

**INFLUENCE OF INSTRUCTIONAL STRATEGIES AND LEARNING  
ENVIRONMENT ON ACADEMIC ACHIEVEMENT OF STUDENTS  
WITH HEARING IMPAIRMENTS IN SELECTED PUBLIC  
UNIVERSITIES IN KENYA**

**BY**

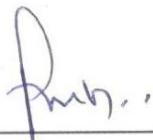
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**A THESIS SUBMITTED IN FULFILMENT OF THE REQUIREMENTS  
FOR THE AWARD OF THE DEGREE OF DOCTOR OF PHILOSOPHY  
IN THE SCHOOL OF EDUCATION  
KENYATTA UNIVERSITY**

**SEPTEMBER, 2020**

**DECLARATION**

This thesis is my original work and has not been presented for a degree in any other university.

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## **DEDICATION**

This work is dedicated to my parents; late Mr. Muthini Muumbi and Mrs. Esther Malinda Muthini; my husband Robert Laki Mutua, and my children; Mwende, Mutio and Kyalo.

## **ACKNOWLEDGEMENT**

My sincere appreciation goes to the Almighty God for his faithfulness has endured during my period of study. Special thanks go to my supervisors Dr. Nelly Otube and Dr. Daniel Muindi and for their scholarly guidance, assistance, devotion and encouragement throughout the course of my study. I appreciate the voluntary participation of all the students with hearing impairments from the three selected universities. I appreciate all the Deans of students Affairs from the three selected public universities for their sacrifice and commitment during data collection. Namely: Fr. Dr. Wamugunda, Dean of Students Affairs University of Nairobi; Professor Kochung, Dean of students Affairs-Maseno University and Dr. Gimode, Dean of students' Affairs Kenyatta University all chairpersons of departments that offer Common University Units in Kenyatta University, University of Nairobi and Maseno University.

Further, my appreciation goes to all the three Deputy Vice Chancellors, Departments of Research and innovation from the three selected public universities for accepting my request to carry out research work in the institutions. God bless you. Many thanks to all chairpersons and lecturers from all the departments that offer University common units for their participation in this study. Thanks to Stanley Nguma and Ann Chadamba for typesetting, editing and formatting this work. I wish to express my sincere appreciation to my loving husband; Robert Laki Mutua, daughter; Mercy Mwende and sons; Jefferson Mutio and Charles Kyalo for their financial support and moral encouragement during the time of study. My gratitude greatly goes to the

research assistants who tirelessly worked with me for many days; sometimes till late into the night organizing the tools for carrying out this research.

**ABBREVIATIONS AND ACRONYMS**

<b>ASL</b>	-	American Sign Language
<b>EFA</b>	-	Education for All
<b>FM</b>	-	Frequency Modulation
<b>HI</b>	-	Hearing Impairment
<b>IDEA</b>	-	Individuals with Disability Education Act
<b>KSIA</b>	-	Kenya Sign Interpretation Association
<b>KSL</b>	-	Kenyan Sign Language
<b>MoEST</b>	-	Ministry of Education Science and Technology
<b>PWD's</b>	-	Persons with Disability
<b>SE</b>	-	Signed English
<b>SEE</b>	-	Signed Exact English
<b>SL</b>	-	Sign Language
<b>SNE</b>	-	Special Needs Education
<b>SWD</b>	-	students with Disabilities
<b>SWHI</b>	-	Students with Hearing Impairments
<b>TC</b>	-	Total Communication
<b>UNESCO</b>	-	United Nations Educational, Science and Cultural Organization
<b>USA</b>	-	United States of America
<b>UN</b>	-	United Nations

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## ABSTRACT

The purpose of this research study was to investigate and analyse the influence of instructional strategies and learning environment used by lecturers on academic achievement of students with hearing impairments in selected public universities. The objectives of the study were: establish support services in the learning environment for students with hearing impairment, identify the teaching methods used by lecturers to teach students with hearing impairments, identify the resource materials used to instruction of students with hearing impairments, determine whether the lecturers who teach students with hearing impairments, have relevant skills and establish the influence of instructional strategies and learning environment on academic achievement of students with hearing impairments. The research adopted a descriptive survey design whereby both quantitative and qualitative approaches were used. A pilot study was conducted to establish the validity and reliability of the research instruments. Data was then collected from lecturers, Dean of students' affairs, chairpersons of Departments that offer university common units and students with hearing impairments. The universities were selected due to the fact that they admit students with Special Needs; hence, they have rich information on the theme of the study. Target population was composed of three Deans of Students' Affairs, 15 chairpersons, 462 lecturers and 70 students with hearing impairments. On data analysis, the statistics were generated by means of statistical package of social sciences (SPSS) version 22.0, while qualitative data was analysed through narrative analysis and thematic approach. The findings revealed that lecturers who teach student with hearing impairments are not inducted on relevant teaching methods and 50.2% of them mainly modify seating position of students with Hearing Impairment. Selected public universities have no policy guidelines for students with HI. The study also revealed that lecturers are not specially trained to teach students with HI. Resource materials used were fair as reflected by 55.7% of students with HI. The selected public universities have inadequate resource materials for students with Hearing Impairments. Additionally, across the selected public universities medium of instruction was significantly different ( $\chi^2 = 42.298$ ,  $P = 0.0001$ ). Students' respondents showed that the number of sign language interpreters were crucial but not enough for students with hearing impairments. Following these findings, the study recommended University Councils to avail bursaries for students with HI, and Higher Education Loans Board (HELB) to allocate more funds to students with hearing impairments pursuing higher education in public universities to enable them to purchase hearing aids which are expensive.

## **CHAPTER ONE**

### **INTRODUCTION AND BACKGROUND CONTEXT**

#### **1.0 Introduction**

This chapter consists of the background information to the study, statement of the problem, purpose and objectives of the study. It also contains the study questions, significance, limitations, delimitations and assumptions of the study. In addition, the theoretical and conceptual frameworks as well as the operational definitions of key terms used in the study are presented.

#### **1.1 Background to the Study**

Internationally, research has shown that the majority of Deaf University graduates are hard of hearing or post-lingual deaf (Breljie, 1999). This might be attributed to the lack of sign language interpreting services at the universities, inadequate resource materials for teaching, lecturers' lack of relevant skills to teach students with hearing impairments and failure to establish academic achievement of students with HI. Breljie (1999) points out that higher education opportunities for hard of hearing students are more as opposed to other categories of hearing loss. Komesaroff ((2000) states that students with HI are grossly underrepresented in higher education and this is due to the fact that few students with HI are admitted to college and universities based on poor grades achieved at high school level.

According to the United Universal Declaration on Human Rights (1948), all Persons with Disabilities (PWDs) have a right to education regardless of their handicap, ethnic backgrounds or social status. This implies removal of barriers that may hinder

education progress to these students in an inclusive setting. This was also echoed by the World Conference Education for All (1990) held in Jomtien, Thailand; which emphasized diversification of Education to include all students with disabilities; further the Salamanca statement (UNESCO, 1994) reported great concern for students with disabilities being enabled to learn in a conducive environment. This includes adjustment of anything in the education sector that hindered imparting knowledge and skills to the students with disabilities. The call for inclusive educating has attracted enrolment of governments and interested groups to seek access to education for people with disabilities who are still unreached (UNESCO, 1994).

Most international conventions made the world community to ensure highest policy and budgetary priority for adequate and appropriate, support provision to ensure effective participation of students with disabilities in the mainstream education setting (UNESCO, 1994). This includes the requirement by all institutions of learning to provide assistive devices and services, adaptation of the learning curricula and school infrastructure to enhance their effective participation and communication of these students with disabilities.

The UN (2011) claimed the period as the international year of youth: Dialogues and Mutual understanding. Students with disabilities are an important sector of the youth movement and are likely to be excluded from education, face discrimination when accessing health care or seeking employment opportunities, stripped off the right to make their own decisions and excluded from participation in public life than their non-disabled peers.

The United Nations (UN) standard Rules on Equalization of opportunities for students with disabilities (SWD) of 1994, urged states to ensure that education for Persons with Disabilities (PWDs), is an integral part of the education system; in agreement it was declared that the use of sign language as a medium of communication among students with HI, should be recognized and provision made to ensure that these students have access to education in their national sign language.

Research shows that hearing loss affects nearly twenty eight (28) million people in the world. One (1) in every twenty two (22) infants born in the United States has some degree of hearing impairment and one (1) in every one thousand (1000) infants has severe or profound hearing impairments (Hirer *et al.*, 2007). The preference of hearing loss increases as people age. Persons above 65 years of age are approximately about eight (8) times more likely to have a hearing impairment than young adults aged 18-34 years. According to the USA Department of Education (2007), seventy two thousands, three hundred and eighty seven (72, 387) students between the age of 6 and 21 were defined as having a hearing impairment and were receiving special education services. In 2019, there were about 2.3 million people between the ages of 18 and 34 living with disability. In addition, 25,000 of these people were enrolled in higher education institutions in the United States (Demographic Aspects of Hearing Impairment) (National Centre for Education Statistics, 1999). Worldwide, almost 650 million people live with disability. About a quarter of these persons are below 18 years (World Health Organization, 2011).

Hearing impairment is experienced in all parts of the world although with varying degree of severity (World Health Organization, 2010). An estimate of 5.3% of the world's population suffer from hearing loss with approximately 91% and 9% of those people being adults and children respectively. Hearing impairment is most prevalent in South Asia, Asia Pacific and Sub Saharan Africa in that order (World Health Organization, 2012).

Persons with disabilities can also be productive members of the society. In both developed and developing countries, promoting more inclusive societies for persons with disability requires improved access to both basic and tertiary education levels which is relevant and appropriate for employment suited to their skills, interest and inabilities (United Nations Economic and Socio Commission for Asia and the Pacific, 2002). For this to happen adaptations are needed and thus physical environments especially at the universities should be accessible. There should be strong regional advocacy and the spread of barrier free design among policymakers and technical personnel responsible for construction of public facilities. They should aim towards reducing barriers in the built environment especially in the developing countries (United Nations Economic and Socio Commission for Asia and the Pacific, 2002). In many African countries research and policy focus has centred on issues to students socio- economic background and gender with women and girls issues in higher education taking centre stage at the expense of students with disabilities (Knaka 1997, Achola 1997, Ajayi 1996).

In Nigeria, Fuandaji (2009) noted the following strategies to be used for effective learning of students with HI; Multi-disciplinary collaborative effort and teamwork between students with HI and all university stakeholders, namely; Dean of students affairs, chairpersons of departments that offer common university units, lecturers who teach students with HI and university management.

Educational achievement has great value to human beings and the society in which they belong. Many of the international conventions have prioritized support for mainstreaming Students with Hearing Impairment (UNESCO, 1994). Therefore, institutions should provide support mechanisms and assistive devices of learning to students with HI (Johnson, 2006). The World Federation of the Deaf (WFD, 2007) stipulates that the main goal of educating the students with HI is to give them same possibilities of participating in the society to adult life as other people without HI. Indeed, this is also in line with the mandate of the Kenya National Association for the Deaf (KNAD, 2009).

In Kenya, there are about 31 public universities. The students' admission criteria is highly competitive and students must attain high grades (aggregate C+ and above) to be admitted to the university irrespective of gender, disability, colour and religion (MOE, 2014). In many African countries, no research has been done on the challenges that students with hearing impairments encounter while undertaking their studies in universities and the influence of the challenges on the students' academic achievement.

The Constitution of Kenya (2010) Chapter 4, Part 3, Section 54 (1) states that persons with disabilities should: be treated with dignity and respect and be addressed and referred to in a manner that is not demeaning; access educational institutions and facilities for persons with disabilities that are integrated to the extent compatible with the interest of the person with disability, to have reasonable access to all places, public transport and information; to use sign language, Braille or other appropriate means of communication and to access materials as well as devices to overcome constraints arising from the person's disability. Section 54(2) of the Constitution, 2010 provides that the state shall ensure the progressive implementation of the principle and that at least five percent of the members of the public in elective and appointive bodies are persons with disabilities.

The three public universities in Kenya namely; Maseno University, University of Nairobi and Kenyatta University, have created departments or directorates which are committed to ensuring that PWDs within their jurisdiction are taken care of. The three universities have strategic and vision plans of enhancing access for persons with disabilities to information and any other utilities accessible to persons without disabilities. These universities admit the largest number of students with disabilities in Kenya.

Despite admitting high numbers of students with special needs, most public universities in Kenya do not provide conducive or supportive environment required for effective participation of students with hearing impairments in academic activities; hence, posing adverse effects. Thus, students with hearing impairments take more

time to complete their degree programs unlike their peers without disabilities (Wolanin, 2005).

## **1.2 Statement of the Problem**

Kenyan universities experience low enrolment rate of students with hearing impairments compared to other types of disabilities. Majority of the students with HI hardly make successful transition to the world of work especially because only a few make it to the universities or middle level colleges. Their poor performance is attributed to lack of institutional support services, inappropriate Instructional strategies, inadequate resource materials, inadequate facilities and lack of modifications of the learning environment. Most of these facilities are academic related and in turn, they affect their academic achievement. A gap exists in their academic achievement as compared to their hearing counterparts (Awori, 2010). These academic challenges prevent them from adequately accessing learning and consequently, they either miss out or drop out or are discontinued from their studies altogether.

Most of the research related to the current topic has been conducted in developed nations. In New Zealand, Powell, Hyde and Punch (2013) in their study reveal that the small population of students with HI and hard of hearing students attending post-secondary institutions deal with various challenges in accessing and participating in classes and in obtaining adequate services. The current study; however, focused on institutions of higher learning in Kenya with the main purpose of determining the influence of instructional strategies and learning environment on academic

achievement of students with hearing impairments in selected public universities in Kenya.

### **1.3 Purpose of the Study**

This study sought to establish the influence of instructional strategies and learning environment on academic achievements of students with hearing impairments in selected public universities.

### **1.4 Objectives of the Study**

The objectives of the study were to:

1. Establish the academic support services in the learning environment for students with HI in selected public universities.
2. Establish the teaching methods used by lecturers in instructing students with HI in the selected public universities.
3. Find out the resource materials used in the instructions of students with HI in the selected public universities.
4. Determine the extent to which the lecturers adapt to the teaching environment to ensure effective learning by students with HI in the selected public universities.
5. Determine lecturers' skilfulness on teaching students with HI in the selected public universities.
6. Establish academic achievement of students with HI in the selected public universities.

### **1.5 Research Questions**

This study sought to answer the following questions:

1. What are the academic support services in the learning environment for students with HI at the selected public universities?
2. What teaching methods do lecturers employ in teaching students with HI in the selected public universities?
3. What resource materials are used by lecturers in instructing students with HI in the selected public universities?
4. To what extent do lecturers adapt to the teaching environment to ensure effective learning for students with HI in selected public universities?
5. Do the lecturers have adequate skills to teach students with HI in the selected public Universities?
6. Do the instructional strategies used in each university influence the academic achievement of students with HI?

### **1.6 Significance of the Study**

The findings of this study highlight challenges encountered by student with hearing impairments and coping strategies as well as learning environment that are useful to public universities' boards of management. Further the institutions provide the academic support services needed to enable the students with hearing impairments learn with ease. It is very crucial for students with hearing impairments to successfully participate in their academic activities easily and enhance their social skills.

The findings of the study suggest alternative academic support services to be put in place by public universities for student with HI. The results contribute to adequate adaptation of teaching environment to ensure effective learning for students with hearing impairments.

The findings help address the academic performance of students with HI in public universities. The study further has practical significance as it explores lecturers' relevant teaching skills for students with HI and opens up other relevant teaching resource material, similarly the findings of this study influences policy making regarding teaching methods for students with HI at public universities. The study guides university policymakers on the most effective support materials for students with HI in public universities.

This was the first time a study of this nature was being conducted in Kenya and with lecturers being viewed as the primary agents in knowledge and skills acquisition for students with HI in higher education institutions. The study was undertaken at a time when there were major concerns being expressed on the dismal academic performance of students with HI in public universities in both developed and developing countries. Similarly, the academic performance of students with HI in public universities was declining for reasons that had not yet been exposed; hence, the importance of this study. The public universities, lecturers, University Councils, Commission for University Education and students with HI mostly benefit from this study.

The instruments used, the findings and the conclusion of the study provides adequate answers to the following: Academic Support services that have been put in place by universities for students with HI, teaching methods used by lecturers in instructing students with HI, resource materials used in the instruction of students with HI and lecturers' skilfulness to teach students with HI in public universities.

The survey instruments used, the findings and the conclusion of the study provides information and basis required in the formulation of policies for effective teaching and learning of students with HI. Further, when the six main objectives of the study are addressed, academic performances of students with HI in the public universities are enhanced.

The study considered access policies and academic support services put in place in the selected public universities. The provision of the academic support services had a significant impact on the students with hearing impairments in terms of equitable access and success in public universities. The exploration of the experience of students with hearing impairments in public universities was therefore significant as it filled a distinct gap in research.

## **1.7 Limitations and Delimitations of the Study**

### **1.7.1 Limitations**

The following were considered in interpreting the results of the study. Research instruments developed for the study were confined to questionnaires, interview guides and observation schedules. Enhancement of academic achievement for students with

HI was only limited to the three selected public universities since there were other public and private universities.

The research instruments developed for the study were confined to the selected public universities. The study confined itself to students with HI from first to fifth academic years of study. Further, the confinement was extended to the perceptions of the students with HI, lecturers who teach students with HI, deans of students' affairs and chairpersons of departments where university common units were taught and the reliability of academic support services, teaching methods, resources materials as well as relevant teaching skills. Additionally, the generalizability of the study results was limited to the target group since students with HI from other public and private universities did not participate in the study.

### **1.7.2 Delimitations of the Study**

Hearing impairments vary from; mild, moderate, severe to profound. There are learners with HI who also have other disabilities. This study; however, focused specifically on learners with HI enrolled in the selected public Universities. Similarly, students with HI were categorized as either hard of hearing or profoundly deaf because, their residue hearing has positive implication on speech training. This enhances their academic achievement. Students with HI mostly rely on sign language, body language and finger spelling among other communication modes which in turn could affect their academic performance. The study was delimited to selected public universities in Nairobi, Kiambu and Kisumu Counties. Only students with HI enrolled in these selected public universities participated in the study voluntarily. All other

public universities were excluded from the study based on lack of logistical support to carry out a study of this kind. There were no parents opinion represented in the study

### **1.8 Assumptions**

The study assumed that:

1. Universities have put in place certain services to accommodate instructional needs of students with HI.
2. The lecturers use specific teaching methods to assist students with HI.
3. The Kenyan sign language used at the selected public universities is familiar with students with HI.

