of Conference Interpreting by Sign Language Interpreters has a significant effect on students' academic performance in St Chatherine University. The gap between the empirical study and this study is that it use mixed method approach which uses both quantitative and qualitative data and it was a Characterization of Conference Interpreting by Sign Language Interpreters while this study focused on both sign language interpreters and students with hearing impairment in a university setting and had a specific level and number of students as samples.

Damulak. (2021). Conducted a research on Effects of Language Experience Approach on Reading Achievement of Pupils with Pre-lingual Hearing Impairment in Jos North Plateau State. The study was a quasi-experimental research type. It adopted the pretest-posttest non-equivalent design, there was no randomization, and (it used an intact class). The design featured two groups, experimental group and control group. The population for this study consisted all pupils with pre-lingual hearing impairment in primary three in Jos North. Specifically those who cannot recognize words, pronounce words, and read simple sentence. The sample of the study was made up of four pupils with pre-lingual hearing impairment in Otana Integrated Primary School Jos in Jos North. The participants were 2 males and 2 females of 8-15 years of age in primary three with pre-lingual hearing impairment who had spent at least three years learning how to identify words and pronounce words without grasping with the words. The study employed the purposive sampling technique. This sampling technique is relevant to the study as the sample possessed the specific characteristics to be studied. The data collected from the field was analyzed using standard deviation for the research questions while the hypothesis were tested using t-test. From the results of this study, it was showed that by using Language Experience Approach, the learning process was simplified and improved and there was a positive responds in the Learning Experience Approach. The gap between the empirical

study and this study is that the empirical study topic is on Effects of Language Experience Approach on Reading Achievement of Pupils with Pre-lingual Hearing Impairment. Achievement is the overall performance of the students in school while this study is on the Effects of Sign Language Interpreters' Services on the Academic Performance of Students with Hearing Impairment this study focuses on the performance of students with hearing impairment because they are still in school and not achievement.

**METHODOLOGY**

This study adopted the positivism research philosophy and the correlational research design. The population of this study consisted of all the registered hotels in Rivers State of Nigeria. The population of this study consisted of Six (6) 300 Level Undergraduate students with the same level of hearing loss in the Department of Special Education and Rehabilitation Sciences. Faculty of Education, University of Jos, Nigeria. The choice of Department of Special Education and Rehabilitation Sciences in Faculty of Education was because that is where the concentration of students with hearing impairment who are receiving interpreting services are found. A letter of introduction was obtained from the supervisor to the Head of Department of Special Education and Rehabilitation Sciences University of Jos to seek for the consent, permission and cooperation of the Management and Students. This study adopted a census approach as the sample remained six (6) students with the same hearing loss in 300Level from the Department of Special Education and Rehabilitation Sciences University of Jos. Nigeria. This was made up of four (4) males and two (2) females. The choice of this sample is because it will enable the researcher to have adequate control of the participants. To analyze the data, both descriptive and inferential statistics was used. The descriptive statistical tools include mean, percentages and charts were used to answer all the research questions, while the inferential statistics of t-test and Analysis of Covariance (ANCOVA) was used to test all the hypotheses using Statistical Package for Social Sciences (SPSS) version 24.0 to analyze the data.

**RESULTS**

**Research Question One:** To what extend does sign language interpreter’s excess workload affect excellence or high performance of students with hearing impairment?

**Table 1: Extent to which Sign Language Interpreter’s Excess Workload Affect Excellence or High Performance of Students with Hearing Impairment**

Workload	N	Pre-test		Post-test		Main C	Extent of Improvement
		Mean	SD	mea	SD		
<b>LOW</b>	<b>2</b>	18	8.4	<b>72</b>	11.3	54	MODERATE
<b>HIGH</b>	<b>1</b>	12	0.0	72	0.0	60	HIGH

**Source: Field survey, 2024. Note:** Percentages are in parenthesis (%), 0-39 = Low, 40-59 = moderate, 60-100 = High

Table 1 shows the extent to which Sign Language Interpreter’s Excess Workload Affect Excellence or High Performance of Students with Hearing Impairment. Before intervention, the Students with Hearing Impairment had low academic performance, while after intervention, Interpreter with low workload taught students with Hearing Impairment 72.00±11.31 had moderate academic performance and 72.00±0.00 had high academic performance. In addition, Interpreter with high workload taught students with Hearing Impairment; 72.00±0.00 had high academic performance. This implies that Sign Language Interpreter’s with low Workload Affect academic Performance of Students with Hearing Impairment to a high extent.

**Research Question 2:** To what extent does poor students sign language background affects comprehension of sign language interpretation of students with hearing impairments?

**Table 2: Extent does Poor Students Sign Language Background affects Comprehension of Sign Language Interpretation of Students with Hearing Impairments**

Sign Language Background	N	Pre-test mean	Pre-test SD	Post-test mean	Post-test SD	Main C	Extent of Improvement
GOOD	2	18	8.49	72	11.31	54	MODERATE
POOR	1	12	0.00	72	0.00	60	HIGH

**Research Data, 2024. Note:** Percentages are in parenthesis (%), 0-39 = Low, 40-59 = moderate, 60-100 = High

Table 2 shows the extent to which poor Students Sign Language Background affects Comprehension of Sign Language Interpretation of Students with Hearing Impairments. Before intervention, the Students with Hearing Impairment with poor and good sign language background had low academic performance:  $18.00 \pm 8.49$  and  $12.00 \pm 0.00$ , while after intervention, students with Hearing Impairment with Poor sign language background were are follows:  $72.00 \pm 11.31$  had moderate academic performance and  $72.00 \pm 0.00$  had high academic performance. In addition, students with Hearing Impairment with good sign language background had 60 had high academic performance and 54 had moderate academic performance. This implies that Students with Hearing Impairment with good sign language background had a fifty-four percent chances to moderate and high performance among students with Hearing Impairment.

