

**MULTIMODAL COMMUNICATION IN THE INSTRUCTION OF LEARNERS
WITH HEARING IMPAIRMENT**

Teachers' perceptions and application in inclusive classes

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Abstract

The purpose of this study was to gain a descriptive understanding of the teachers' perceptions and application of multimodal communication in the instruction of learners with hearing impairment in inclusive classrooms. In particular it was aimed at finding out how teachers perceive multimodal communication. This included the practice in a classroom milieu where learners with hearing impairment are instructed together with their hearing counterparts.

The study followed a qualitative case study design. The reason for choosing this design was to study the phenomena in depth. In order to gain deeper understanding of the phenomenon, three cases were studied using non-participant observation strategy. Observation was used to ascertain the multimodal communication practices of the cases in their respective classrooms. Thus, observation was used as the main method complemented by in-depth interview. The study adapted some of the aspects in the 'Total Communication Checklist and Assessment' developed by (Waldo, et.al. 1981) in the structuring of both the observation and interview guides. A video material entitled 'Teachers for All' was used to find out the influence it had on the teacher's instruction.

Numerous findings emerged from the study. Regarding perceptions, teachers were aware of the importance of multimodal communication in the instruction of learners with hearing impairment. However, two of the cases studied perceived it to be very difficult and time consuming in situations where content delivered were mainly abstract. Furthermore, where the lessons were conducted in the area language other than English, the teachers seemed to have more challenges than they used English language. It was further noticed that it was easier for teachers to forget some category of learners during the teaching-learning processes.

Regarding teachers application of multimodal communication, findings revealed that teachers used varied communication modalities in the instruction of learners with hearing impairment. These among others included speech, signs, a combination of speech and signs and total communication. Speech was the pre-dominantly used communication modality. Other supplementary communication modalities used included the non-verbal, the facial expression, gestures, finger spelling, mouthing and body movement. Visual modalities were often used when giving specific instruction geared towards a learner with hearing impairment. However, it was noticed that only one case balanced the use of the visual/manual and auditory modalities.

Based on the overall findings, conclusions were made among others, that teachers' perceptions and application of multimodal communication in the instruction of learners with hearing impairment differed from teacher to teacher and was dependant on one's background training and subject taught. Effective instruction called for teacher skillfulness in the use of the two main communication modalities, the visual and the manual modalities. Conclusively, communication and instruction for learners with hearing impairment in inclusive classrooms is a subject that needed further research.

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Dedication

I dedicate this piece of work to my precious mother who laid a foundation for me, the late grandmother who never lived to witness my success, the entire family, beloved son and daughters who endured my absence.

List of abbreviations

UPE	Universal Primary Education
UNESCO	United Nations Education Scientific Cultural Organisation
NGO	Non Governmental Organisation
EFA	Education for All
WFD	World Federation of the Deaf
M.O.E.s	Ministry of Education and Sports
PLE	Primary Leaving Exams
ZPD	Zonal of Proximal Development
DB	Decibels
SL	Sign Language
TC	Total Communication.

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1 INTRODUCTION

1.1 Background to the study

The study's focus was on teachers' perceptions and application of Multimodal Communication in the instruction of learners with hearing impairment in inclusive classrooms. It further explored how the video based material entitled 'Teachers for All' influenced the teachers thinking and practice. The video material consists of recorded audio-visual sequences reflecting classroom practices, in Uganda and Kenya. It was a case study of three teachers in an ordinary school in Uganda.

This chapter presents the contextual background of the study, justification of the study, the research problem, research questions and sub-questions, purpose of the study and the conceptual frame work of the study.

Uganda is a land locked country in East Africa that borders with Sudan to the north, Kenya to the east, Tanzania to the south, Rwanda to the south west and the Democratic Republic of Congo to the west. It has got a population of approximately 24.4 million people, of which 2.4 million are persons with Disabilities (Uganda Bureau of Statistics, 2002). Uganda is one of the member state countries that have made efforts to implement the inclusive education practices within its education sector. The initiative to implement inclusive practices is reflected in a number of national policies and strategies. For instance the Universal Primary Education (UPE) 1997, the constitution of the republic of Uganda 1995, the Government White Paper on Education for National Integration and Development 1992, the Disability Act 2007, and others.