### **1.9 Theoretical Framework**

This study was based on Theory of Meaningful Learning (ML) by (Hussen, 1995). Human expectations, beliefs, emotional levels and cognitive competencies are developed and modified by social influence that convey information and activate emotional reactions through modelling, instruction and social persuasion. The environment is not a fixed entity that impinges upon individuals, but most aspects of the environment do not operate as an influence until they are activated by appropriate behaviour. Therefore, lecturers do not influence students unless they attend their classes. People are both products and producers of their environment; meaning they affect the nature of their experienced environment through selection and creation of situations.

Meaningful learning depends on cognitive functioning which involves knowledge, much of it specialized and cognitive skills for operating on it. Language development which is part of human thought is linguistically assessed; hence the processes by which language develops are of major interest. In efforts to develop their cognitive competency, people draw on their own experience and turn to others who are well informed in the matter of concern due to complexity and rapid growth of knowledge, human acquisition of specialized cognitive competencies relies increasingly on model expertise. According to Hussen's theory (1995) of meaningful learning, lecturers or instructional materials such as books and computers, categories of hearing loss, coping strategies and instructional methods, all play a pertinent role in ensuring that the students with HI are engaged appropriately. The theory has five characteristics which are: active, construction, cumulative, self-regulated and goals-oriented. The students with HI actively engage in the learning process in lectures, note taking, group discussion which lead them to be constructive goal-oriented and self-regulated in their studies. Thereafter, the engagement leads to cumulative knowledge and self-actualization resulting to high academic achievement.

### 1.10 Conceptual Framework

## LEARNING PROCESS IN PUBLIC UNIVERSITIES

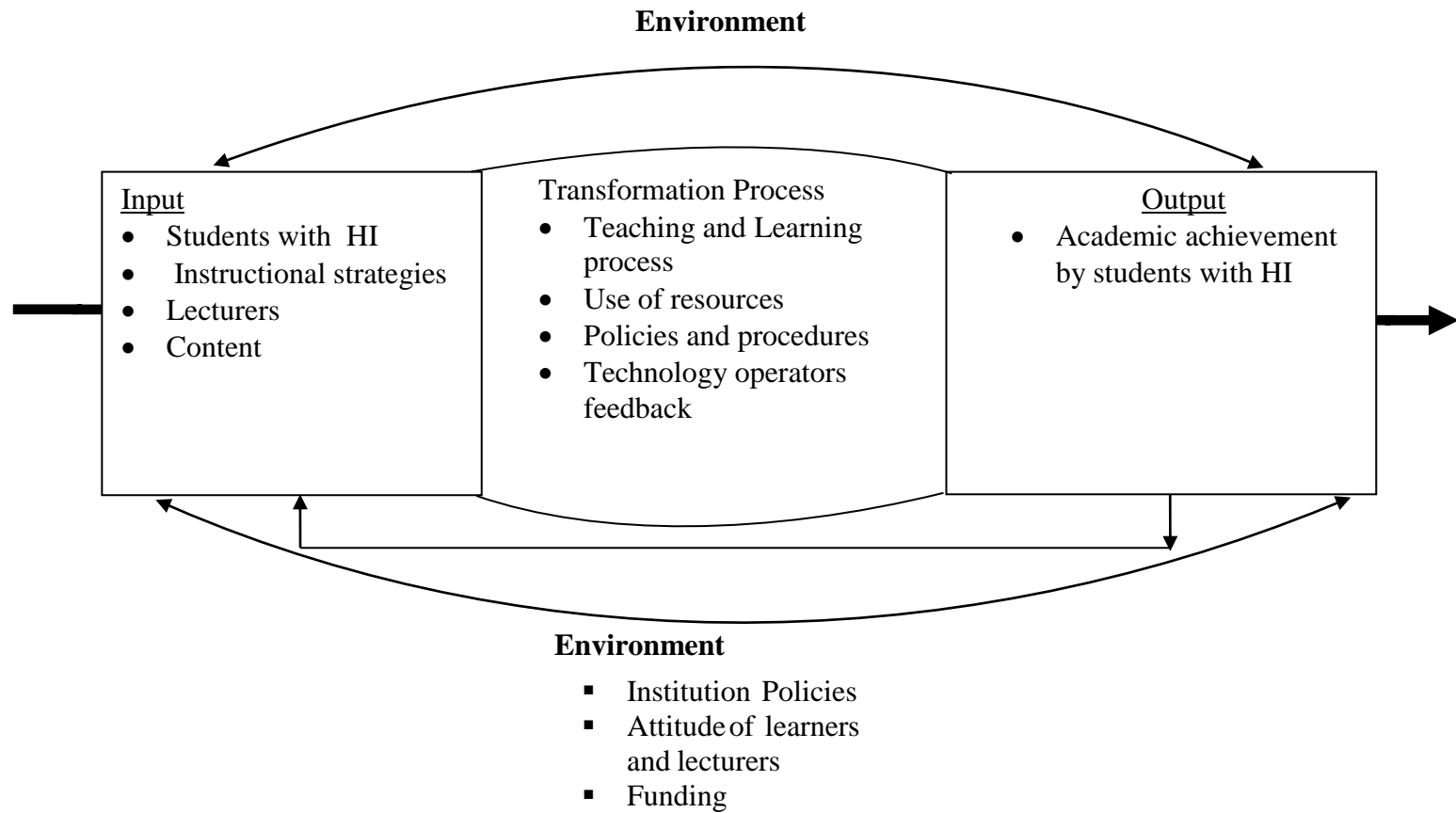


Figure 1.1: Conceptual framework (Laki, 2015)

This model is relevant to the study because, from the perspective of academic achievement, which is an aspect of effective instructional strategies and learning environment available in the study, Students with HI at public universities learn with their regular counterparts, hence availability of academic support services , effective instructional strategies and learning environment yield to their academic achievement.

Students with HI in institutions of higher education can easily access knowledge and skills with adequate support services and their retention rate is improved. This can be achieved through provision of adequate and appropriate teaching and learning resources as well as application of relevant academic support services namely; use of sign language, power point skills, and overhead projectors, availability of ICT, sign language interpreters and augmentative alternative communication to employment or self-employment. This in turn enhances smooth transition from the university to the place of work. Universities context is challenging to all students and the problems of adjusting to academic life obligations it imposes to students with HI often lead to failure and abandonment; hence, the dire need to apply modern effective instructions on studies such as proper lecture session consideration, use of sign language interpreters and assistive technical capabilities.

### **1.11 Operational Definition of Terms**

**Academic Support Services:** Refers to a wide variety of instructional methods, educational services, or school resources provided to students in the effort to help them accelerate their learning progress, catch up with their peers, meet learning standards, or generally succeed in school.

**Academic achievement:** The ability to do something successfully especially using own effort and skill; for example, examinations.

**Accommodation:** The act or state of adjustment or adaptation.

**Barriers:** Structure blocking access; something that obstructs: often by emphasizing differences.

**Captioning:** Providing an illustration with a title or explanation.

**Curriculum:** Academic content taught in a school or in specific course or program.

**Deaf:** A person wholly lacking or deprived of the sense of hearing; unable to hear or one with Hearing Impairment (IDEA, 2000).

**Disability:** Loss or reduction of function due to impairment (Heward, 2006).

**Emancipation:** Empowerment, having what it takes to accomplish a task.

**Enabling factors:** Factors that make impossible or facilitate a process.

**Hard of hearing:** A condition whereby a person has significant hearing loss that makes some special adaptations necessary. The person is able to benefit from hearing to understand speech but with amplification (Heward, 2006).

**Hearing impairment:** Any form of a hearing loss that adversely affects educational performance and therefore makes the individual eligible for special education (IDEA, 2000).

**Hearing Impaired:** A condition which occurs when there is a problem with or damage to one or more parts of the ear.

**Hostel Accommodation:** A form of low cost, short- term shared sociable lodging, supervised for both students with and without HI (regular), in the universities.

**Impact:** The powerful effect that something has on somebody or/and the measure of the tangible and intangible effect or consequences.

**Influence:** The capacity to have an effect on the character, development, or behaviour of someone or something, or the effect itself.

**Instructional strategies:** These are techniques which lecturers use to assist students become independent in their learning in order to accomplish academic tasks.

**Inclusive Education:** Means education that is non-discriminatory in terms of disability, culture, gender or other aspects of students or staff that are assigned significance by a society.

**Kenyan Sign Language:** This is a signed language system used by persons with hearing impairments in Kenya based on the Kenyan Culture (MoEST, 2004).

**Learning Environment:** Refers to the diverse physical location, contexts and cultures in which students learn.

**Mainstream:** Is where the students with disabilities are included in general education classes to increase their social interaction opportunities.

**Public University:** A university that is predominantly funded by public resources through a national or sub national government.

**Persons with disabilities:** Those who deviate from what society terms as normal persons in sensory abilities and/or physical characteristics to such an extent that they require a modification of school and social practices.

**Resource room:** A room in a learning institution that is equipped with various learning resources (Friend, 2008).

**Sign Language:** A visual, gestural language that has its own distinct grammar and uses symbols to represent ideas and concepts (Friend, 2008).

**Strategy:** A plan of action or activities designed and directed towards achieving a particular or major goal or overall aim (Friend, 2008).

## **CHAPTER TWO**

### **REVIEW OF RELATED LITERATURE**

#### **2.1 Introduction**

This chapter examines literature contributions related to the problem under study. The review covered the findings of researchers, authors and professionals whose work is relevant to the title under investigation. The review was based on the objectives of the study, support services, teaching methods, resource materials, instructional adaptation, relevant skills and academic achievement of students with HI.

#### **2.2 Academic Support Services Put in Place for students with HI in Public**

##### **Universities**

The struggle to integrate students with HI socially and academically is very challenging in the lecture halls where specialized academic support and access services are not commonly offered to students with HI in the universities. Students with HI identify themselves differently; there are those who perceive themselves as members of the deaf community. They have a degree of audio-logical deafness and exhibit attitudinal cohesion linguistically, politically and socially with other deaf people (Baker & Cokely, 1980). The other group is the oral deaf who use speech and hearing aids.

Individual tutoring services are vital due to the fact that students with HI do not receive as much information during lecture sessions as their hearing peers (Jacob, 1977). Spradbrow and Power (2000) carried out a study on Deaf and hard of hearing students at Queens Land University with a sample size of 72 students with HI. Many

of the students reported enjoying satisfying friendship and a sense of belonging with other deaf people (often for the first time), while others experienced feelings of social isolation in a largely hearing peer groups. Spradbrow and Power (2000) have documented that hard-of-hearing students in Australia universities also miss information during lectures as well, hence, the need for group tutoring. Crèmes (1991) found that in Germany, about six out of ten students in their study identified tutoring as essential to their success in the university. Tutoring enhances reading and writing skills and clarifies lecture notes. Interpreting as a strategy for students with hearing impairments was evaluated in a study by Jacobs (1997). The researcher used skilled interpreters and the students with HI whose performance were average and comparable to that of hearing peers. Test of immediate recall of short-term lecture content indicated that the students with HI correctly answered about 84% as many times as the hearing students. The need to offer academic support services is universal however similar approaches to address such needs has been found beneficial to undergraduates (Cremer, 1991; Spradbrow & Power, 2002).

Scherer and Walter (1988) carried out a study on higher education for students with HI, with a sample size of 320 deaf students. The study revealed that universities should attend to the whole deaf students to avoid withdrawing from their studies, hence impacting negatively on their academic performance. Stinson and Walter (1997) statistically posted significant relationships between students' satisfaction with class work and their academic achievement for persistence or withdrawal. Stinson and Walter identified three social issues to be addressed for students to adjust effectively

to higher education; developing social skills, establishing an identity and acquiring independence and interdependence.

Kersting (1997) conducted a study on balancing between Deaf and hearing worlds; reflections of mainstream college students on relationships and social interaction. The study revealed that University or College administration and delivery of post-secondary programs for the students with HI. Further, investigate the experiences of students who arrive in college without knowledge of sign language or familiarity with deaf culture, as well as evaluate currently existing programs and services designed to meet the needs of students with HI. Students with HI further reported feelings of isolation, loneliness and resentment and these were most intense during orientation and the critical first year of study. Alienation from both deaf and hearing peers was experienced and this concurs with Foster and Decaro (1990). One of the most salient characteristics of learning by students with HI in mainstream lecture halls is the students' dependence on a third party to provide access to information. More recently, education research has been graduated on automatic speech recognition, using specialized software to translate spoken messages to print (Stinson et al., 1999).

Reasons as to why students with hearing impairments do not complete their undergraduate degree programs are numerous. They include: lack of academic preparation and the challenges of lacking academic support services, leaves of absence, program lengths, and difficulty in carrying full course loads, dissatisfaction with social life and changes in career interests (Long & Stinson, 1982; Stinson & Walter, 1992).

Tutoring has been embraced as a way of alleviating some of the challenges that hinder students with HI. Consequently, different countries have embraced it. For instance, in England and other European countries like Germany tutoring is a direct instruction approach, rather than a support for reinforcing lecture session learning. Similarly, in the United States, tutoring is an academic support service that provides students with HI with content learning and skills development in addition to lecture hall experience. Orlando, Gramly and Hoke (1997) found that in the United States, students with HI in higher education seek tutoring not only to improve their course grades and study skills but to improve their understanding of lectures to enhance their reading, writing skills and to clarify the notes.

There is a dire need to evaluate the relationship of interpreting to learning because this is what helps students with HI. Jacob's (1977) study on skilled interpreters and students with HI whose grade point average was comparable to that of hearing peers pointed out that a test of immediate recall of short-term lecture content indicated that, the students with HI correctly answered 84% as many items as the hearing students. This is supported by Quinsland and Long (1989) in their study on learning via Direct and Mediated instruction by students with HI. They had a sample size of 36 students with HI involved in the study. The study revealed that students with HI can learn as much via Sign Language interpretation in the classroom. The study further revealed that students with HI learning Science through a skilled interpreter scored twice as high as those learning through unskilled interpreter. De Groot (1997), Seal (1998) and Winston (1995) further support the findings on the accuracy and effectiveness of interpreting which may depend on content knowledge as well as familiarity with the

content. Statistics indicate that lack of quality elementary and secondary educational opportunities are reasons why many countries have few students with HI in Higher education institutions (Marshark, Lang & Albertin, 2002). This study identified a gap on academic support services hence attempted to fill it.

### **2.3 Resource Materials for Students with HI**

A study carried out in New York with 64 students with HI revealed that it was necessary to address issues of accommodations thereby modifying all aspects of learning environment. These include improvement of classroom acoustics and lighting, addition of assistive listening devices, provision of captioning and or sign language interpreting and adapting new technologies for online learning (Henderson, 1999; Horn & Besktoldt, 1999; Lewis & Ferris, 1999). Most studies on sound environmental modification have focused on elementary age children, while other studies have indicated sound environmental amplification to be beneficial in post-secondary level classrooms for students with HI. However in speech recognition posting scores up to 37% in classrooms with poor listening conditions. Higher education programs are also offering students with HI opportunities with and without academic support services in many countries like Australia (Spradbrow & Power, 2002), China (personal Communication, 2001), Germany (Cremer, 1991) and Israel (Miller & Mizrahi, 2000).

In German, Cremer (1991) reports on a study on resource materials involving 125 students in higher education with 99.2% of them reporting that assistance through academic support services was essential. A higher number of respondents (69.5%)

identified note takers as important to their success followed by tutors (59.0%) and interpreters (34.3%). The findings indicated that German students were decidedly in favour of trained tutors (71.4%) as compared to untrained tutors. Lack of academic support services significantly affects academic performance of students with HI in public universities.

In contrast, Obata et al. (1999) summarized that 25.6% of the 144 main stream university and college students in Japan responding to a survey felt that post-secondary institutions were not attractive because there were no special academic support services. In view of the importance attached to academic support services for students with HI, the current study sought to find out the academic support services that are put in place by universities to facilitate learning and academic achievement of students with HI in selected public universities. Similarly, the enrolment of students with HI in the three selected public universities was as low as 70 only. Indeed provision of academic support services for students with HI is of paramount importance. However, the literature reviewed in this section presents a knowledge gap on achievement of students with HI in the selected public universities.

In another study, the U.S Department of Educational Statistics (1993) reported on a survey of two year and four year programs in the United States with deaf and hard of hearing students for the period 1989/1980 up to 1992/1993. The study did not include academic support services data from Gallaudet University and the National Technical Institute for the Deaf. The findings of the study revealed that of the sampled institutions that provided academic support services, 75% provided note takers, 67%

provided sign language interpreters while 65% stated that tutors assisted students with ongoing coursework. From the overall sample of 2,350 institutions with enrolments of students with HI and hard of hearing students, 18% were unable to offer some requested academic support services. In addition, 14% were unable to provide academic support services of a sign language interpreter requested for students with HI.

The expansion rate of academic support services as well as access of services offered in University Education programs for a long time remains a failure, average or dismal. In the United States for example, only one of every four deaf and hard of hearing students graduates (Stinson & Watter, 1997; Watter, Foster & Elliot, 1987). Graduation rate of approximately 25% is similar for both two years and four years programs in the United States.

With the failure rate of students with HI in colleges and universities being so high, the current study sought to fill this gap by planning as well as implementing programmes that improve retention and academic achievements of students with HI in selected public universities.

Most of the research on resource materials conducted in the United States established that there is need for adequate academic support services universal and similar approaches to addressing such needs can be found in the literature (Cremer 1991; Sparadbrows & power 2000). This study intended to fill this gap by analysing

resource materials used in the instruction of students with HI in the selected Public Universities.

The concerned departments in the various universities include: departments of Gender and Development Studies, department of Education Communication and Technology, department of Environment Education, department of Education Psychology and department of Educational Foundations of Kenyatta University. Similarly, University of Nairobi has six schools that offer Common University Units; namely School of Communication Studies, School of Development Studies, School of Public Health, School of Law, School of Physical Science, School of Philosophy and Religious Studies. Maseno University has two departments that offer common units; namely department of HIV & AIDS and department of Information Technology.

The Special Education Task Force report (MOE, 2003) itemized the assistive devices and technologies needed to facilities mobility, social inclusion and learning. The attainment of quality education for students and trainees with special needs is largely dependent on the provision of specialized human institutional and community capacity development.

National education sector plan (MOE, 2014) emphasizes the need for capacity building for teachers, trainers, educational managers, learning support assistants and technical disability related personnel such as a sign language interpreters and ICT experts at all levels of education for students with special needs.