### Hypothesis One

**Ho1:** There is no significant differences between the pretest and posttest mean score performance of students with hearing impairments who are affected by sign language interpreter's excess workload and those who are not.

**Table 3: t-test Analysis of Pretest and Posttest Mean Score Performance of Students with Hearing Impairments between Sign Language Interpreter's Excess Workload**

Test	WORKLOAD	N	$\bar{X}$ SD	df	t-cal	p-value
Pretest	Low	2	18.08.49	1	-.577	.667
	High	1	12.00			
Posttest	Low	2	72.0011.31	1	0.00	1.00
	High	1	72.00			

Source: Research Data, 2024

Table 3 shows t-test Analysis of Pretest and Posttest Mean Score Performance of Students with Hearing Impairments between Sign Language Interpreter's Excess Workload. Before intervention, based on Sign Language Interpreter with Low Work-Load: Students had  $18.00 \pm 8.49$  and High-Workload had  $12.00 \pm 0.00$  with t-value of  $-0.577$  and p-value of  $0.667$ . Since the p-value is greater than  $0.05$ , meaning there is no significant difference between pre-test mean scores performance of students with hearing impairment in control and experimental groups. But after intervention, students in low workload and high workload had  $72.00 \pm 11.31$  and  $72.00 \pm 0.00$  respectively with t-value of  $0.00$  and p-value of  $1.00$ . Since the p-value is greater than  $0.05$ , meaning there was no significant difference between the pretest and posttest mean score performance of students with hearing impairments who are affected by sign language interpreter's excess workload and those who are not. Therefore, the researcher accepts the null hypothesis and rejects the alternative hypothesis. This means that there was no significant difference between the pretest and posttest mean score performance of students with hearing impairments who are affected by sign language interpreter's excess workload and those who are not. This result was in tandem with Amanda (2018) and Damulak. (2021) who found that by using Language Experience Approach, the learning process was simplified and improved and thee was a positive responds in the Learning Experience Approach..

## Hypothesis Two

**Ho2:** There is no significant differences between the pretest and posttest mean scores performance of students with hearing impairments who came from good sign language background (parent with hearing impairments) and those who are not (hearing parents).

**Table 4: t-test Analysis of Pretest and Posttest Mean Scores Performance of Students with Hearing Impairments from Poor and Good Sign Language Background**

Test	WORKLOAD	N	$\bar{X}$	SD	df	t-ca	p-value
Pretest	Poor	2	18.08.49		1	-.577	.667
	Good	1	12.0.				
Posttest	Poor	2	72.011.31		1	0.00	1.00
	Good	1	72.0				

**Source:** Research data, 2024.

Table 4 shows t-test Analysis of Pretest and Posttest Mean Score Performance of Students with Hearing Impairments from Poor and Good Sign Language Background. Before intervention, both poor and good sign language background were low with  $18.00 \pm 8.49$  and  $12.00 \pm 0.00$  with t-value of  $-0.577$  and p-value of  $0.667$ . Since the p-value is greater than  $0.05$ , meaning there is no significant difference between pre-test mean scores performance of students with hearing impairment from Poor and Good Sign Language Background. In addition, after intervention, students with hearing impairment from Poor sign language background had  $72.00 \pm 11.31$  and  $72.00 \pm 0.00$  respectively with t-value of  $0.00$  and p-value of  $1.00$ . Since the p-value is greater than  $0.05$ , meaning there was no significant difference between the posttest mean score performance of students with hearing impairments from Poor and Good Sign Language Background. Therefore, the researcher accepts the null hypothesis and rejects the alternative hypothesis. This implies that irrespective of Poor and Good Sign Language Background of the students with hearing impairments, their performance are the same. This present result was in agreement with Istifanus (2021) findings that signaling Device has a positive and significant effect on Social Adjustment of Persons with Hearing Impairment in Jos Metropolis.

## CONCLUSION

The research on the effects of sign language interpreter's services on academic performance of hearing impaired students is still in its early stages. It was evident from the foregoing that sign language interpreter's services can have a positive effect on students' academic performance. While, factors such as the student's age, the type of curriculum, and the teacher's knowledge of sign language also seem to play a role in the effectiveness of sign language interpreter's services.

## RECOMMENDATIONS

From the foregoing we recommended as follows:

1. To maximize the effectiveness of sign language interpreter's services, stakeholders should ensure that all educational materials are provided in an accessible format, providing training for teachers and staff on how to work with sign language interpreters, and establishing clear communication guidelines between the interpreter, the student, and the teacher. Additionally, it is important to consider the preferences of the student when choosing between on-site and video remote interpreters. With proper implementation, sign language interpreter's services can be a valuable tool in supporting the academic success of students with hearing impairment.
2. Sign language interpreters should not take up excess workload as this can lead to burnout and a decline in the quality of their work. The authority of the University of Jos, especially Department of Special Education and Rehabilitation Services should set time limit for the interpreters.

3. Coherently, Agencies, organizations and the Federal Government at large that employ sign language interpreters should set reasonable limits on the hours and assignments that interpreters are expected to take on.

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