UPE is the advent of inclusive education in the Uganda context. It was declared in 1996 and its implementation took effect in 1997. The policy stipulates among others that, all children within the age range of 6-12 years have a right to access education no matter their cultural, social or economical background, and first priority given to a child with a disability. Consequently, the advent of inclusive education practices in Uganda came into effect as part of the wider call and advocacy at international foras to which Uganda is a signatory. For instance, one such was the Salamanca statement, which called upon all governments to "adopt as a matter of law or policy the principle of inclusive education, by enrolling all children in

ordinary schools, unless there are compelling reasons for doing otherwise” (UNESCO 1994: ix). UPE is a typical inclusive practice that brings together children who differ in terms of physical, social, sensory and academic abilities.

The overwhelming response to UPE meant that in many schools the number of pupils double (Lubanga, 1999), resulting in overcrowded classrooms, lack of trained teachers, lack of instructional materials and text books and many others (Babu, 1998). The shortcomings affect all children, including those with special educational needs. Nevertheless, before its implementation, the number of children with special educational needs attending primary schools was limited compared to today. According to the National Policy for Disability Act (2006), a total of 150,559 CWDs enrolled in UPE schools of which 82,537 were male and 68,022 females. The population has kept on increasing since then. By implication it means increased and skilled manpower that can ably support learners with diversified needs from within the same setting.

1.2 Teacher training

To address the issue of increased and skilled manpower in special education, Uganda went ahead and began the training of special needs teachers who can ably handle the inclusive classrooms. This was effected way back in 1992 when a policy on ‘Education for National Integration and Development’ was developed. Through this policy Uganda government established and mandated Uganda National Institute of Special Needs Education, now referred to as the Faculty of Special Needs and Rehabilitation, Kyambogo University, to start the training of special needs teachers using the 1991 Act of parliament.

This initiative is in line with Smith (1998) views that, if the teacher training programs preparing the general educators to deal with learners with diverse needs are effective, then there is a likelihood that the inclusion movement will continue to move forward. For a teacher to be effective depends on how well he or she performs in the classroom. And in order to be effective, thorough and quality training is greatly needed from any institution of higher learning. It was noticed in the school where the study was conducted that teachers had varied backgrounds, special needs training background and general education training background. This seems to be the trend in most of the Ugandan schools at primary level of education. The teachers in primary school settings are supposed to teach all the learners, with and without

special needs within the same setting. Nevertheless, gaps still exist in the various areas concerning appropriate service provision as may be required by each individual learner.

In reality, success of the whole education system hinges on the committed effort of the teachers in understanding the varying needs of the learners and adapting teaching approaches that suit the individual requirements without any compromise. Opdal and Wormanæs (2001) pointed out that, the teacher's beliefs about and acceptance of the policy and philosophy of inclusive education are significant predictors of the degree to which they carry out inclusive practices and outcomes of such practices. In other words their contributions and attitude have got stronger impact on the success of the education system. Without them implementation of the inclusive program may never be a reality.

1.2.1 Challenge faced

The increased number of enrolment in schools invariably indicates an increase in number of learners with diversified needs accessing the inclusive settings. Among such learners are those with hearing impairment. Learners with hearing impairment instructed together with the hearing call for use of varied communication modalities. It then implies that the teacher has to be competent in use of such modalities.

Experience seems to show that learners with hearing impairment suffer more re-adjustments in terms of academic performance. That is, they seem to lag behind their hearing peers academically. Due to the communication barriers, they seem prone to exclusion because of the inability to effectively perceive auditory sound. This factor is compounded by the teachers' inability to effectively communicate in a way that makes it possible to engage in meaningful learning interaction. In view of this, it is inevitable that the inclusion of learners with hearing impairment is one of the issues within the education field that has attracted more debates from the different stakeholders. Consequently it has been argued that allowing them access does not guarantee their success in learning.

1.3 Hearing impairment

The term 'Hearing Impairment' in this study refers to a reduction in hearing, and can be a mild, moderate or severe hearing loss. It is a generic term that includes the subsets of Deaf and hard of hearing (Ingule, Rono & Ndambuki, 1996). Sometimes, in the Ugandan context

the term hearing impairment and deafness are used interchangeably. It is sometimes used to refer to either deaf or hard of hearing.