The Constitution of Kenya (2010) makes public participation as one of our country's values and principles of governance. It further calls for human dignity, equity, social justice, inclusiveness, equality, human rights, non-discrimination and protection of the marginalized. The Basic Education Act (Republic of Kenya, 2013) outlines the need to increase access, enhance retention; improve quality and relevance of education in all academic levels. Furthermore, the Persons with Disabilities Act (Rok, 2003) provides a comprehensive legal framework which outlaws all forms of discriminative treatment of persons with disabilities such as lack of access to education and training. It also provides for adaptation of infrastructural, socio-economic and environmental facilities to ensure conducive environment for person with disabilities.

Ministry of Education (MOE, 2003) recommended that students and trainees with disabilities be provided with a barrier free physical and social learning environment to operate with minimal support and maximize their functional potentials, and similarly provide adapted video based content with audio and signing for students with HI. According to Article 35 of the Persons with Disabilities Act (2003) provides that, value added tax and any other government levy exemptions for materials articles and equipment to be used by individuals with disabilities, institutions and organisations to keep their costs reasonably minimum to accommodate persons with disabilities.

Stinson, Mckee and Elliot (1998) describe several benefits of real-time-captioning. The display remains on the screen for enough time to allow students with HI to check back and fill in information they might have missed from either the interpreter or the lecturer. Secondly, a hard copy of the complete lecture transcript may be available

after class when the captions are stored in a computer memory. This study investigated the resource materials used for instructing students with HI in selected public universities in order to fill the gap.

#### **2.4 Adaptation of Teaching Environment by Lecturers for Students with HI**

In this study, environmental modifications of the universities' lecture halls were investigated as a strategy to enhance learning and academic achievement. While note takers are helpful, providing a conducive listening environment would intuitively seem to be a more effective strategy. The opportunity to do this arose at York University first in 1989 and again in 2006.

Preferential seating and lighting is always a key component to any list of strategies on instruction and learning environment for students with HI (Leavitt & Flexer's, 1991). The research clearly indicates the effects of facilitator to the students with HI on speech perception in classrooms in relation to lecturers' position while teaching relative to instructors. This enhances how students with HI perceive information. They should have a clear view of the instructors, classmates and sign language interpreters. Other academic support services would be assistive devices and sign language interpreters. There is little data on the use of assistive devices by students with HI in public universities in Kenya. A study of 23 adult graduates of auditory verbal therapy programs by Millet (2008) indicated that 13 adults reported using FM system in high school. Only one out of the 18 adult students at the university used FM system. This further ensures that all classroom discussions are accessible to everyone including hearing, students with HI or hard of hearing students. The use of technology

allows audio and video recording of actual lectures or presentations (webcasting). Technology like media site which records a live class capturing and visual materials (i.e., PowerPoint slides) was used at York University to offer students choices in accessing courses (Kehoe, 2004).

In addition to serving as the portal through which students' access the recorded lecture for each class, this technology offers many opportunities to enhance learning and increases participation especially in discussion forums (Powell, 2007). The findings from this study in New York left a gap for a similar study to be done in a developing country like Kenya. The current study therefore investigated the adaptations that lecturers make to teach students with HI in the selected public universities.

## **2.5 Lecturers Skilfulness in Teaching Students with HI in Public Universities**

Education of students with hearing impairments in regular public institutions has its backing from international documents, which support inclusion of all students in regular public universities. Such documents include the United Nations Human Rights to Education (1948), the UN Standard Rules of Equalization of Opportunities for Persons with Disabilities (UNESCO 1993), the Salamanca Statement and Framework for Action on Special Needs Education (1994). Russel-Fox (2001) notes that for an effective inclusion process, the professional relationship may be developed among audiologists, sign language interpreters, speech and language therapists. In addition, collaboration should be between the professional teams. Further, deaf adults, who were deaf role models, were involved as sign language instructors in inclusive setting as they were often the best teachers in sign language.

Internationally, research has shown that majority of Deaf University graduates are hard of hearing or post-lingual deaf (Brelje, 1999). This might be attributed to lack of sign language interpreting services at the universities. Brelje (1999) points out that, higher education opportunities for hard of hearing students are more as opposed to other categories of hearing loss. Komesaroff (2000) firmly states that students with HI are grossly underrepresented in higher education and this is due to the fact that few students with HI are admitted to college and universities based on poor grades achieved at high school level.

According to Lang (2002), countries like United States of America, had more than 25,000 students with deafness in 1999; hence, the complex issue involving the academic achievement needs to be researched further. Studies have revealed communication barriers in learning arts, Science and language subjects. The present study was very much related to all the studies reviewed in that it sought to analyse the instructional strategies used for academic achievement of students with HI. It however, differed with all of them because it focused on the academic achievement of students with hearing impairment in selected public universities. It is hoped that the findings will serve a major role in further research in the area and also inform university administrations, lecturers, and the students with Hearing Impairments. Available data from the Ministry of Education in 2003 shares that there were only 665 students with HI in the public universities. By 2005, this number had increased to 2,428 in both Public and Private Universities. The growing number of students with HI within a university context is a recent occurrence based on several factors,

including; the development of proposals for quality, bilingual education for the deaf and historical movement in which public universities embrace inclusion policies.

According to Marschark (2005), who carried out a study on *Looking Beyond the obvious: Assessing and understanding students with HI*, he posted that one of the assumptions of inclusion is that discursive structure and information transmitted by a hearing lecturer to hearing students is appropriate to the knowledge and learning styles of students with HI. Deaf students form a more heterogeneous group than those without hearing challenges. Most of them grow up in linguistically challenged environments. Therefore, they do not have linguistic competences necessary for making effective use of the interpretation. The current study aimed at establishing whether the lecturers at the selected Public Universities who teach students with HI have the relevant skills to provide a reasonable level to understand lecturers' preparedness and the development of social and professional skills. The study by Merscherk (2005), on inclusion of students with HI left a gap for a similar study hence the study on influence of instructional strategies and learning environment on academic achievement of students with HI filled the gap by investigating on lecturers' skilfulness in teaching students with HI.

## **2.6 Establishment of Academic Achievement of Students with HI**

Research has shown that students with HI or hard of hearing have difficulty with reading and written language and develop writing skills at a slower pace than their hearing peers. Students with HI score with the low-average range when tested on contextual convention. Hearing loss is severe enough to adversely affect the students'

educational achievement (Paul & Quigley, 1994). There is a wealth of evidence available documenting the speech perception learning and behaviour challenges that result when those students also experience hearing impairments. (Crandel & Boss, 1986; Finitzo – Heiber & Tillman, 1978; Flexer, 2004).

Adequate literacy (reading and writing) skills are critical to success of participants in Educational setting, in professional and employment opportunities (Lederberg, Schick & Spencer, 2013). In most individuals, reading abilities start evolving in early childhood through development of pre-literacy skills, advance with formal reading instruction in school and expand as a result of higher education, social and recreational experience (Luckner, Sebcl, Cooney, Young & Muir, 2005).

Previous studies have showed that without age appropriate reading and writing skills, students cannot fully participate in classroom activities and are at risk for academic failure, leading to problems with employment and social adjustment (Moats, 2000). Over the last 40 years, studies have showed that deaf children have significantly poorer reading comprehension, literacy skills, and overall depressed academic achievement in general when compared to their hearing peers. (Qi & Mitchell, 2012; Wilbur & Quigley, 1975).

Numerous surveys (Allen, 1994; Traxler, 2000) report that approximately half of deaf students in the United States were reading below the fourth grade level at the time of their high school graduation (Carthon, 2004), with only 7-10% of deaf high school graduates reading at the seventh grade level and above. Despite reports of historically low and stagnant academic achievement, results of a study conducted by Antia, Jones,

Reed and Kreimeyer (2009) shed a more positive light on deaf students' school achievement. During a period of five years score on standardized assessments of reading, language, and mathematics, as well as demographic and communication data were obtained from 197 deaf students enrolled in mainstream classrooms for at least two hours daily.

The results indicated that over that period many deaf students achieved average or above average levels. Deaf students achieved 48-68% average score or above average levels in reading, 55-77% in language and writing, and 71-68% in Mathematics. Furthermore, Spencer, Gantz, and Knutson (2004) assessed academic achievement of 27 deaf students who had cochlear Implants using Woodcock-Johnson Tests of Achievement Subsets. The results revealed that deaf students with cochlear Implants had favourable academic performance.

In order to be a successful reader and writer, it is necessary for a deaf student to develop different linguistic mechanisms in order to lap concepts into meaningful forms of expression (Wilbur, 2000). However, the relationship between deafness and low English literacy skills is complex and appears to be related to a variety of factors like language competence, academic achievement, cognitive abilities, and family background (Wilbur, 1977) as well as the method of test formation (Nolen & Wilbur 1985).

Language acquisition is paramount indeed; Mayberry and Lock (2003) study showed that their adult participants, both hearing and deaf who acquired language early in life

performed significantly better in academic. Sherwood (2013) conducted a study on academic performance of deaf and hard of hearing students on reading. About 41% of the participants were in average or above average range and 55% in Mathematics. Overall, these findings support the efficiency of education approach in raising the level of academic achievements of deaf and hard of hearing students.

## **2.7 Summary of Reviewed Literature**

The literature review has indicated that influence of instructional strategies and learning environment on academic achievement of students with HI is identified by researchers as an Educational problem worldwide. Scholars have made relevant efforts in addressing the issue in order to ensure students with HI learn and achieve in academics as their hearing counterparts at the public universities. Literature review further established and highlighted existing challenges that adversely influence academic achievements of students with HI based on instructional strategies and learning environment. Findings from a number of studies on the topic were contradicted by results from similar studies on the same topic. The literature reviewed in this study came mostly from developed countries with only a few from developing countries and Kenya is no exception. Literature pin pointed the facts that, studies concentrated on influence of instructional strategies and learning environment on academic achievement mainstream (regular) students in public universities and minimal research has been done on academic achievement of students with HI. It is within these knowledge gaps that this thesis was situated. Therefore, this study contributes to existing research literature and informs administrators of public

universities, policy makers, lecturers who teach students with HI and other stakeholders on the various challenges facing students with HI.

## **CHAPTER THREE**

### **RESEARCH DESIGN AND METHODOLOGY**

#### **3.0 Introduction**

This chapter outlines the research design, variables, the study locale, the target population, sampling techniques and sample size, research instruments constructed to address the research objectives and research questions, piloting of instruments which aided in ascertaining the validity and reliability, data collection techniques, data analysis and logistical and ethical considerations.

#### **3.1 Study Design**

A research design can be seen as a scheme, outline or plans that are used to generate answers to research problems (Orodho, 2005). It is a plan on how to gather, information, when to collect data and how to analyse the data obtained. The study adopted a descriptive survey design, utilizing different methodologies in data collection and analysis. According to Best (1993), a descriptive study presents what is and interprets the nature of an ongoing event. The design was suitable for this study because the qualitative approach, allowed for the use of observation checklist and questionnaires. Open-ended questions were used for probing. The qualitative approach in this study was relevant because it produced data that was quantifiable through questionnaires.

The design was appropriate for the study because the researcher was interested in establishing the influence of instructional strategies and learning environment on academic achievement of students with HI in selected public universities in Kenya.

The researcher used triangulation various research instruments. The main characteristic of this method is that the researcher has no control over the variables and can only report what has happened and what is happening (Ary, Jacob Razavieh, 2002; Kothari, 2004). The design also provided views for subsequent research that was more specific and aimed to uncover the nature of facts in the given situation. Therefore, the rationale for adapting a descriptive research is that it enabled the designed research to obtain important information concerning the current status of phenomena and where possible draw valid general conclusions from the facts discovered (Coher, Marion & Marrison, 2011).

### **3.2 Variables**

Variables are measurable characteristics that take different values among subjects (Biggam, 2001, 2008). An independent variable is one which the researcher manipulates in order to determine its effect or influence on another variable (Mugenda, 1999). In this study, the independent variables were mechanisms put in place by universities to increase academic participation of students with HI, academic support system resource materials, relevant teaching skills and environment adoption. On the other hand, the dependent variable was the academic achievement. The combined influence of these factors determined the impact of instructional strategy and learning environment on academic achievement of students with hearing impairments at selected public universities.

### **3.3 Locale of the Study**

The study was conducted at three selected public universities which comprised of Kenyatta University, University of Nairobi and Maseno University. Kenyatta University is located along Thika Super Highway, which is about 18km from Nairobi City, situated in Kiambu County. The other public universities were University of Nairobi which is located at the Central Business Division of Nairobi City, in Nairobi County and Maseno University which is located 26km from Kisumu town along Kisumu-Busia Road. The institutions were purposively selected because they have enrolled students with HI which was the main focus of the study.

### **3.4 Target Population**

A population is defined as total collection of elements about which we wish to make some inferences (Kungu, 2015). Kilungu, 2015, define population as a large collection of subjects from where a sample can be drawn. Mugenda & Mugenda (2012) term target population as that population to which a researcher wants to generalize the results of his study. The target population for this study was drawn from the three public universities which admit students with hearing impairments. Common University units are compulsory to all students including students with HI who are not exempted. The researcher intended to generate data from all the students with HI taking the University common units and who are in any year of academic study.

In the University of Nairobi, there are six schools that offer common University units namely; School of Communication Studies, School of Developmental Studies, School

of Public Health, School of Law, School of Physical Science, School of Philosophy and Religious Studies.

In Kenyatta University there are five departments that offer common university units; department of gender and development studies, departments of education communication and technology, department of environmental education, department of education psychology and department of educational foundation. Similarly Maseno University has two departments that offer common units; namely departments of HIV & AIDS and departments of information technology.

**Table 3.1: Target Population**

Categories	Dean of students' Affairs		Chairpersons of Departments		Lecturers		Learners with HI	
	M	F	M	F	M	F	M	F
University of Nairobi	1	0	5	1	250	25	16	4
Kenyatta University	1	0	3	2	80	20	22	9
Maseno University	1	0	2	0	72	15	13	6
Totals	3	0	10	3	402	60	51	19

Source: Kenyatta University, University of Nairobi and Maseno University, 2016

The target population therefore comprised of 3 deans of students' affairs, 13 chairpersons of departments that offered common university units, 462 lecturers and 70 students as shown in Table 3.1 above.

### **3.5 Sampling Techniques and Sample Size**

In this section, information on sampling techniques and sample size is presented. A sample is a sub-set selected from the accessible population and should be a representative of the actual population.

#### **3.5.1 Sampling Techniques**

Purposive sampling was used to select the three Public Universities who admit students with HI. All the deans of students' affairs, all the chairpersons of the departments that offer common university units, all lecturers who teach common University units to students with HI and all students with HI who pursue university common units were purposively sampled to participate in the study.

#### **3.5.2 Sample Size**

As shown on Table 3.2, sample size comprised of 3 Deans of students' affairs and 13 chairpersons of department that teach university common units. These departments included: Kenyatta University's, five departments which offer common university units, namely; Department of Gender and Development Studies, Department of Educational Communication and Technology, Department of Environmental Education, Department of Educational Psychology and Department of Educational Foundation.

Maseno University has two Departments that offer common units; namely Department of HIV & AIDS and Department of Information Technology. University of Nairobi has six schools that offer common university units namely; School of

Communication Studies, School of Development Studies, School of Public Health, School of Law, School of Physical Science, School of Philosophy and Religious Studies. The sample from the three selected public universities had 462 lecturers who teach common University Units to students with HI and 70 students with HI from the selected public universities in Kenya. During the study, the Deans of students' affairs were requested to provide information about the Universities' enrolment.

**Table 3.2: Sample Size**

Categories	Dean of students Affairs		Chairpersons of Departments		Lecturers		Learners with HI	
	M	F	M	F	M	F	M	F
University of Nairobi	1	0	5	1	250	25	13	6
Kenyatta University	1	0	3	2	80	20	20	4
Maseno University	1	0	2	0	72	15	18	9
Totals	3	0	10	3	402	60	51	19

Source: Kenyatta University, University of Nairobi and Maseno University, 2016.

### 3.6 Research Instruments

The study instruments included an interview guide for Deans of students' affairs and chairpersons of Department that offer Common University Units, one questionnaire for lecturers, another questionnaires for students with HI and one observation schedule for lecture hall presentation sessions and resource room teaching and learning materials.

### **3.6.1 Observation Schedule**

Given that the focus was the academic achievement of students with HI in the selected public universities, the researcher reviewed the relevant documents. In particular the students' academic transcripts (which were willingly provided by the students with HI) were reviewed.

The review of the academic transcripts for each student with HI was done for three academic semesters to draw the relevant conclusions and focus on support services for students with HI in the selected public universities. In addition, classroom observation of actual teaching and availability of teaching equipment was done. The researcher also analysed the resource materials available for teaching students with HI, as well as the available human resource for example sign language interpreters.

### **3.6.2 Interview Guides for Dean of students Affairs**

Interview guides were prepared with open – ended questions for the Deans of students Affairs. The interview focused on the academic support services offered by the university to students with HI. A one–on-one interview guide was used to interview the three Deans of students affairs from the selected public Universities.

### **3.6.3 Questionnaires for Chairpersons of Departments.**

A questionnaire was administered to thirteen (13) Chairpersons of Departments that offer University Common units from the three selected public universities. The questionnaire focused on the performance of students with HI in common university units as well as medium of instruction.

### **3.6.4 Questionnaires for Lecturers Teaching University Common Units**

A questionnaire was administered to lecturers who teach common university units to students with HI, intending to seek information on challenges they face while teaching students with HI who are enrolled in the selected public universities.

### **3.6.5 Questionnaire for Students with HI**

The questionnaires for the students were coded as follows: UoN (UoN S01 to UoN S019), KU (KU S01 to KUS 024) and MU (MU S01 to MU S027) and they were administered by the researcher. The questionnaires for the lecturers were coded according to the abbreviation of the name of the selected public university as follows: (UoN L01-UoN L275) KU (KU L01-KU L100) and MU (MU L01-MU L087) and were given to the respondents to fill independently, and later collected for analysis. The questionnaires catered for quantitative and qualitative aspect of the study. The findings were summarized and complemented the qualitative data.

## **3.7 Pilot Study**

The University of Eldoret was chosen for the pilot study due to various reasons including early establishment of a Special Needs Education department, and the presence of students with hearing impairments.

A pilot study was carried out in the University of Eldoret before the actual data collection, mainly to pre-test the research instruments and to ascertain their validity and reliability. University of Eldoret was selected for piloting due to the fact that students with HI are placed in various universities by a central KUCCUP, same as

university of Nairobi, Kenyatta University and Maseno University which are the institutions in the main study. These are selected for various courses in the universities that admit students with HI. This means that all students with HI who are admitted in the universities are likely to have common characteristics. In addition University of Eldoret is a constituent college of Moi university; therefore the teaching practices are likely to be similar to those of Moi University. The respondents comprised of 3 Deans of student affairs, 462 lecturers, 70 students with HI and 13 chairpersons of Departments that offer common university units. Responses from the pilot study were used to modify the tools in wording and formatting where necessary.

According to Bryman (2008), a pilot study assists the researcher to gain experience on how to use research tools while ensuring their compliance and researcher confidence on their applicability. This was done to determine the effectiveness of the research instruments used to give the feasibility of the study (Semakula, 2000). A pilot study to pre-test the research instrument was presented to one (1) Dean of students Affairs and forty six (46) lecturers and seven (7) students with HI in University of Eldoret, in Uasin Gishu County, Kenya. The respondents for the pilot were purposively selected with the assumption that they possessed elements representative of the characteristics found in the target group.

The pilot study helped the researcher check whether the items included in the study actually fit into the phenomena of the study. Errors identified in the instruments such as questions that needed correction and items that needed to be simplified through translation in sign language were corrected. Examples were question 5, 6, 8 and 11 in

the students' questionnaire. During their initial formulation, these items aroused a lot of questions from the students with HI and failed to generate required responses. The items were consequently rephrased into simple focused question items. The pilot study also revealed that the instruments took longer than the anticipated time, hence, the researcher adjusted the time for the instruments. The pilot study enabled the researcher to eliminate any ambiguous items in the instruments as recommended (Creswell, 2012; Weisma and Jurs, 2005, Trochim 2000).

### **3.7.1 Validity of the Instruments**

An instrument is said to be valid if it measures what it is intended to measure (Sarstedt, 2011; Ridley, 2005). Validity is the degree to which results obtained from the analysis of the data actually represents the phenomenon under investigation. Orodho (2009) and Mugenda (1999) concur that validity is the accuracy and meaningfulness of inferences based on research results. It can therefore be explained as the ability of instruments to measure what they are intended to considering the limited numbers of students with hearing impairments.

Validity was determined by requesting the research supervisors to critique the suitability of the instruments in measuring what they were meant to measure. The researcher also ensured that the interview schedule used for collecting the interview data was trustworthy and free from bias. Cohen (2007) postulates that the most practical way of achieving greater validity, is to minimize bias.

### 3.7.2 Reliability of the Instruments

Orodho (2009) defines reliability as the extent to which an instrument is stable and consistent across repeated measures. According to Kombo and Tromp (2006), reliability is consistency of an instrument to yield the same results once used. Reliability in this study was done using test re-test method. Any item that did not generate the desired response was revised or removed.

Reliability is closely linked to validity because a valid instrument is always reliable (Amin, 2005). In this study reliability was secured by a probing approach on certain specific areas through: administration of interview guides for the Deans of Students' Affairs twice, administration of questionnaires to the chairpersons of departments that offered common university units twice, administration of the same questionnaires to lecturers who taught university units twice, administration of interview schedule for the Dean of Students' Affairs twice, administration of observation schedule in the lecture hall to the same group twice and administration of questionnaires to the same sampled students with HI twice.

Reliability was also attained through the pilot study. The piloted instruments were analysed and comparisons were drawn and spearman rank order correlations was employed to compute the correlation coefficient in order to establish the extent to which the contents of the instruments were consistent in eliciting the same responses every time the instrument was administered. The items (responses) were first subjected to reliability test using Cronbach Alpha reliability coefficient. The formula for Alpha:  $\text{Alpha} = \frac{n r_{ii}}{1 + (n-1) r_{ii}}$ , where N= the number of items in the test or

questionnaire and  $r_u$  = the average of all the inter-item correlations. The findings gave a Cronbach's Alpha of 0.8622 which was enough ground for the researcher to continue with the main study (Cooper & Schildler, 2001). A correlation coefficient of about 0.80 is considered high enough to depict reliability of the instrument (Cooper & Schilndler 2001; Cohen, Marion & Morrison, 2001). Therefore, the pilot study was crucial for the main study.

### **3.8 Data Collection Techniques**

Before proceeding to the field for data collection, the researcher submitted a research proposal to the Graduate School, Kenyatta University for examination and approval through the department of Special Needs Education. After approval to proceed for data collection, the researcher obtained authority to conduct research from the National Commission for Science, Technology and Innovation (NACOSTI). The researcher trained research assistants on how to use research instruments (Orodho 1998). At each selected county the researcher sought permission from the Assistant County Commissioner and the County Director of Education before visiting the selected public universities.

The researcher analysed responses on the resource materials used for teaching students with HI, the facilities available to support students with HI and the instructional strategies used by lecturers in teaching the Common University Units. The researcher interviewed Deans of students' affairs and chairpersons of department that teach university common units since they interact and keep very important records for all students including those with HI. The researcher also issued

questionnaires to the sampled lecturers who teach university common units and to the students with HI since they had key information from their experience at the University. The questionnaires were based on the instructional strategies and learning environment respectively. The respondents were given two weeks to complete the exercise at each university as the researcher conducted the observation exercise at the given lecture halls. Once the exercise was completed, the researcher collected the questionnaires and after thanking them, left to the next institution. While interviewing participants, flexibility was considered throughout the data collection process.

### **3.9 Data Analysis**

The data collected from questionnaires, interview guide and observation schedule was carefully organized and analysed. The data was analysed quantitatively and qualitatively. Qualitative analysis involved making inferences and conclusions from students with hearing impairments from open-ended items in the questionnaires and responses from the interviews. Quantitative data was derived from questionnaires using the Statistical Package for Social Sciences (SPSS version 22). Qualitative data was analysed using content analysis. Descriptive statistics for each scale and summary was compiled. Results were presented in form of tabulation on instructional strategies of students with HI, frequency of resource materials and percentages of instructional strategies were computed to show the influence of instructional strategies on students with HI on their academic achievement. Information gained through observation was used to explain the results obtained from statistical data. Similarly, information generated from both interview schedule and observation checklist was transcribed into written form through note taking. The data was examined for relevance before being

coded to themes for descriptive analysis. Quantitative analysis was done by using chi square test on the association of the lecturers' demographic information in the three universities. Further, a correlation analysis was done on at a  $P \leq 0.05$  levels to establish the influence of instructional strategies on the students' achievements. This enabled the triangulation of data using both qualitative and quantitative data gained (Biggam, 2008). The data was presented using frequency tables of percentage counts, pie charts, tables and various figures.

### **3.10 Logistical and Ethical Considerations**

As part of the preparation for the study, the researcher adopted the Data Field Guides as stated by Marschall and Ross Man (1999) and Gall, Gall and Borg (2009) where they point out that it is critical for a researcher to observe Professional Ethics. Before data collection exercise begun, it was critical for the researcher to obtain authority from Graduate School, Kenyatta University and National Commission for Science Technology and Innovation. Once the permit was given, the researcher sought permission from the County Directors of Education where the selected Public Universities under study are located as well as from the county commissioners. The three universities were Maseno University, University of Nairobi, and Kenyatta University. Respondents were assured of confidentiality with regard to the information they were to give. Consent was sought from the study participants to make sure that they participated in the study willingly and without coercion.

After receiving the permit, the researcher visited the respective county commissioners' offices to seek permission to carry out research at the selected public

universities. For example, permission was sought from Kiambu offices both in county commissioner's office and County Director of Education. Thereafter, the researcher proceeded to Nairobi County Commissioner's Office and County Director of Education's office, to seek consent for research. Lastly, the researcher proceeded to Kisumu County for the same permit documents. Initial contacts, were made in selected Public universities to make appointments with prospective respondents and during these visits the researcher explained the purpose of the study.

The researcher hired two assistants with knowledge on sign language and trained them on the purpose of the study. The assistants were taken through the two sets of questionnaires, observation schedule and the interview guide. The researcher and the research assistants visited the institutions and discussed their intention to conduct studies with Deans of Students' Affairs and chairpersons of departments that offer common units in the selected public universities. During the meetings with the research assistants, discussions were made on how to administer each research instrument. Data was collected over a period of three weeks in each public university from Monday to Friday though there were cases where some lecturers requested for more time to complete the questionnaires.

Ethical consideration were essential in attaining validity of the research findings since they are closely linked to the laws, rules and regulations governing people of the land (EU, 2007). Kothari (2004) argues that consent prior to research should be sought from all participants involved in the study.

## CHAPTER FOUR

### DATA PRESENTATION, ANALYSIS AND DISCUSSION

#### 4.0 Introduction

In this chapter, data analysis, results and discussions are presented. Data was collected using different instruments which included observation schedules, interview guides and questionnaires. Data was analysed both quantitatively and qualitatively and presented by use of frequencies, percentages, bar graphs and pie charts. Data analysis, findings and discussions were organized in different themes derived from the study objectives which are:

1. Establish the academic support services in the learning environment for students with HI in selected public universities.
2. Establish the teaching methods used by lecturers in instructing students with HI in the selected public universities.
3. Find out the resource materials used in the instructions of students with HI in the selected public universities.
4. Determine the extent to which the lecturers adapt to the teaching environment to ensure effective learning by students with HI in the selected public universities.
5. Determine lecturers' skilfulness in teaching students with hearing impairment in the selected public universities.
6. Establish academic achievement of students with HI in the selected public universities.

#### 4.1 Academic Support Services for Students with HI

Objective one was to establish academic support services in the learning environment for students with HI. To investigate this, the study looked at facilities and equipments put in place for students with HI in the selected public universities.

##### 4.1.2 Accommodation of Students with HI on Campus Hostels

The researcher focused on the accommodation on campus hostels as a support service put in place by universities to enhance learning and achievement of students with HI. On campus hostels accommodation was of interest to the study as students were spared the challenges of off campus hostel accommodation. A questionnaire enquiring on the support services was administered to 70 students from the selected Public Universities. Their responses were as shown in the table 4.1

**Table 4.1 Students Accommodation on Campus Hostels**

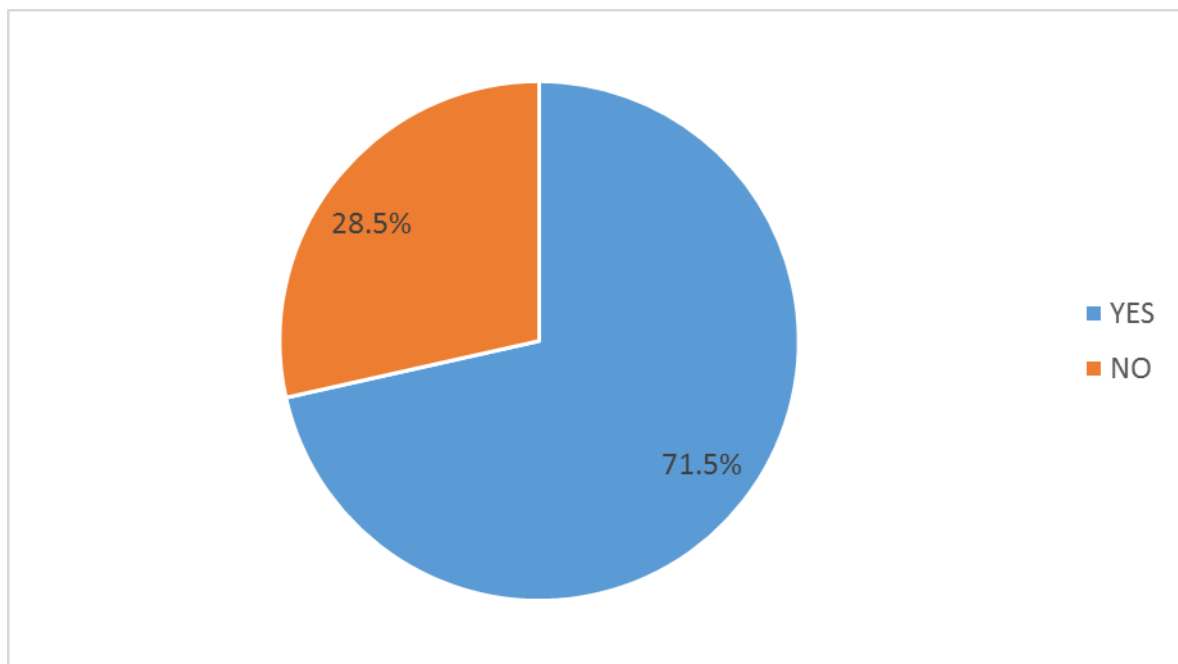
<b>University hostel</b>	<b>Frequency</b>	<b>%</b>
Yes	55	78.6
No	15	21.4
<b>TOTAL</b>	<b>70</b>	<b>100</b>

The findings revealed that 55 (78.6%) were accommodated on campus hostels, however 15 (21.4%) were not accommodated on campus hostels. Thus, the universities have ensured that they offer accommodation to their students with HI. Universities ensure that they accommodate all the students with HI in campus hostels. The findings concur with a study carried out by Powel (2007) who carried out a comparison study on students with HI satisfaction with distance learning and on campus the findings revealed that students with HI on campus did better than those

off campus or who commute due to inadequate accommodation at the university. When students are accommodated on campus hostels, it gives them ample time to study and ease the trouble on transport, time wasting and security. These results were triangulated with findings from interview guide administered on the three Deans of Students Affairs who indicated that most of the students with HI were accommodated in the university hostels. This is an indicator that Universities are mindful to offer accommodation to students with HI on university hostels.

#### 4.1.3 Financial Support for Students with HI

The study also sought to find out whether students with HI received any financial support. The findings are indicated in the figure 4.1.

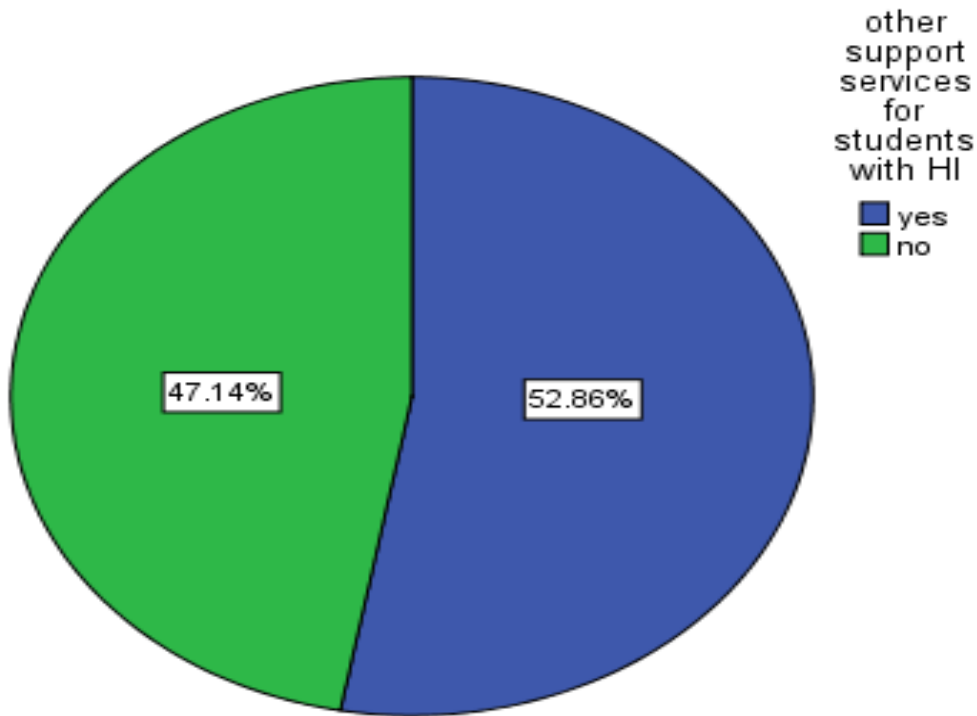


**Figure 4.1: Financial Support for Students with HI**

The findings revealed 50 (71.4%) of the students response showed that they got support for their upkeep and tuition while 20(28.6%) did not. From the findings, there is a clear indication that universities ensure secure upkeep of these students with HI. Student with HI are entitled to equal treatment like other students in line with Basic Education Act (2003) and the Constitution of Kenya (2010), which outlines the need to increase access, enhance retention; improve quality and relevance of education in academic levels. Furthermore, the persons with disabilities Act (Rok, 2003) provides a comprehensive legal framework which outlaws all forms of discriminative treatment of persons with disabilities such as lack of access to education and training. It also provides for adaptation of infrastructure, socio-economic and environmental facilities to ensure a conducive environment for person with disabilities.

#### **4.1.4 Other Support Services for Students with HI**

Further, the study sought to establish whether the Deans of Students' Affairs offices had the service of the sign language interpreters since all Deans were not conversant with sign language. Some of the universities provided some sign language interpreters while others did it only on special occasions. This finding implies that some students with HI may lack means of access to instructions which disadvantages them in academic achievements.



**Figure 4.2: A Pie Chart Showing Other Support Services for Students with HI Percentage**

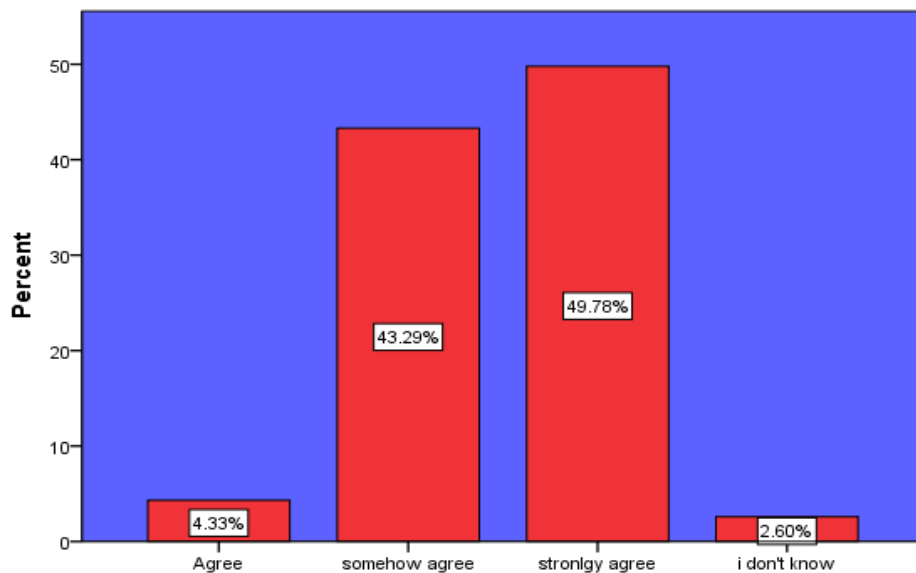
The findings reveal that a large number of students received financial support and tuition at 37 (52.86%) while 33 (47.14%) did not receive. According to basic education Act of (2003) states that the maximum extent possible persons with disabilities should be provided with assistive devices, other equipment ,access to available information, technical assistance to all institutions, associations and organizations concerned with the welfare, rehabilitation of persons with disabilities including those controlled and managed by the government, to make provision for assistance to students with disabilities in the form of scholarships, loan programmes, fee subsidies and the similar form of assistance in both public and private institutions according, to basic Education Act of (2003), provision for persons with disabilities.