For this particular study, the term hearing impairment will be used to refer to all categories of hearing loss. Because some frame factors like the causes, severity, time at onset, and the nature of hearing loss makes the divide between the different categories of hearing losses more difficult to distinguish. However, one thing in common among the different categories of learners with hearing impairment regardless of the degree, nature and or cause is the experience they share relating to communication barriers in a world dominated by speech. In this case, communication breakdown seems to be the main barrier to their exclusion even within the class that was meant to be inclusive according to the UPE guidelines (Mushoriwa, 2001).

Communication is an essential factor in determining one's academic performance, thus a need for further investigation. Communication in this study refers to a two way exchange of ideas, feelings, thoughts, opinions or information using sets of codes and symbols that all parties involved can understand and use effectively (Skjørten, 1997). This may take different forms thus the use of term communication modalities in this research. It was postulated that the use of several modalities may increase opportunities for learning the naturalness of human communication and in turn lead to a more flexible, efficient system which is more appealing and easier to penetrate generally (Granstrom, House and Karlsson, 2002). This goes without saying that, both the teacher and learner must use communication modalities best understood by either of them to make learning meaningful and possible.

In summary, the inclusion of learners with hearing impairment has brought into the limelight a complex issue concerning the medium of instruction used in the classroom. It is against this background that such a study is carried out on the teacher's perception and application of multimodal communication in the instruction of learners with hearing impairment in inclusive classrooms.

1.4 Statement of the research problem

The education policy in Uganda recognizes the importance of including all learners in the same setting and processes. Under the Universal Primary Education (UPE) policy guidelines of 1997 both learners with and without special needs are required to access and learn

alongside each other within the nearest schools to them. The inclusion of learners with special needs bears significance to learners with hearing impairment who for a long time have had their education provided in segregated special schools and units. The argument for this has always been the challenges they face with the varied communication and instructional modalities used in ordinary schools as opposed to that in special institutions. Expectedly, with the introduction of inclusive education practices, teachers in ordinary schools are obliged to instruct and offer appropriate services to all learners within the same environment, irrespective of learners' individual needs.

As mentioned, this is an issue that has caused a lot of controversies in the education arena and a dilemma to most of the teachers on how to effectively instruct learners with hearing impairment together with their hearing counterparts. Reason as mentioned, the major problem faced by learners with hearing impairment when educated with their hearing peers is communication (Stinson & Antia, 1999).

Hearing loss affects the child's linguistic abilities in one way or the other. For instance, it impacts on the learner's auditory perception and the English vocabulary comprehension in the world dominated by speech. Failure to access this spoken information within the immediate environment is the sound cause for the communication breakdown. However, apart from the use of speech, persons with hearing loss can adopt and use varied communications modalities to maintain the interpersonal relationship with the people they are interacting or working with. Such options may include, use of signs, cued speech, total communication, finger spelling, gestures and many others.

Communication being a two way exchange of information implies that both parties are expected to communicate in the best understood modalities. This goes for the teacher and the learner alike. Without forgetting though, human communication may naturally be multimodal, involving the interaction of modalities such as speech, facial expressions, hand gestures and body movements. Limitation of one or more of these modalities can still deprive an individual from understanding and expressing oneself effectively. It is unclear though, whether teachers are aware of such complexities. Even then, it is not clear what interventional strategies they have come up with in order to effectively instruct learners with hearing impairment with their hearing counterparts.

Based on this background, the study sought it wise to find out the teachers perceptions and application of multimodal communication in the instruction process. On the assumption that, if there was improved instruction in the inclusive classrooms, then the target for EFA would be realized. This could be a fertile area for future research in a struggle to promote the accessibility of persons with hearing impairment, as called for in the Uganda context (Uganda Communication Act, 1998).

Lastly, to further enable teachers reflect on their thinking and practice, a video-based material entitled ‘Teachers for All’ with similar sequences on hearing impairment was worked with. Sequences worked with included; partial inclusion, telling a story, finger spelling and learners who are hard of hearing. This was sought be a relevant strategy that could enable teachers reflect on their thinking and practice. The video based material involved similar classroom situations recorded from other settings where teachers used varied communication modalities in the instruction process.

1.5 Main questions

- How do teachers perceive and apply multimodal communication, in the instruction of Learners with Hearing Impairment?
- How does the video based material entitled “Teachers for All” influence the teachers thinking and practice?