## 4.2 Teaching Methods Used for Students with HI

The second objective sought to identify the teaching methods used by lecturers in instructing students with HI and how they impact on the student overall academic achievement.

### 4.2.1 Medium of Instruction Used in Teaching Students with HI

To find out whether any special teaching methods are used by lecturers, a questionnaire on medium of instruction used when teaching students with HI was administered. The findings are indicated in the following bar graph below.



**Figure 4.3: Rating for Medium of instruction**

The study reveals that 49.78 % of the respondents cited that they strongly agreed with the medium of instruction used when teaching students with HI, followed by those who somehow agreed at 43.29%, agreed at 4.33% and those who did not know as represented by 2.60%. According to Sprabrow and Power (2000) study on the

medium of instruction for students with HI, students with HI miss a lot of information during lectures.

In the selected public universities, academic achievement is measured by students' performance based on academic policies in the institution. The emphasis on academic achievement is made to identify, track, encourage and evaluate the progress of students with HI in the universities (Borefoot, 2011).

Duncan (2006), Ekwama (2003) and Borefoot (2011) have pointed to the not conducive medium of instruction is crucial issue that must be promptly attended to. Further, study by Duncan (2010) underscores that the sense of hearing plays major role in the use and development of verbal language and communication. Ainscow (2007) established that communication has to do with acquisition as well as abstraction of meaningful information. Processing and storing information in short term and long-term memory and retrieval of information is vital for academic achievement.

Okeke (2003) in Ghana highlighted that undoubtedly, educators were aware of the unrivalled importance of oral language in teaching and learning processes. Similarly, a study by Ekwama (2003) on teacher student's interactions reported that oral communication facilitated meaningful knowledge acquisition than any other form of communication. Further, study by Heward (2006) on learning of students with HI reported that most learning occurs through interaction with other people. Such learning is possible only when individuals are able to communicate with understanding.

Students were asked to comment on the medium of instruction, some of the respondents said:

*ST UoN10*     ‘without the sign language interpreter communication is interrupted’ (Field data, 2010)

*ST MU01*     ‘I miss classes too. If there is no interpreter it’s complicated, so I miss class or I leave the lecture hall’ (Field data, 2016)

*ST KU 01*     ‘The professor knows that students with HI write to the professor to communicate with him. If it is a lecture I just leave, there is no point in staying. If it is my group work I sit in and write; my Communication is by writing’ (Field data, 2016)

The comments indicated that sign language was not adequately used as a language of instruction for students with hearing impairments. The students’ comments show that they need to be instructed in the language that they understand better so as to enhance their academic achievement. These findings are supported by Foster, Long and Snell, (1999), Martins, (2007), Masutti and Santos (2008) who stated that sign language is essential for instruction to students with HI.

The findings are in agreement with the results from a study by Sprabrow and Power (2000) on the medium of instruction for students with HI which indicate that students with HI miss a lot of information during lectures. Furthermore, lecturers were asked if universities had inducted them on teaching methods of students with HI. The findings are indicated in the table 4.2.

**Table 4.2 Teaching Methods for Students with HI**

	Frequency	Percent	Valid Percent	Cumulative Percent
Valid Strongly agree	32	6.9	6.9	6.9
Agree	50	10.8	10.8	17.7
somehow agree	30	6.5	6.5	24.2
strongly disagree	300	64.9	64.9	89.2
i don't know	50	10.8	10.8	100.0
Total	462	100.0	100.0	

The study indicated that at 64.9% informants strongly disagreed with teaching methods for students with HI. Followed by those respondents who agreed and who did not know both at 10.8%. Respondents who strongly agreed at 6.9 % and who somehow agreed at 6.5% making the least count. The findings revealed that there is urgent need to carryout induction on the teaching methods for students with HI. Research done shows that induction of lecturers handling students with HI is paramount due to complexity of communication challenges. Many staff reported feeling limited in terms of training to support students with HI, knowledge of resources, skills for making adjustments and unfamiliarity with disability laws (Leyser et al., (2000). Findings revealed that students with HI did not learn adequately. These findings concur with results of a study conducted by Fuller, Healey, Bradley & Hall, (2004) who focused on the obstacles faced by students with HI at University level that there were many barriers to inclusive instruction such as fast rate of lecturers' speech during lectures, difficulty in participating in discussions and answering questions.

### 4.2.1 Instructional Language

It was also important to establish whether the language used by lecturers was suitable when giving instructions to students with HI. The findings from the students are indicated in the table 4.3.

**Table 4.3 Instructional Language**

<b>Responses</b>	<b>Frequency</b>	<b>%</b>
Suitable	30	42.9
Unsuitable	30	42.9
Not sure	10	14.2
<b>Total</b>	<b>70</b>	<b>100</b>

The findings revealed that 30(42.9%) find the language used for instruction suitable, 30(42.9%) were unsuitable and 10(14.2%) were not sure if the language is suitable.

When asked to comment on the suitability, some of the respondents said:

*ST UoN10 'without the sign language interpreter communication is interrupted'*  
(Personal communication March 9<sup>th</sup> 2016)

*ST MU01 'I miss classes too. If there is no interpreter it's complicated, so I miss class or I leave the lecture hall'* (personal communication 16<sup>th</sup> March 2016)

*ST KU 01 'The professor knows that students with HI write to the professor to communicate with him. If it is a lecture I just leave, there is no point in staying. If it is my group work I sit in and write; my communication is by writing'* (Personal communication 30<sup>th</sup> March 2016)

The findings revealed that sign language was used as instructional language for students with hearing impairments. The student's comments show that they need to

instructed in the language that they understand better to enhance academic achievement.

The findings are supported by Foster, Long, Snell, (1999); martins, 2007; Masutti, Santos, (2008) who stated that sign language is essential for instruction of students with HI.

#### **4.2.2 Instruction Strategies Challenges Encountered by Students with HI**

Other challenges faced by students in relation to instructional strategies and learning environment were also investigated. The study revealed the following:

Students with HI were unable to understand lecturer's instruction in lecture halls, number of interpreters were not enough, most lecturers were totally lacking in use of sign language during instruction, lecturers not giving extra attention to students with HI in and out of lecture halls, some lecturers were not concerned about the presence of students with HI in lecture halls, communication was best in the presence of a sign language interpreter, assistance from the class fellows and friends in learning was not sufficient, students with HI did not feel "belongingness" to the class during lessons, hostels are very far from lecture halls and no note takers. These findings concur with a study carried out by Navin Thousand as cited in Andrews, (2000) on challenges faced at university by students with HI. Studies done show that the above challenges are part of students with HI at the Universities but Institutions of higher learning need to make an efforts in controlling these challenges to enhance academic achievement.

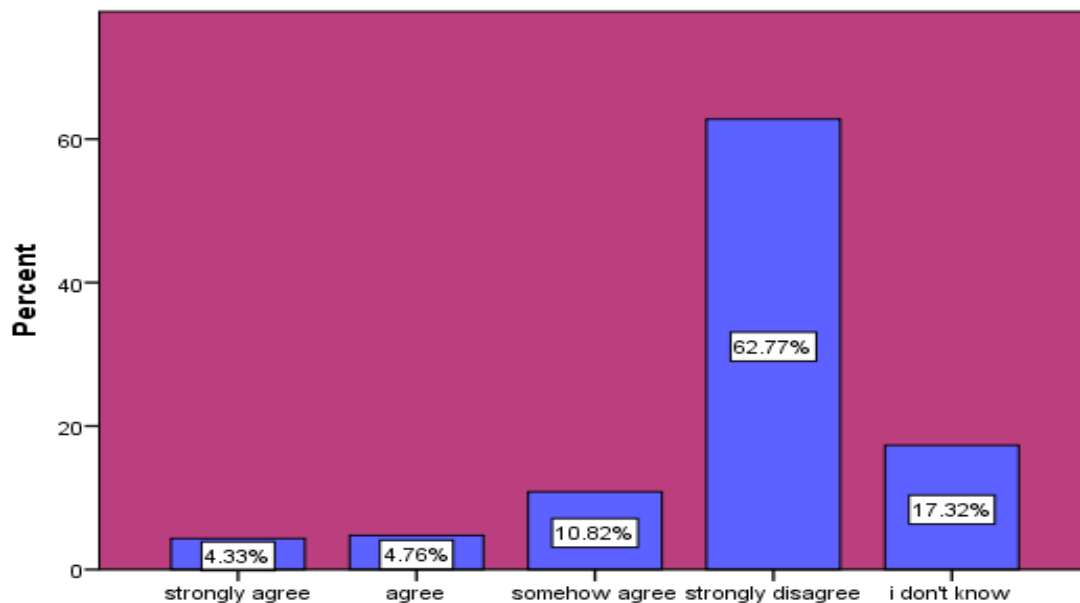
The information gained through observation was used to triangulate the views of the Deans of student's affairs, lectures and the students with HI views, teaching methods used by lecturers in instructing students with HI.

### 4.3 Resource Material Use in Instruction of Students with HI

The third objective sought to find out the availability, adequacy and use of resource material used for instruction of learners with HI.

#### 4.3.1 Adequacy of Resource Materials

The study sought to know whether the existing resource materials in the selected public universities were adequate for students with HI. The findings indicated in the bar graph below.



**Figure 4.4. Frequency of adequacy of resource materials**

The study reveal that majority of the respondents strongly disagreed with the adequacy of resource materials as represented by 62.77% , those who did not know followed at 17.32%, somehow agreed at 10.82% , agreed at 4.76% and those informants who strongly agreed at 4.33%.The researcher noted that majority of students did not have individual or group hearing aids. The results revealed that there was need for universities to provide assistive devices like hearing aids. The researcher established that there was need for assessment centres with necessary equipment and qualified personnel to carry out assessment for all the students with HI for early intervention from their basic and higher education institutions. This study is supported by the results from a study carried out by Millet, (2008) which established that the use of resource materials like assistive devices for students with HI are crucial, including personal FM systems, hearing aids, audiovisual and other resources.

Previous researches done show those adequate resource materials are very important to students with HI. The same question on adequacy of resources was asked to the students. The findings indicated in the table 4.4

**Table 4.4 Resource Material for Students with HI**

<b>RESPONSES</b>	<b>Frequency</b>	<b>%</b>
Very adequate	10	14.3
Adequate	15	21.4
Fair	30	42.9
Inadequate	15	21.4
<b>Total</b>	<b>70</b>	<b>100</b>

The findings established that 30 (42.9%) indicated that universities have fair resources for students with HI, followed by 15 (21.4) adequate. The study revealed that nearly

43% of students with HI felt that resource material was fair. 21.4% showed that resource materials were inadequate. Findings revealed that students with HI lacked resource materials to enhance their academic achievement. The researcher established that availability of resource materials for students with HI in the selected public universities were important factor that influences academic achievement. These findings were supported by students performance on highest and lowest grades ever achieved. Research done by Larsen, Vega & Ribera, (2008) did support the idea that students with HI should be provided with enough resources to enable their learning and retain ability of content learnt. Achieving positive support for disabled students requires more than legislative change (Madean & Gannon, 1997). This study is supported by Goode, (2007) who stated that various modifications and entry procedures and examination arrangements should be adhered to for students with HI at the university. The findings of this study concur with UN General Assembly (2011) emphasized that its laudable intention is to promote accessibility, remove or break all kinds of barriers and to achieve the full and equal participation of persons with special needs in university.

In agreement with Disabled People International (DPI, 2005; Lindsay, 2007; Mittler, 2000) who states that the fundamental principle of special needs education is that all students with special needs learn in a least restrictive environment, regardless of any difficulties and differences they may have concurs (UNESCO, 2003). Concurs with Action for the Right of Children, (2000) inclusiveness of the segregate are ended to avoid psychological and emotional burdens on students with HI.

#### **4.3.2 Lecturers Mitigation of Challenges Faced by the Students with HI**

Lecturers were also asked on how to minimize some of the challenges faced by students with HI. Most frequently cited that; universities to create awareness and sensitization through workshops for university fraternity. Majority of the respondents mentioned that; universities to support sign language training for all stakeholders. Most frequently cited that; university stakeholders had to be knowledgeable about students with HI expectations. Most frequently cited that; universities to establish assessment facilities at the universities to carry out regular assessment for students with H.I. Most frequently cited that; universities who enrol students with HI to establish and avail appropriate resource rooms with adequate equipment and facilities.

Majority of the respondents mentioned that; sign language interpreters to be positioned at all front desks at the universities. Least mentioned by respondent is that; lecturers to use power point while teaching to enhance comprehension for students with HI there should be adequate lighting in all lecture halls at the universities. The researcher's observation schedule indicated that most universities lacked: Hearing aids for students; hostels were far apart from the lecture halls; resource room centres were not well equipped with facilities and personnel; interpreters for sign language interpreters were not enough.

#### **4.4 Adaptation of Teaching Environment for Effective Learning**

The fourth objective sought to find out how the lecturers modified the teaching and learning environment for effective learning. It was observed that various strategies have been put in place to enhance effective learning environment for students with HI.

#### 4.4.1 Strategies in Place to Enhance Learning for Students with HI

The researcher focused on strategies put in place by universities which are adapted by the lecturers when teaching all students including those with HI since it has a direct impact on their academic achievement. A questionnaire was administered to 462 lecturers and the findings indicated in the table 4.5.

**Table 4.5 Strategies for teaching students with HI**

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	use of support services	439	95.0	95.0	95.0
	use of technology	11	2.4	2.4	97.4
	use of equipment	3	.6	.6	98.1
	use of resource materials	5	1.1	1.1	99.1
	use of facilities	4	.9	.9	100.0
	Total	462	100.0	100.0	

Majority of the informants cited that use of support services was the mainly used strategy for teaching students with HI as represented by 95.0%, followed by use of technology at 2.4%, use of resource materials at 1.1%, use of facilities at 0.9% and use of equipment at 0.6%.The researcher established that there is minimal use of technology for students with HI to enhance academic achievement.

These findings are in agreement with studies by Hodgson, (1991); Kelly and Brown, 2002; Woodford, Pritchard and Jones (1998), who argue that on strategies of teaching students with HI on improving classroom acoustics through structural modifications

and the addition of sound absorptive materials were preferred solution. Further, the findings are supported by another study at the secondary level classrooms for students with HI speech recognition scores of up to 37% in classrooms with poor listening conditions (Lersen, Vega & Ribera, 2008). Similarly, the findings are in agreement with a study by Crandell, Charlton, Kinder and Kreisman (2001) who found out that adults demonstrated better ability to understand sentence material in background noise with sound field amplification than without.

Conversely, the finding of the study differed slightly with the results of another study conducted by Leavitt and Flexor's (1991) on classroom seating and lighting. The study revealed that preferential seating was always a key component to any list of strategies provided to lecturers to enhance understanding for students with HI compared to the current study which reveals only 4(0.9%) on use of facilities as an instructional strategy.

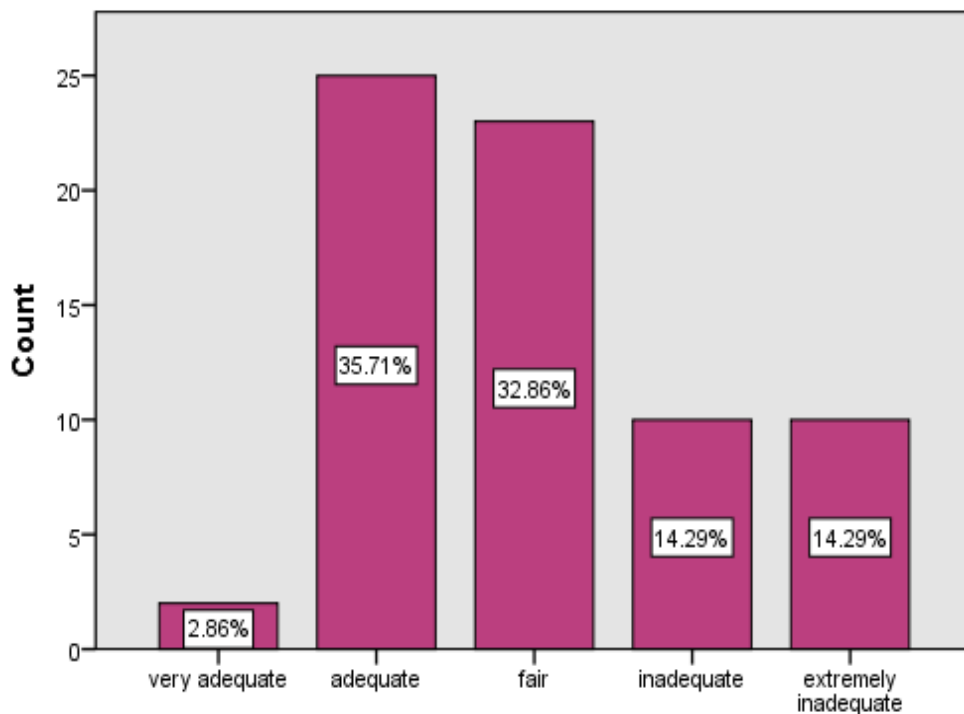
The above services provided by the universities were observed by the researcher in observation schedule guide. Most researches done emphasize on the same services provided by the universities.

The study by Dowli and Anderson (1994) on effective teaching methods for students with HI at the universities revealed that students with HI valued professors who are knowledgeable about the course content and who use visual materials to communicate expectations. Those who make assignments clearly, those who lecture at a good pace, make sure students understand, challenge students thinking and emphasize important

information in the lecture. The findings agree with the result of a study done on the differences between the perception of mainstream university professors and students with HI regarding the expertise lecturers should have, Lang et al., (1993).

#### 4.4.2 Adjustments during Examination

The researcher was interested in finding out the mechanism for adjustment put in place by the universities during examination period to cater for students with HI diverse needs and the impact of these mechanisms on academic achievement. A questionnaire was administered to student and the findings indicated in the Figure 4.5.



**Figure 4.5: A bar graph showing percentage adjustment during Examination**

Students demonstrated that 25(35.71%) felt that their needs were adequately considered during examinations, while 23(32.86%) felt that their needs were fairly

considered during examinations. This shows that fair handling of students with HI was noted and emphasized by the researcher.

#### **4.4.3 Students with HI Views on Adaptation of Learning Environment**

The students with hearing impairments were also asked to comment on how the environment is adapted to their learning needs. The comments from students with HI revealed their responses on the learning environment as follows:

ST MU 16 *“One way to improve the accessibility in the classroom is to make lecture videos that have some titles available, if the lecturer cannot find a video suitable for captioning, the lecturer should give me an alternative assignment to match my classmates.”*(Personal communication May, 12<sup>th</sup> 2016)

ST KU 12 *“Sometimes, when classmates talk to me, they realize oh, I am deaf and they would feel sorry for me”.*(Person communication May, 17<sup>th</sup> 2016)

*The student continued students campus treat me decently, but at first, it is a little “awkward” “It is really hard for me to make friends because am not really sure if people are open-minded to being friends with students who are disabled.*(Personal communication 14<sup>th</sup> May, 2016)

ST KU 14

*“I have written a letter to the administration requesting for sign language interpreter for the last two years with no reply... she added that it has been a problem and a “point of frustration” that interpreters are not even available for most of the campus*

*events such as concerts and theatre productions.*”(Personal communication 26<sup>th</sup> May, 2016)

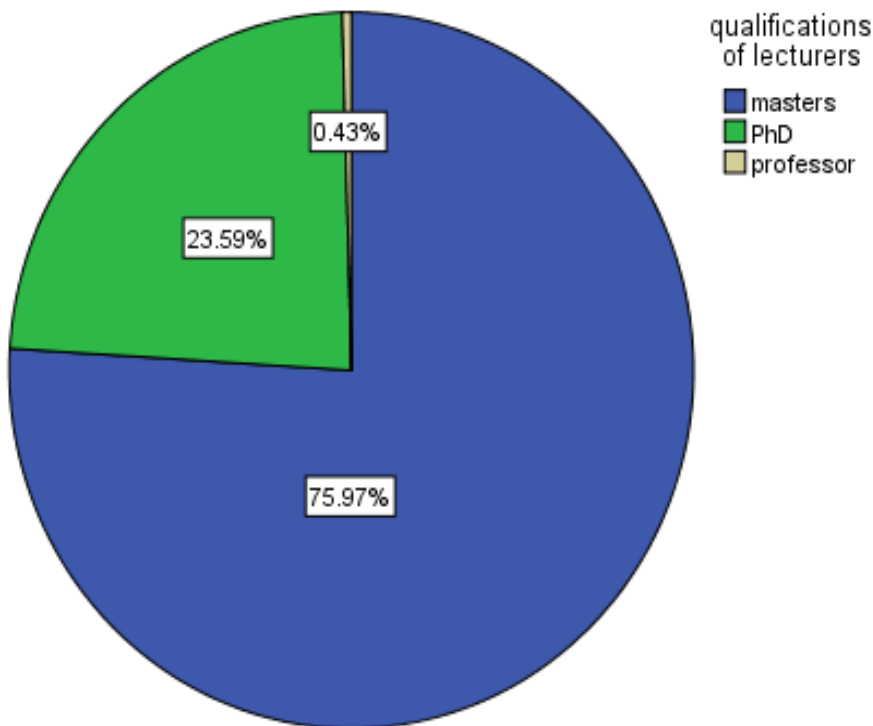
#### **4.5 Lecturers’ Skillfulness in instructing Students with HI in the Selected Public Universities**

Objective five was to determine lecturers’ skillfulness in instruction of students with HI. To investigate this, the study looked at the lectures’ academic qualifications as well as their experience in teaching students with HI.

Universities are guided by Commission for university education on the policies to hire lectures to teach students with HI. The study sought to study lecturers’ academic qualifications for teaching Common University Units to students with HI.

##### **4.5.1 Qualifications of Lecturers**

The researcher administered questionnaires to a sample of 462 lecturers. The findings are shown in the Figure 4.6:



**Figure 4.6: Lecturers' qualification**

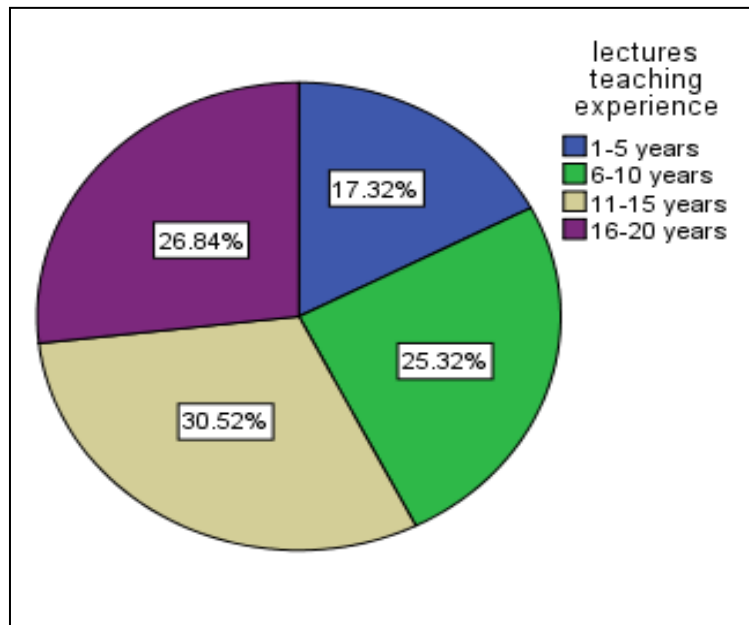
The results indicated in figure 4.6 shows that 351 (75.97%) had Master's degree followed by doctoral degree with 109 (23.59%) and professors were at 2(0.43%). The study revealed that majority of the university lecturers were masters' degree holders.

Qualified academic staff has a direct impact on the overall performance of students including those with HI. In figure 4.6, it is evident that all lecturers teaching the students with HI had attained the required level of teaching at the university. It can be interpreted that qualified lecturers are well equipped with knowledge and skills to teach students in a diverse setting though further questions were to ascertain whether these lecturers had the specific skills for teaching University Common Units to students with HI. This was important for researcher when identifying the methods that were used to teach students and adaptation of the learning environment.

#### **4.5.2 Lecturers' Teaching Experience**

Lecturers were also asked to indicate their teaching experience. Most lecturers had a teaching experience between 11-20yrs (30.52%). Such teaching experience of (11-20yrs) is an indication that majority of lecturers stay on job for a longer period and gain adequate experience to engage students in institutions of learning. The study revealed that the sampled lecturers had adequate experience in the teaching professional and the findings indicated in the figure 4.2.

The findings agree with Lang et al (1994) that deaf students had preferences similar to those of hearing students. Students with impairments valued lecturers who are more experienced and knowledgeable about the course content and who used visual materials, communicate expectations and assignment clearly, lecture at a good pace, and make sure students understand, challenge learners' thinking and emphasize important information in the lecture hall. According to Foster (1999), college and university lecturers make few if any modifications for students with HI. Similarly, what is needed or preferred by students with HI does not appear to match with what is offered in lectures. Spradbrow and power (2000) add that students with HI preferred lecturers who understood them and their impairment and they also valued lecturers who were able to communicate clearly in signs. The researcher established that students with HI in the selected public universities are taught by lecturers with teaching experiences with majority ranging from 11-15 years as represented by (30.52%).



**Figure 4.7: Lecturers' teaching experience**

The researcher established that students with HI in the selected public universities are taught by lecturers with teaching experiences with majority ranging from 11-15 years as represented by (30.52%).

The researcher sought to find out the teaching experience of lecturers since it provided vital information on learning environment and methods of instruction to all students in the Universities including those with HI. Experience in teaching profession and in special needs education has an impact in the overall performance of students with HI.

The findings from the students with HI revealed that:

- ST UoN 05 “*Students with HI were unable to understand the lecturers’ instructions in lecture halls.*” (Personal communication March 4<sup>th</sup> 2016)
- ST KU 07 “*Most lecturers were totally lacking in the use of sign language during instructions.*” (Personal communication February 16<sup>th</sup> 2016)
- ST KU 09 “*lecturers were not giving extra attention to students with HI out of the lecture halls*”. (Personal communication February 18<sup>th</sup> 2016)
- ST KU 02 “*Some lecturers were not concerned about the presence of students with HI in and out of lecture halls*”. (Personal communication March 2<sup>nd</sup> 2016)

From these sampled views, it is clear that students’ opinion on lecturers’ ability to teach students with special needs is quite negative. Despite high academic Qualifications and teaching experiences noted, many lecturers were not experienced in teaching students with HI. The findings from this study concur with the study by Fuller, Healey, Bradley & Hall (2004) who established that there were many barriers to inclusive instruction such as the fast rate of lectures’ speech during lectures, some lecturers’ speech during lectures even restricted students with HI to tape the lectures. The researcher established that the service of sign language interpreter is important in an inclusive lecture hall as the students with HI reiterate is important in an instruction and communication is best when there are interpreters to assist them. Similarly, a study done by Stinson (1999) established that one of the most salient characteristic of effective learning by students with HI in the mainstream lecture halls is the students’ dependence on a third party (sign language interpreter) to provide access to

information. It is worth noting that methodological triangulation was adopted for the present study. Information collected through interviews from Dean of Students' Affairs and questionnaires for chairpersons of Department that offer common University units lecturers who teach students with HI and students with HI. The findings revealed that there were a lot of challenges hence universities needed to improve on instructional strategies, resource materials, resource room and adjustment services during examinations for academic achievement of students with HI. It was noted that each of the three selected public universities had different academic support services with minimal similarities. Despite different challenges faced at the selected public universities, students with HI depended on the regular students as note takers and more especially college mates who were conversant with sign language to interpret. These findings are in line with a study carried out by Henderson, (1999), Horn and Besktdt, (1999); Leweis and Feris, (1999) who established that students with HI should be provided with accommodation, transport services and sign language interpreters to enhance their academic achievement.

#### **4.5.3 Students' Impression of Lecturers' Experience**

The study sought information from the students with HI on the lecturers' experience to guide them during the learning process. Some of the students' views are captured below:

ST UoN05     *“Students were unable to understand lecturers' instruction in lecture halls.”*

ST KU07     *“Most lecturers were totally lacking in use of sign language during*

*instructions.”*

ST KU09      *“Lecturers were not giving extra attention to students with HI and out of lecture halls.”*

ST KU02      *“Some lecturers were not concerned about the presence of students with HI in and out of lecture halls.”*

From these samples views, it is clear that students’ opinion on lecturers’ ability to teach learners with special needs is quite negative. Despite high academic qualification and teaching experience noted in section 4.7 above, many lecturers are not experienced in teaching learners with HI. The findings from this study concurs with the study by Fuller, Healey, Bradley & Hall (2004) who established that there were many barriers to inclusive instruction such as the fast rate of lecturers speech during lectures, some lecturers speech during lectures, some lecturers even restricted students with HI to tape the lectures. The researcher established that the services of sign language interpreter is important in an inclusive lecture hall as the students with HI reiterate that the lecturers’ instruction and communication is best when there are interpreters to assist them. It is worth noting that methodological triangulation was adopted for the present study. Information collected through interviews from Deans of Students’ Affairs and questionnaires for chairpersons of Department that offer common University units lecturers and students with HI. The findings revealed that there are a lot of challenges hence universities need to improve on instructional strategies, resource materials, resource room and accommodation services during examinations for academic achievement of students with HI.

Further the researcher established other support services that had been put in place by universities for students with HI. The study focused on the support services that had been put in place by universities to enhance learning and academic achievement of students with HI. An interview guide administered to the three Deans of Students' Affairs from the three selected Public Universities revealed that; the universities offer some support services to students with HI.

#### **4.6 Establishment of Academic Achievements of Students with HI**

Objective six sought to establish academic achievement of students with hearing impairments, the study analyzed the data collected on academic support, teaching methods, resource materials, and adaptation of the learning environment, as well as lecturers' teaching skills for students with hearing impairments. These variables were compared with the academic achievement of students with hearing impairment in their examinations at the end of their semester and final academic grades achieved. This is because the above mentioned variables have a direct impact to the students' academic achievement.

##### **4.6.1 Use of Hearing Aid**

Further on objective six, the study sought to establish whether there was use of hearing aid. The researcher sought to establish whether the students had hearing aids and what the lowest grade achievements the students had obtained. The findings showed that majority (70.6%) of those who had hearing aid had grade C as their lowest grade. For those who did not have hearing aid, (54.2%) score a grade C as shown in Table 4.6.

**Table 4.6: The lowest grade scored by students having hearing aids**

	The lowest grade obtained			Total
	C	E	Fail	
Have hearing aids	12(70.6%)	4 (23.5%)	1(5.9%)	17(100%)
Do not have hearing aids	26(54.2%)	19 (39.6%)	3(6.3%)	48(100%)

### 4.6.3 Students with HI Academic Achievement

To relate these factors, students' academic grades were analysed further.

**Table 4.7 Average Grades Attained by Students with HI**

Responses	Frequency	%
A	8	11.4
B	20	28.6
C	30	42.8
D	10	14.3
E	2	1.4
F	0	0
<b>Total</b>	<b>70</b>	<b>100</b>

Average GPA grade attained from students with HI records was obtained. It can be noted that most of the student are average (42.8%). Although this is not a fail, the general trend indicated that they have potential to move to the higher percentile grades. Success at degree level can be critical, in terms of lifelong impact of earning capacity and location in the labour market yet disabled student's tend to encounter more barrier to learning at University and to achieve poor outcomes in terms of final

degree classification despite having comparable qualifications to other students when entering the same university (Ridderl et al., 2002).

From the findings on instructional methods and availability of resource, it is clear that students with HI are not provided with adapted teaching infrastructure, modified environment, relevant resource materials, assistive devices, acoustic lecture halls, support services, individual and group hearing aids, in order to compete fairly with their fellow students. This can be taken to explain to be the reason for weaker grades. Student with this kind of disability need much more of assistance for them to be properly mainstreamed in any regular learning institution.

#### **4.6.4 Students with HI Explanation for their Academic Achievement**

To triangulate the finding from document observation on academic achievement, study sought to find out student's explanation on reasons for their performances.

Various students had this to say;

*ST MU02*      *"Students need enough time during examinations"* (personal communication June 3<sup>rd</sup>, 2016)

*ST UoN010*    *"Students are not able to complete lecture notes during lectures, this lead to poor grades"* (personal communication June 15<sup>th</sup>, 2016)

*ST KU013*    *"Some concepts had no specific sign names. How do we do it in exams? Lecturers should learn how to explain these concepts"*  
(personal communication 21<sup>st</sup> 2016)

*ST MU021*    *"Some lecturers do not issue notes to students with HI."*(Personal communication June 29<sup>th</sup>, 2016)

*ST KU019* “The academic level of the sign language interpreters should match the contents.” (Personal communication July, 5<sup>th</sup> 2016)

*ST MU026* “Interpreters were not enough to match their needs.” (Personal communication July 7<sup>th</sup> 2016)

*ST KU022* “Non-caring attitude from some lecturers who think we get everything they say” (personal communication July, 13<sup>th</sup> 2016)

These sentiments are clear indication that instructional methods, coupled with some major services limitation for students with HI, which may have contributed to the poor grades. The findings revealed that public universities that enrol students with HI must attend to the “whole student” to eliminate feelings of isolation, loneliness and resentment.

Lecturers were also asked to give opinion on how their instructional strategies and learning environment affected the student’s performance. In general, lecturers said that they are not informed about the presence of students with HI in the Universities hence they do not do early planning in lectures preparation. When lecturers were asked on the availability of policy guidelines for students with HI, the findings revealed that a small number of lecturers are aware of policy guideline on students with HI hence students’ poor performance in academic achievement.

These responses are in agreement with the study by Millet (2008) on the use of the assistive devices for students with HI at the university level. The survey on 23 students with HI of auditory verbal therapy programs (all with severe to profound

hearing loss) indicated that only 13 students with HI reported using FM system in high school whereas only one out of the 18 students with HI at university used FM system. The findings are supported by responses of students with HI from the selected public universities whose responses revealed that only 6 out of 70 students with HI had hearing aids.

Generally, academic performance appears to follow the normal curve with minimal failures. This indicates that students with HI work hard despite not being provided with adequate support services, inadequate resource materials and lack of individual or group hearing aids.

#### **4.7 Summary of the Chapter**

This Chapter presents main findings based on Deans of students' affairs, chairperson of departments that offer common university units, lecturers and students with HI responses to six key research questions formulated in relation to the objectives of the study. Methodological triangulation was adopted for the present study. Information gathered through interview guides with Dean of student affairs, questionnaire for chairperson of Departments and lecturers, students with HI and observation schedules on influence instructional strategies and learning environment on academic achievements of students with HI in selected public universities. Information collected was analysed and results compared to determine areas of agreement, as well as areas of divergence. The findings of the study revealed that selected public universities are lacking or have inadequate support services in place, that teaching strategies used by lectures are inappropriate to suit students with HI, resource

materials are inadequate or lacking, lack of environmental adaptation as well as lecturers having inadequate skills to instruct students with HI in selected public universities. It is worth noting that using questionnaires, interview guides, and observation schedules enabled the researcher to obtain in-depth results that would not have been realised using a single strategy, similarly increasing the validity and utility of the findings. The roles played by the Dean of students affairs and the chairpersons of department with common university units in the present study was however necessary. As key stakeholders of university administration, they provided important and critical information pertaining to the status of influence of instructional strategies and learning environment on academic achievement of students with HI in the selected public universities. The opinion of the researcher, the Dean of student affairs, the chairpersons of departments with common university units, lecturers and students with HI analysed in this study may therefore be used in addressing the challenges faced by students with HI in the selected public universities.

## CHAPTER FIVE

### SUMMARY, CONCLUSION AND RECOMMENDATIONS

#### 5.1 Introduction

This chapter presents the summary of the findings, implication of the study, conclusion, recommendations and suggestions for further studies. The chapter is divided into six sub-sections. The first section contains the summary of the research findings and is further sub-divided into six sections, with each subsection giving a summary of the results as per research objectives.

The following were the objectives of the study:

1. Establish the academic support services in the learning environment for students with HI in selected public universities.
2. Establish the teaching methods used by lecturers in instructing students with HI in the selected public universities.
3. Find out the resource materials used in the instructions of students with HI in the selected public universities.
4. Determine the extent to which the lecturers adapt to the teaching environment to ensure effective learning by students with HI in the selected public universities.
5. Determine lecturers' skilfulness in teaching students with hearing impairment in the selected public universities.
6. Establish academic achievement of students with HI in the selected public universities.

## **5.2 Summary of the Findings**

This section presents the summary of research findings. The section is organised according to the objectives of the study.