1.5.1 Sub-questions

- What communication modalities do teachers use in the instruction of Learners with Hearing Impairment?
- Why do teachers use the communication modalities mentioned above?
- How does the use of the mentioned communication modalities influence on the Instruction process?
- What challenges do teachers face in using the communication modalities mentioned?
- What are the teachers’ perceptions on the video based material entitled “Teachers for All” as a strategy for improving the Instruction practices?
- In which ways has the video ‘Teachers for All’ made it possible to improve on the teachers instructional practices?

1.6 Purpose of the study

The purpose of this study is to develop an understanding of the perceptions and application of multimodal communication in the instruction of learners with hearing impairment in inclusive classrooms. Emerging issues were analyzed from the teachers' point of view. Teachers are central in any educational program if at all improved progress is to be realized. In addition, it is thought that understanding teachers' perception about different communication strategies and how they use them could be the starting point to achieved improved progress in the learning of learners with hearing impairment.

The question that may still linger in one's mind is, what is meant by improved progress and how can it be realized? One of the key factors towards this effect is to address the communication challenges experienced by teachers during classroom instruction. What happens in either the classroom or with an individual may pose several mishaps. For instance, one barrier to communicating and or being communicated to is one of such an example of a happening likely to occur. To respond positively to the Jometien 1990 conference call for "Education for All" with no exclusion on the basis of gender, sex, disability and so on, all classroom related aspects should then be attended to in the most appropriate way possible.

1.7 Justification for the study

Conducting this study was thought relevant and timely because of the debates and controversies currently revolving around the inclusion of learners with hearing impairment in the ordinary setting, worldwide and at a national level. Similarly, it was discovered that, no such kind of study have ever been conducted in Uganda apart from other countries. This being a contentious issue and in regard to teacher competence coupled with their concerns, it was thought worthy of investigation. Possibly, the complexities of how to effectively include learners with hearing impairment would to some extent be addressed.

This could also be partly the reason why learners with hearing impairment performance are slightly lower than that of their hearing counterparts. Realizing improved performance is a key to success in any education system. As *Nelson Mandela said, Education is the most powerful weapon which one can use to change the world.* Consequently, seeking knowledge and understanding of how teachers perceive and use communication in the instruction of learners with hearing impairment is considered one way of empowering them and to bring

quality knowledge and skills. This in turn may enable the teachers to prepare the learners in a manner that makes them useful to the society in which they live. Under Article 30 of the Uganda Constitution (1995), it is an individual's right and an obligation to which each and every other stakeholder in the education field should adhere to, try to address the upcoming challenges of all learners.

It is hoped that by conducting this study some of the challenges experienced by teachers will to a certain degree be addressed. Possibly new ideas will be generated from the teachers instructing learners with hearing impairment in the inclusive classrooms. Such ideas may be useful in the development of improved instruction strategies and may inform the enactment of favorable policies or laws addressing specific related educational issues. Further more, it was considered here that offered reflections on the use of video stimulated experiences was an additional measure to enforcing all the above.

1.8 Contextual framework of the Study

1.8.1 Overview of Uganda's education system

Uganda's formal education has undergone through several transitions since the 1880's when education was first introduced by Christian missionaries. The system is structured in a hierarchal manner in a 7-4-2-3 system. That is to say, seven years in primary, four years in secondary 'O' level, two years in 'A' level and three years at the University level. At the primary level, basic education is provided for leading to the award of Primary Leaving Certificate in four core subjects which include English, Mathematics, Science and Social studies. There are categories of primary schools namely; Private Primary Schools under the management of Non- Government Agencies and government aided schools. This study was carried out in one of the government aided school.

Presently, over 7.7 million children of school going age attend primary schools including those with Special Needs (Ministry of education report, 2005). Before the introduction of UPE, children with special educational needs were being instructed in special schools. But of recent, many have been enrolled in the mainstream setting through the universal primary education programme sometimes also referred to as inclusive education programme. With the advent of UPE, the enrolment of learners with special educational needs in primary schools

increased by 72.6% from 26, 429 in 1997 to 218, 286 in 2004; 117, 824 males and 100,462 female (UPE hand book, 2004).

This is an indication of the remarkable success that has been achieved by Uganda in ensuring accessibility of primary education to all children of school going age in the country.

However, This initiative and attainment of improved access is challenged by a number of issues like teacher pupil ratio, number of trained teachers or specialist teachers, imbalances in gender related issues, curriculum provisions and assessment, quality services to children with varying needs.

1.8.2 Special education in Uganda

Special Needs Education in Uganda has gone through a period of trends since its formal introduction in 1952. In the beginning, the provision of special education was purely in the hands of the Non- Government Organization (NGO), who were mainly missionaries and some relatives who needed to educate their disabled relatives. Before that, Uganda did not possess laws, legislation or policies as regards the education of children with special educational needs. Education was provided for in special schools with fewer numbers in schools for children with visual, hearing, learning and motor impairments.

Until now, inclusive education has subsequently become and seen as the way to ensure that all learners access and participate in education. It is a concept that purports the notion that learners with special needs can be active, valued, fully participating members of the school community in which diversity is viewed as the norm and high-quality education provided through a combination of meaningful curriculum. In view of this, effective teaching and learning necessitate support from the teachers who are assumed to have knowledge and skills needed to make inclusion work (Ferguson, 1995) Recent developments in special education indicates that inclusion movement has succeeded in re-channeling the special needs schools children from special schools to regular schools (Hallahan and Kauffman, 1994). Special schools however are still in existence in Uganda.

1.8.3 Education of children with hearing impairment in Uganda

In Uganda, education of children with hearing impairment started in 1958, under the British colonial rule. A unit was by then opened and instruction was purely in oral. The origin of the

oral method to communication started as a controversy between the two scholars. The French priest Abbe Charles Micheal de L'Epee an advocate for manualism and a Germany Samuel Heinicke an advocate of oralism. Which controversy stretched further, till it was passed as a resolution by the 1880 Milan conference to eliminate the use of manualism.

Nearly all schools for the Deaf then implemented the oral method and Uganda inclusive. However, this was refuted by the Deaf community at its World Federation of the Deaf conference held in Rome, Italy in 1951. The resolution of this conference changed to manualism. However, many decades since this 1951 conference, the issue of communication modalities and usage in the instruction of learners with hearing impairment still remain controversial.

This is partly due to the perceptions and beliefs people have towards persons with hearing impairment. Within the education sector, some perceive the condition as a challenging disability to handle within an inclusive classroom. It has for year's plagued people's minds, since it hinders effective communication with others. Yet, neglect may be an antecedent to isolation and retarded progress in academics. Genuinely, hearing loss greatly impacts on the learners' performance and may be a cause for further discourse where negative attributes such as; being un-cooperative, inattentive and /or academically inept is still exhibited in some educators' minds and comments (Knight and Maltby, 2000).

However, the developmental milestone of UPE currently in existence in the education children with special needs in Uganda like many other countries has to a certain extent transformed the education system. Many including those with hearing impairment are now able to access schools within their reach. In addition, a number of educational reforms in the country geared towards providing quality education have been instituted at different levels. Yet the issue of quality assurance for these cohorts remains a challenge.

1.8.4 Educational implications

Research has shown that, the educational outcomes of children with hearing impairment have not been parallel to those of their hearing peers (Braden, 1994; Moores, 1978 & 2001; Paul, 1998; Schirmar, 2000). Foremost, is the fact that they lag behind because of the inability to comprehend the length written information.

In the Ugandan context, a discrepancy in the learners with hearing impairments performance is easily monitored in the Primary Leaving Exams (PLE) taken at the end of the seven years of primary cycle of education. For example, in one of the special schools for the Deaf, compilation of results obtained from the national examination results indicated the candidates performance from 2001 to 2004 as follows; - (refer to the table below).

Table 1: Primary Leaving Exam results for learners with hearing impairment for the year 2001-2004

YEAR	NO.OF CANDIDATES	DIVISION						
		1	11	111	1V	X	Y	U
2001	14		3	2	5	1	5	-
2002	14			5	2	7	-	-
2003	20		2	4	-	-	-	12
2004	14			1	3	-	-	10

As highlighted in the table above, learners with hearing impairments performance is still low as compared to the required academic standards at the end of seven years of primary education. In the Uganda context, a candidate obtaining division 1 is considered to have performed very well, divisions 11 and 111 moderate, 1V fair, X, Y and U are grades characterized as failures. This partly re-affirms the learners with hearing impairments performance. At the moment there are no statistics obtained by learners instructed from the inclusive classrooms. Based on this performance, the underlying assumption is that teachers too have a big role to play.