### **5.2.1 Academic Support Services and Learning Environment for Students with HI**

Findings for objective one of the study, established that universities have put some support services in place to increase learning and achievement for students with HI at selected public universities. The findings revealed that students accommodation in campus hostels 55(78.6%) with only 15(21.4%) not offered accommodation in campus hostel. Similarly financial support at 50(71.4%) of financial support further upkeep whereas 20(28.6%) did not get. This means that some other services are lacking. Dean of students' affairs responses, supported by findings of chairpersons of departments that offer university common units, lack of sign language interpretation services at their offices. Factors perceived by lecturers as the main problem are: lack of policy guidelines; inadequate instructional strategies. Students with HI cited: lack of adequate accommodation in universities hostels for all students with HI, inadequate resource materials, inadequate support for tuition and upkeep; lack of hearing aids, regular students' poor attitude towards them, inadequate lecture hall participation, few/or no sign language interpreters. The study findings further revealed that majority of the lecturers felt and believed that inadequate instructional strategies, lack of policy guidelines, lack of familiarization with students with HI were some of the major factors influencing academic performance of students with HI at the selected public universities.

### **5.2.2 Teaching Methods Used in Instructing Students with HI**

Findings of objective two established that some of the lecturers made use of support services and resource materials, facilities and equipment available in the learning environment. Lecturers felt the use of all the strategies as critical to enable them to instruct students with HI appropriately. The findings indicated that lecturers in selected public universities lacked access to other resources for teaching due to lack of relevant skills while at the same time they were not inducted on the strategies or lacked specialized training on the same.

### **5.2.3 Resource Materials Used to Instruct Students with HI**

Findings for objective three, the study revealed that the resource materials were inadequate with lecturers indicating that 290 (62.77%) disagreed on adequacy of resource materials. Responses from students with HI on availability of adequate resource materials revealed, 30(42.9%) was fair, an indication that resource materials are only fairly available showing that students with HI lack adequate resource materials to enhance knowledge acquisition for academic achievement, followed by 15(21.4%) students with HI indicated adequate resource materials. Concerning their opinion on availability of resource materials, lecturers felt that universities had adequate resource materials. However, at the time of the present study, availability of resource materials for students with HI were not adequate.

### **5.2.4 Adaptation of Teaching Environment for Effective Learning**

Objective four, study findings revealed that lecturers tried to adapt teaching environment for effective learning of students with HI. The researcher established that

a probably big percentage of the students with HI could be in the hard-of-hearing category that could benefit from simple lecture hall adjustments and the fact that two public universities had the services of the sign language interpreters. The researcher established from observation schedule that there is need for more environmental adjustment in the lecture halls for the students to comprehend lectures especially the use of technology skills such as use of FM systems and Real-time captioning.

### **5.2.5 Lectures Skillfulness in Teaching Students with HI**

Objective five on whether lecturers have relevant skills to instruct students with HI, The findings indicated that most lecturers were not aware of the presence of students with HI for early planning in order to attend to their special educational needs. When lecturers were asked on the policy guidelines on students with HI the findings revealed that a small number of lecturers were aware of the policy guideline on students with HI hence the disparity of feelings. The findings revealed that 300(66.6%) of lecturers were not given induction on appropriate teaching methods for students with HI. Whereas 50(11.2%) agreed to have been inducted on appropriate teaching methods. In addition, students with HI were unable to understand lecturer instruction in lecture halls: lecturers were lacking in use of sign language during instruction. Also, lecturers were not giving extra attention to students with HI in and out of lecture halls. The researcher established that universities should facilitate lecturers' training in sign language, employ enough sign language interpreters for key university common units and lecture halls. It is important for universities to create awareness on hearing impairments to all the university fraternity.

### **5.2.6 Establishment of Academic Achievement of Students with HI**

Objective six revealed that lack of lecturers' appropriate instructional strategies and poor learning environment to teach students with HI contribute to poor grades. Further, the study revealed that adaptation of teaching environment is critical based on lecturers' responses; use of sign language interpreters and effective participation of students with HI in learning. Further on analysis of the opinion of students with HI on lecturers' instructional strategies, the study revealed that students were faced by many challenges during their period of study.

### **5.3 Conclusions**

On the basis of findings of the present study, the researcher reached the following conclusions:

1. Influence of instructional strategies and learning environment in selected public universities on academic performance of students with HI is real. This was established from the lecturers not using any relevant teaching strategy for students with HI through questionnaires and observation schedule administered by the researcher.
2. Selected public universities have not put in place adequate support services for students with HI. Offices of the Dean of Students' Affairs, office of the chairperson of Departments that offer Common University Units and lecture halls do not have adequate services of sign language interpreters. The Deans of Students' Affairs were not specially trained in sign language. Furthermore, sign language is a mode of communication for students with HI however it enhances their academic achievement . The researcher recommends the University Board of

Management to facilitate workshops and refresher courses to all teaching and non-teaching staff.

3. Public universities which enrol students with HI to create awareness and sensitization programs on the presence of students with HI. From time to time they should organize workshops, seminars and refresher courses for sign language training for their university fraternity.
4. Some of the Lecturers are not proficient in using sign language; University board of management to encourage and facilitate lecturers to willingly train and use sign language while giving instruction to students with HI in and outside lecture halls.
5. Lecturers to exhibit devotion and dedication in performing their duties regarding students with HI and try to give them additional time in and outside lecture halls.
6. Lecturers to provide copies of lecture notes, hand outs, course contents and reference lists in advance so that they may go through the material early in time.
7. Public universities which enrol students with HI to establish “disability friendly centres” or “directorate of Disability Services” where every student with special needs may get registered at the time of admission so that he/she could claim for adequate support services during the course of study.

Finally the researcher came to conclusion that the study succeeded in achieving its purpose and objectives. The high return rate of lecturers’ questionnaires and students with HI as well as the Deans of students’ Affairs and the chairpersons of Departments with university common units’ willingness to participate in the study provided sufficient information to answer six key research questions formulated for the study. Issues pertaining to academic achievement for students with HI should be approached

from four perspectives: students with HI support services, teaching methods, resource materials and environmental adaptation. The success or failure of instructional strategies for students with HI at the selected public universities, fall on lecturers' perception towards students with HI. For effective professional preparation, lecturers to train in general instructional strategies and learning environment but also be offered specialized training for teaching students with HI. Universities' board of management to offer refresher courses on a regular basis in addition to being given opportunities to attend seminars and workshops on specialized instructional strategies. Universities' board of management to provide effective learning environment, specialised facilities, e.g. horseshoe tables, assistive devices like individual or group hearing aids and an FM system. Lecture halls to be fitted with sound acoustic modifications, microphones, sign language interpreters, video tapes, note takers, sound field amplification system with a single ceiling mounted speaker, Real-time caption and accommodation for students with HI on campus hostels. The lecture halls to have appropriate seating and adequate lighting because preferential seating is always a key component in the learning environment for students with HI.

#### **5.4 Recommendations**

With regard to the findings of the study, the following recommendations were made with a view to improve instructional strategies and learning environment for students with HI in selected public universities;

- (i) Public Universities which enrol students with HI to put in place adequate accommodation in campus hostels for all students with HI to improve their academic achievement.

- (ii) All lecturers who teach Common University Units to students with HI to use relevant and appropriate teaching strategies.
- (iii) Public Universities which admit students with HI to avail adequate resource materials for students with HI.
- (iv) All lecturers who teach University Common Units to students with HI to attend and participate in workshops, seminars, and sign language trainings to enable them adapt to teaching environment appropriately.
- (v) Public Universities to make sign language a Common University Unit for all students in the University
- (vi) All University fraternity should be sensitized on the needs of students with HI
- (vii) Higher Education Loan Board (HELB) to increase funding to all students with HI
- (viii) Few resource materials available at some Universities enabled students with HI achieve average grades in the end of the semester examination.
- (ix) Offices of the Dean of students Affairs is key to all students with HI, hence the need to have the services of sign language interpreters to assist students with HI.

#### **5.4.1 Policy Recommendations**

- (i) On the basis of objectives one and two, the study recommends that Commission for University Education (CUE) should adequately prepare policy guidelines for lecturers who teach students with HI. The Commission for University Education and the University Board of Management to facilitate lecturers to

attend sign language training, refresher courses, seminars and workshops on a regular basis.

- (ii) Higher Education Loans Board (HELB) to make a deliberate effort to increase funds to the students with HI pursuing higher education in public universities. The study recommends that such funds be released on time to the students with HI to enable them to acquire the resource materials needed to facilitate effective learning for academic achievement especially hearing aids which are expensive.
- (iii) Public Universities Board of Management to ensure that they establish resource centres at universities which enrol students with HI. The study recommends that University Board Management have to be innovative enough to source for funds from NGOs and Business Organizations to procure adequate resource materials for resource centres required by students with HI. The study further recommends that student with HI have to be given university bursaries for needy students.
- (iv) The study recommends that the Commission for University Education to recognize the unique and challenging roles lecturers of students with HI face and motivate them to remain in the departments of special needs as well as in departments that offer common university units. It has to emulate what the Teachers Service Commission is doing to teachers who teach students with special educational needs. The study further recommends sign language to be made one of the common university units and universities to embrace use of technology to assist students with HI.
- (v) In line with the study the Commission for University Education together with University Board of Management to ensure modification of lecture halls

(learning areas) to be acoustic or sound proof to enable students with HI especially the “hard of hearing” category to benefit adequately from lectures.

#### **5.4.2 Recommendations for Further Research**

- (i) The present study focused on influence of instructional strategies and learning environment on academic achievement of students with HI in selected public universities. Future research could be extended to other public universities.
- (ii) The researcher focused on the influence of instructional strategies and learning environment on academic achievement of students with HI. Future research could be carried out to establish influence on other University Units.
- (iii) The current study focused on the influence of instructional strategies and learning environment on academic achievement of students with HI. Future study to be carried out to establish other factors that influence academic achievement of these students with HI in public universities.

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**APPENDICES**

**Appendix A:**

**Interview Guide for Dean of students Affairs**

*This interview is designed to obtain information on the analysis of instructional strategies used for students with HI and its influence on academic performance at selected public universities.*

**Section A – Bio Data**

Tick appropriately (✓)

1. Name of the Institution: \_\_\_\_\_

Time: \_\_\_\_\_

**Section B**

2. What is your professional qualification?

3. Please indicate the number of students admitted with HI by gender

4. Kindly, state some academic support services offered by the University to students with Hearing Impairments

(i) \_\_\_\_\_

(ii) \_\_\_\_\_

(iii) \_\_\_\_\_

(iv) \_\_\_\_\_

5. Do you have any training in SNE?

6. If Yes above, specify area

(i) \_\_\_\_\_ (ii) \_\_\_\_\_

(iii) \_\_\_\_\_ (iv) \_\_\_\_\_

(v) \_\_\_\_\_

7. Does the University offer accommodation for students with Hearing Impairment in campus hostels?

8. Do you use sign language to Communicate with the students with Hearing Impairments?

9. Do you have interpretation services at the office?

10. Do you have students with Hearing Impairments representatives in the University students Association or Union?

11. What do you think the University should do to minimize the challenges faced by students with hearing impairments?

(i) \_\_\_\_\_

(ii) \_\_\_\_\_

(iii) \_\_\_\_\_

(iv) \_\_\_\_\_

(v) \_\_\_\_\_

(vi) \_\_\_\_\_

12. Does the University provide transport services to the students with hearing impairments?

13. Mention any other accommodations provided by the University for students

with HI

(i) \_\_\_\_\_

(ii) \_\_\_\_\_

(iii) \_\_\_\_\_

- (iv) \_\_\_\_\_
- (v) \_\_\_\_\_
- (vi) \_\_\_\_\_

*Thank you for your response time and patience*

## Appendix B:

### Questionnaire for Chairpersons of Department

*This questionnaire intends to seek information on the impact of challenges faced by students with hearing impairment (HI) in public universities on their academic performance. Please feel free and answer all the questions as accurate as possible.*

***Note that the response you give will NOT in any way be used against you.***

#### SECTION A – BIO DATA

##### General Information

1. Gender: female: ( )      Male: ( )
2. What is your professional qualification?
  - Master specify-----
  - Doctor of philosophy (PhD) ( )
3. How many Lecturers do you have in your department.....
4. How long have you been a chairperson at the department?  
 A 1-2Yrs    B.3-4Yrs    C.5-6Yrs    D.7-8Yrs
5. Do you have students with Hearing Impairments in your department?  
 Yes ( )                      No ( )
6. If your answer is (Yes) for the question above how many students with HI do you have in department?
  - (a) First year                      ( )
  - (b) Second year                      ( )
  - (c) Third year                      ( )
  - (d) Fourth year                      ( )
  - (e) Fifth year                      ( )

(f) Sixth year ( )

(g) Eighth year ( )

7. How do you communicate with the students with HI?

(i) Speech

(ii) Sign Language

(iii) Writing

(iv) Sign Language Interpreter

8. Mention the University Common Units offered by your department

(i)

(ii)

(iii)

(iv)

(iv)

(v)

(vi)

(vii)

(viii)

(ix)

(x)

9. How do the students with Hearing impairments perform in University Common

Units?

(i) Excellent ( )

(ii) Good ( )

(iii) Fair ( )

(v) Poor ( )

(vi) Very Poor ( )

10. Mention some of the University Common Units in which students with HI perform well at your department.

(i)

(ii)

(iii)

(iv)

(v)

(vi)

(vii)

(viii)

(ix)

(x)

11. Mention the University Common Units which are poorly done?

(i)

(ii)

(iii)

(iv)

(v)

(vi)

(vii)

(ix)

(x)

12. What recommendations would you give to the University to help students with HI to improve their performance?

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*Thank you for your response, time and patience.*

## Appendix C:

### Questionnaire for Key Informants (Lecturers)

*This questionnaire intends to seek information on the impact of challenges faced by students with hearing impairments (HI) in public universities on their academic performances. Please feel free and answer all the questions as accurate as possible.*

***Note that the responses you give here will NOT in any way be used against you.***

#### SECTION A – BIO DATA

##### General Information

1. Gender: female: [    ]            Male: [    ]

What is your professional qualification?

▪ Master specify-----

▪ Doctor of philosophy (PhD) [    ]

2. How long have you been teaching at the university?

A. 1-5yrs            B. 6-10yrs    C.11-15yrs    D.16-20yrs

3. Have you ever taught students with HI in any of your classes?

Yes [    ]            No [    ]

4. At the start of lectures, do you establish whether there are some students with

HI?    Yes [    ]            No [    ]

5. If yes above, what teaching adjustment do you apply for the students with HI?

(a) Seating position

(b) Use of a sign language interpreter

(c) Use of note takers

(d) Power point slides

**SECTION B**

1. The University informs staff about the presence of students with HI in their classes.

Strongly Agree

Agree

Somehow agree

Strongly disagree

I don't know

2. The University has a policy guideline on how to cater for the needs of students with HI.

Strongly Agree

Agree

Somehow agree

Strongly disagree

I don't know

3. Students with HI are able to participate effectively in learning.

Strongly Agree

Agree

Somehow agree

Strongly disagree

I don't know

4. The medium of instruction used by lecturers teaching students with HI is conducive for them.

Strongly Agree

Agree

Somehow agree

Strongly disagree

I don't know

5. The Lectures who teach University Common Units are trained in special needs education.

Strongly Agree

Agree

Somehow agree

Strongly disagree

I don't know

6. Students with HI enrolled in the University are mainly profoundly (totally deaf)

Strongly Agree

Agree

Somehow agree

Strongly disagree

I don't know

7. What adaptation strategies has the University put in place for students with HI.

Use of resource materials

Use of academic support services

Use of facilities

Use of technology

Use of equipment

8. I am aware of the existence of University resource room for students with HI.

Strongly Agree

Agree

Somehow agree

Strongly disagree

I don't know

9. I am familiar about the role played by the resource room in helping students with HI in the University.

Strongly Agree

Agree

Somehow agree

Strongly disagree

I don't know

10. I am inducted on the teaching methods, I can use when teaching students with HI

Strongly Agree

Agree

Somehow agree

Strongly disagree

I don't know

11. I am familiar with the teaching methods for students with HI

Strongly Agree

Agree

Somehow agree

Strongly disagree

I don't know

12. The resource materials provided by the University are adequate.

Strongly Agree

Agree

Somehow agree

Strongly disagree

I don't know

13. The University provides various resource materials to help in the instruction of students with HI.

Strongly Agree

Agree

Somehow agree

Strongly disagree

I don't know

*Thank you for your responses, time and patience*

### Appendix D:

#### Questionnaires for Students with Hearing Impairments

*This questionnaire is designed to obtain information on the impact of challenges encountered by students with hearing impairments (HI) in public universities.*

*Put a tick (✓) in the bracket corresponding to your answer and explain where spaces have been left.*

#### SECTION A – BIO DATA

- (i) Name of the institution: \_\_\_\_\_
- (ii) Date: \_\_\_\_\_
- (iii) Academic year: First ( )    Second ( )    Third ( )    Fourth ( )
- (iv) Degree: Program being pursued  
 B.Ed. (Arts) [ ]                      B.Ed. (Science) [ ]
- (v) Gender    Male [ ]    Female [ ]
- (vi) Name of the faculty: \_\_\_\_\_
- (vii) Name of the Department: \_\_\_\_\_

#### SECTION B – Tick (✓) appropriately

1. Do you have a hearing Aid?  
 Yes [ ]      NO [ ]
2. Are you accommodated at the University hostels Yes [ ]      NO [ ]
3. Main challenges encountered \_\_\_\_\_  
 \_\_\_\_\_
4. Appropriate Teaching/Learning resources \_\_\_\_\_  
 Very Adequate                        
 Adequate                                
 Fair                                        
 Not conducive                        
 Extremely not conducive
5. Students with hearing impairment are supported for tuition and upkeep just as the regular ones      Yes ( )      No ( )

## 6. Regular students attitude towards the students' with hearing impairments

Very positive Positive Fair Quite negative Very negative 

## 7. Suitability of content presentation by lecturers when teaching.

Very suitable Suitable Not sure Unsuitable Very unsuitable 

## 8. Adjustments provided by the university during examination.

(i) Very Adequate (ii) Adequate (iii) Fair (vii) Not conducive (viii) Extremely not conducive 

## 9. Resource materials offered by the university

(i) Very Adequate (ii) Adequate (iii) Fair (iv) Not conducive (v) Extremely not conducive 

## 10. Hearing Aids are too expensive to buy and maintain

Yes ( ) No ( )

## 11. Suitability of the language used when providing instruction

Very suitable Suitable Not sure Unsuitable Very suitable

12. List the coping strategies you use to adjust to learning environment at the university

---

(a) How is your academic performance generally?

1) Excellent [  ]

2) Good [  ]

3) Fair [  ]

4) Poor [  ]

5) Very poor [  ]

13. What was the highest grade you have achieved?

A

B

C

E

Fail

14. What is the lowest grade

A

B

C

E

Fail

15. In which unit did you get the lowest grade?

---

---

16. Any explanation for the poor grade(s) attained?

---

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17. What recommendations would you give to the University to help you overcome these challenges? \_\_\_\_\_

---

---

Thanks you for your responses, time and patience.

**Appendix E:****Lecture Hall Observation Schedule for Students with HI****SECTION A – BIO DATA**

Name of observer: \_\_\_\_\_ Date: \_\_\_\_\_

Name of university observed: \_\_\_\_\_ Time: \_\_\_\_\_

Department: \_\_\_\_\_

**SECTION B***Tick accordingly.*

How frequently does the lecture hall have described academic support services?

<b>Lecture Hall Structure</b>	<b>Never</b>	<b>Rarely</b>	<b>most of the time</b>	<b>Always</b>
Sound proof walls (acoustic)				
FM system				
Power point slides				
Group amplification system				
Microphones				

Comments \_\_\_\_\_

<b>Teaching Learning Modes</b>	<b>YES</b>	<b>NO</b>	<b>N/A</b>
Lecture method			
Lecture notes			
Note takers			
Sign Language Interpreters			
Individualized Educational Program			
Favourable seating positions			
Use of hearing Aids			
Discussion group			

Comments \_\_\_\_\_

\_\_\_\_\_

<b>Lecture Hall Adaptation</b>	<b>YES</b>	<b>NO</b>	<b>N/A</b>
Positive interaction with students with HI			
Provides enrichment/remediation			
Uses appropriate verbal communication			
Uses appropriate non-verbal communication			
Gives clear directions			

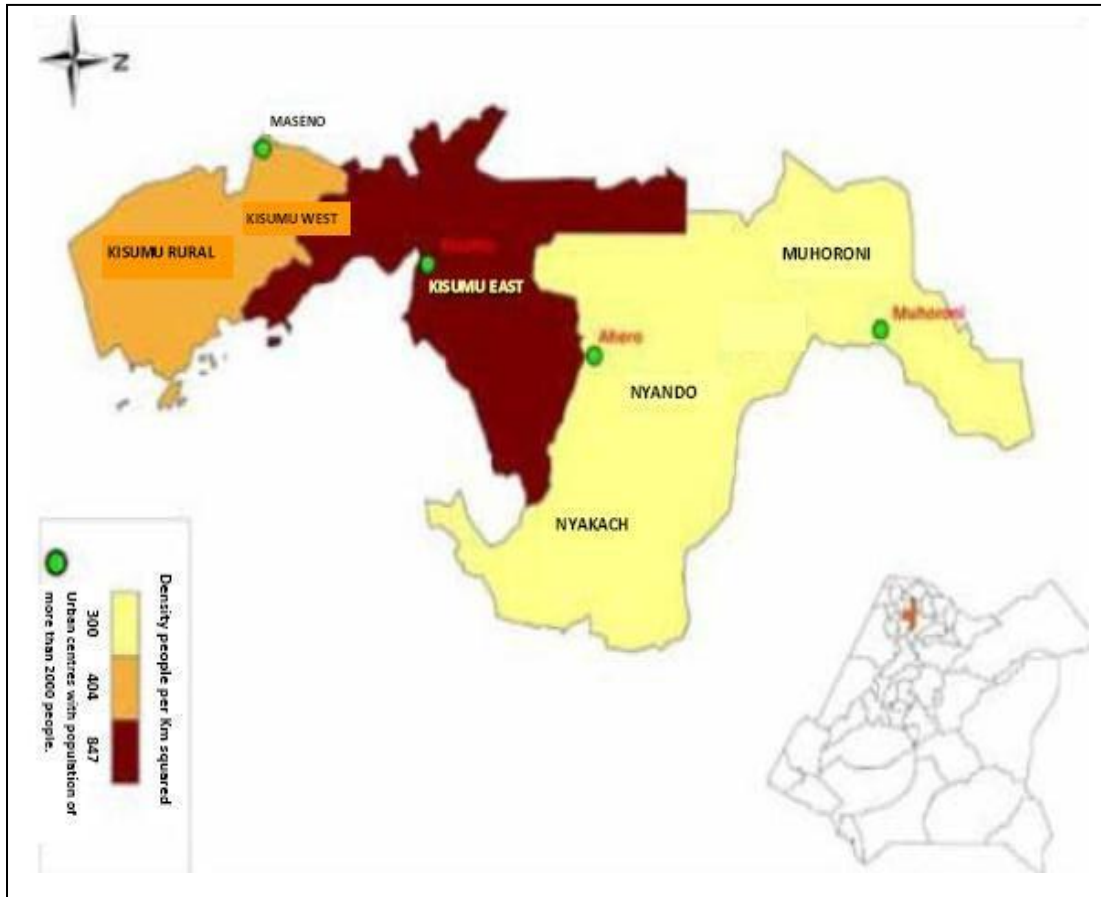
Comments \_\_\_\_\_

\_\_\_\_\_

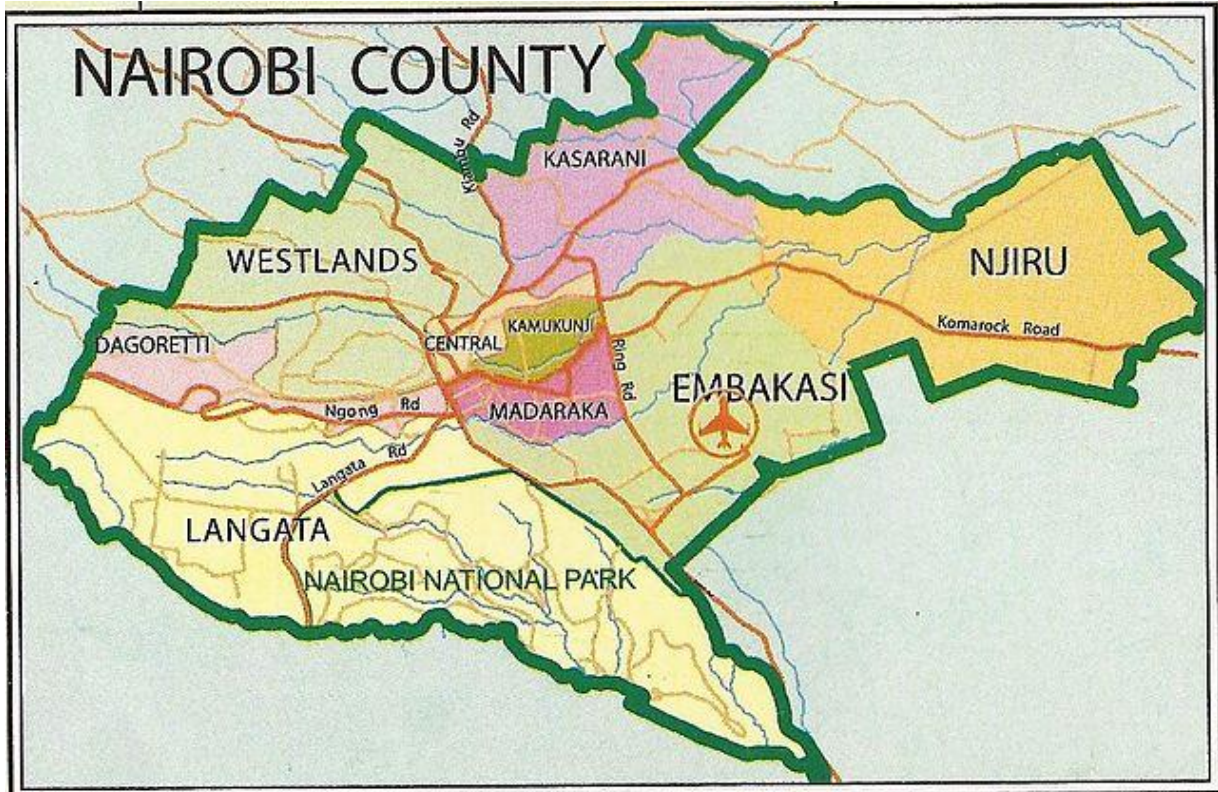
Observers signature: \_\_\_\_\_

Date: \_\_\_\_\_

**Appendix F:**  
**Map of Kisumu County**



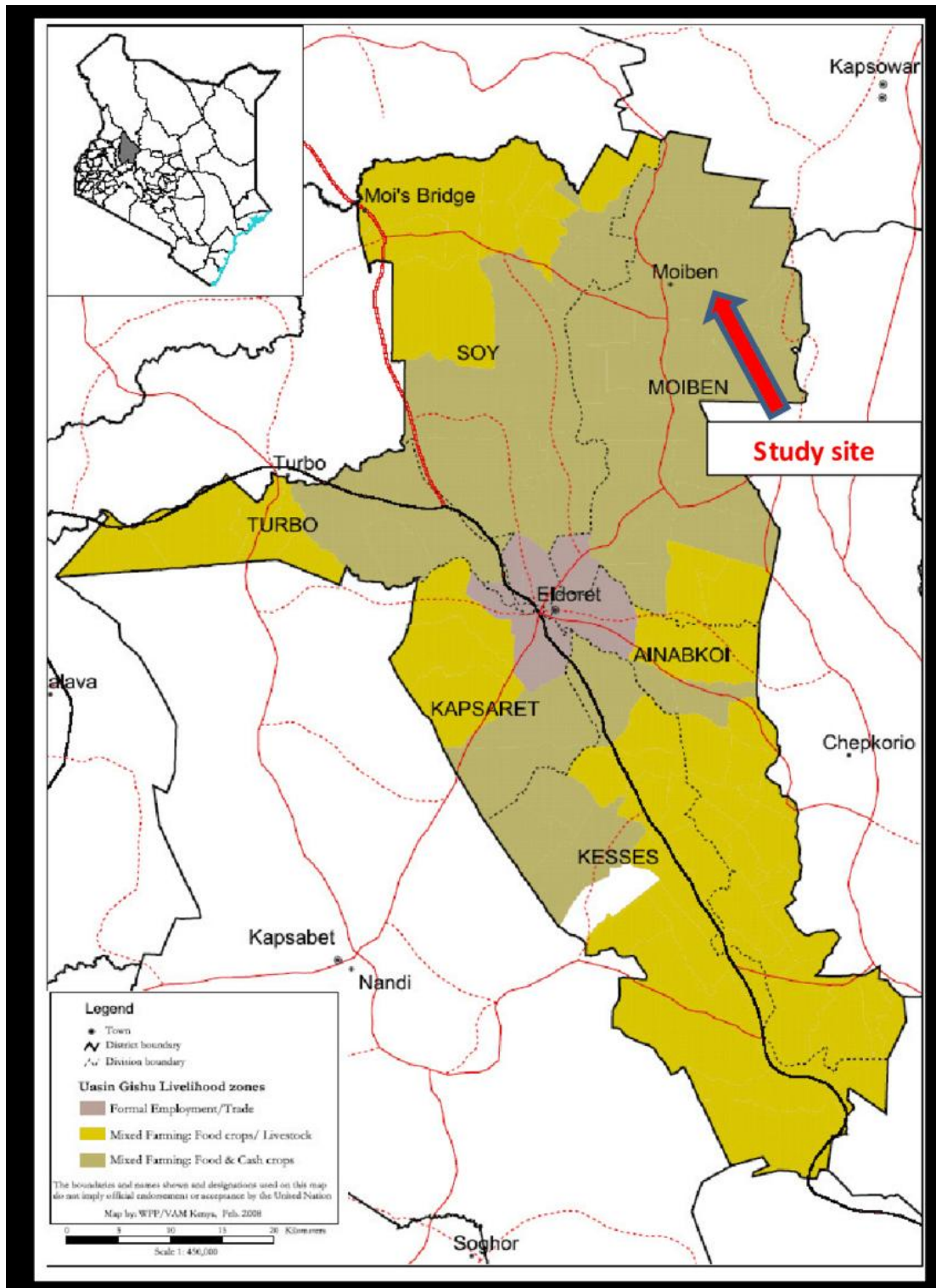
**Appendix G:**  
**Map of Nairobi County**



**Appendix H:**  
**Map of Kiambu County**



**Appendix I:**  
**Map of Uasin Gishu County**



## Appendix J: Authorization Letter



### NATIONAL COMMISSION FOR SCIENCE, TECHNOLOGY AND INNOVATION

Telephone: +254-20-2213471,  
2241349, 310571, 2219420  
Fax: +254-20-318245, 318249  
Email: secretary@nacosti.go.ke  
Website: www.nacosti.go.ke  
When replying please quote

9<sup>th</sup> Floor, Utalii House  
Uhuru Highway  
P.O. Box 30623-00100  
NAIROBI-KENYA

Ref. No.  
**NACOSTI/P/16/28310/9924**

Date:  
**29<sup>th</sup> February, 2016**

Peninnah Mbaluka Laki  
Kenyatta University  
P.O. Box 43844-00100  
**NAIROBI.**

#### RE: RESEARCH AUTHORIZATION

Following your application for authority to carry out research on "*Influence of instructional strategies on academic achievement of student with hearing impairments in selected public universities in Kenya*" I am pleased to inform you that you have been authorized to undertake research in **selected Counties** for a period ending **26<sup>th</sup> February, 2017**.

You are advised to report the **Vice Chancellors of selected Universities, the County Commissioners and the County Directors of Education of the selected Counties** before embarking on the research project.

On completion of the research, you are expected to submit **two hard copies and one soft copy in pdf** of the research report/thesis to our office.

  
DR. S. K. LANGAT, OGW  
FOR: DIRECTOR-GENERAL/CEO

Copy to:

The Vice Chancellors  
Selected Universities.

The County Commissioners  
Selected Counties.

COUNTY COMMISSIONER  
UASIN GISHU COUNTY  
P. O. Box 30126-00100, NAIROBI  
TEL: 341006

  
COUNTY COMMISSIONER  
UASIN GISHU COUNTY

The County Directors of Education  
Selected Counties.



### Appendix K: Research Permit

**CONDITIONS**

- You must report to the County Commissioner and the County Education Officer of the area before embarking on your research. Failure to do that may lead to the cancellation of your permit.**
- Government Officers will not be interviewed without prior appointment.**
- No questionnaire will be used unless it has been approved.**
- Excavation, filming and collection of biological specimens are subject to further permission from the relevant Government Ministries.**
- You are required to submit at least two(2) hard copies and one(1) soft copy of your final report.**
- The Government of Kenya reserves the right to modify the conditions of this permit including its cancellation without notice.**

**REPUBLIC OF KENYA**

**NACOSTI**

**National Commission for Science, Technology and Innovation**

**RESEARCH CLEARANCE PERMIT**

**Serial No. A 8017**

**CONDITIONS: see back page**

**THIS IS TO CERTIFY THAT:**

**MS. PENINNAH MBALUKA LAKI**

**of KENYATTA UNIVERSITY, 0-90140**

**NOTE, has been permitted to conduct research in Kiambu, Kisumu, Nairobi, Uasin-Gishu Counties**


**on the topic: INFLUENCE OF INSTRUCTIONAL STRATEGIES ON ACADEMIC ACHIEVEMENT OF STUDENT WITH HEARING IMPAIRMENTS IN SELECTED PUBLIC UNIVERSITIES IN KENYA**

**for the period ending: 26th February, 2017**

**Permit No : NACOSTI/P/16/28310/9924**

**Date Of Issue : 29th February, 2016**

**Fee Received :Ksh 2000**



*[Signature]*  
**Director General**  
**National Commission for Science, Technology and Innovation**

**Applicant's Signature**

**Appendix: L**  
**Approval of Research Proposal**



KENYATTA UNIVERSITY  
GRADUATE SCHOOL

E-mail: [dean-graduate@ku.ac.ke](mailto:dean-graduate@ku.ac.ke)

P.O. Box 43844, 00100

NAIROBI, KENYA

Tel. 810901 Ext. 57530

Website: [www.ku.ac.ke](http://www.ku.ac.ke)

Internal Memo

FROM: Dean, Graduate School

DATE: 10<sup>th</sup> February, 2016

TO: Laki Peninnah Mbaluka  
C/o Special Needs Educations  
Kenyatta University

REF: E83/24036/2013

**SUBJECT: APPROVAL OF RESEARCH PROPOSAL**

This is to inform you that Graduate School Board at its meeting of 27<sup>th</sup> January, 2016 approved your Research Proposal for the Ph.D. Degree Entitled, **"Influence of Instructional Strategies on Academic Achievement of Student with Hearing Impairments in Selected Public Universities in Kenya"**.

You may now proceed with your Data Collection, subject to clearance with Director General, National Commission for Science, Technology and Innovation.

As you embark on your data collection, please note that you will be required to submit to Graduate School completed Supervision Tracking Forms per semester. The form has been developed to replace the Progress Report Forms. The Supervision Tracking Forms are available at the University's Website under Graduate School webpage downloads.

By copy of this letter, the registrar (Academic) is hereby requested to grant you Substantive registration for your Ph.D studies.

Thank you.

**EDWIN OBUNG'U**  
**FOR: DEAN, GRADUATE SCHOOL**

c.c. Chairman, Special Needs Education Department.

Registrar Academic – Att: J. Likam

Supervisors:

1. Dr. Daniel Muindi  
Department of Educational Communication and Technology  
**Kenyatta University**
2. Dr. Nelly Otube  
Department of Special Needs Education  
**Kenyatta University**

EO/rwm

**Appendix: M**

**Chi table showing association on the lecturers' views on medium of instruction used by lecturers in the universities**

**Chi-Square Tests**

	Value	Df	Asymp. Sig. (2-sided)
Pearson Chi-Square	42.298 <sup>a</sup>	6	.000
Likelihood Ratio	43.198	6	.000
Linear-by-Linear Association	.351	1	.554
N of Valid Cases	462		

a. 0 cells (.0%) have expected count less than 5. The minimum expected count is 8.66.

**Appendix: N**

**Chi table showing association on the lecturers' establishment of presence of students with HI at start of lecturers in universities**

**Chi-Square Tests**

	Value	Df	Asymp. Sig. (2-sided)
Pearson Chi-Square	6.630 <sup>a</sup>	2	.036
Likelihood Ratio	6.604	2	.037
Linear-by-Linear Association	6.324	1	.012
N of Valid Cases	456		

a. 0 cells (.0%) have expected count less than 5. The minimum expected count is 33.45.