1.9 Teacher training and competencies

Before entering the work force teachers in Uganda are supposed to undergo training in teacher education. Training of teachers is provided for by the different institutions; universities and other tertiary institutions. In Kyambogo University, where the writer works, there are two faculties re-designed to train teachers, the Faculty of Education and the Faculty of Special Needs and Rehabilitation. The Faculty of Education is responsible for training teacher trainers

in general education and the Faculty of Special Needs and Rehabilitation is solely responsible for training special needs teachers.

To answer to the call of “Education for All”, both faculties went ahead to re-design the courses offered. By the time this study was being conducted, both the faculties had started to re-structure their programs. The Faculty of Education included a component of special needs in its curriculum and the Faculty of Special Needs and Rehabilitation shifted from offering a specialized diploma course to a general diploma course in special needs education. These are strategies aimed at equipping the upgrading teachers with the basic knowledge and skills required to meet the diversified needs of special needs children accessing inclusive schools.

However, the effectiveness of the modifications made and quality of training provide to teachers is still questionable. No follow ups yet made to establish whether the knowledge and skills imparted to the teachers was of quality enabling them produce tangible results.

Teachers’ competence as discussed above is attributed to the training attained and the attitude exhibited.

1.10 Personal experience

Throughout the writers working experience with children and adults with hearing impairment at both primary level and institution of higher learning, noticed was the barrier to communication experienced by many people who desire to interact with learners with hearing impairment. However, in the quest to communicate with them, many frequently find alternative ways in which to communicate. Based on this, reflecting on the teachers perceptions in primary schools and possibly observing their practice would help to shed more light on the phenomenon studied, multimodal communication.

The other experience realized was, during the administering of primary leaving exams (PLE) in Uganda. Majority of the learners with hearing impairment were not able to interpret the written examination questions. Even though there were interpreters in place, there was failure to understand the questions examined upon. According to these candidates, blame was put on the teachers who did not ably communicate the lesson content to them in the most appropriate way possible, during classroom instruction. Plausibly, the argument raised by learners with hearing impairment was that most of the time teachers used speech during the instruction which posed a difficulty in understanding the information taught.

2 LITERATURE REVIEW

2.1 Introduction

Literature review is a body of text that aims to review the critical point of current knowledge on particular topics. The chapter therefore, presents topics on multimodal communication, understanding hearing impairment and its consequences, meeting learners' needs with hearing impairment, academic challenges, inclusion and inclusive education, teacher preparation for inclusive settings, a communicative environment, development of communication skills and the theoretical frame for the study.

2.2 Multimodal communication

Over the past years, the concept of multimodal communication has emerged as important and effective communication strategy meant to increase learning potentials in learners (Poteau, 2002). Realizing learning potentials in classroom requires a common understanding of the teacher and the learner. This can only be enforced through the use of common communication modalities. However, despite the recognition, Ademokoya (2008) observes that choosing an effective and acceptable communication modality is the most challenging factor particularly in inclusive classrooms.

The term multimodal in this study refers to use of two or more communication modalities as applied in classroom instruction. On the other hand the term modality simply means a mode or a way of exchanging information between people. Why multimodal communication in classroom instruction? The use of several modalities are not only of great interest to creating a less restrictive environment, but also important to many people with sensory impairments in enhancing communication and interaction (Ganstrom, House and Karlsson, 2002).

Importantly, apart from the emphasis on the use of multimodal in the instruction of learners with sensory impairment in learning, from time to time any other person may find oneself using more than one communication modality at ago as need arises.

Instruction of learners with hearing impairment in inclusive classrooms require use of varied communication modalities such as, manual modalities (signs, gestures, child- devised gestures and finger spelling), oral modalities (speech or lip-reading, oral- auditory) and total

communication (involving a combination of several modalities oral, manual, English sign supported systems, reading, writing, drawing) and so on. However, in several inclusive classrooms today, the commonly used communication modality by the teachers is speech which may not easily be comprehended by learners with hearing impairment due to the limitations in auditory output. Coupled with that is the impact hearing loss poses on an individual in terms of communication opportunities (Heward, 2000).

2.3 Hearing impairment

Hearing impairment occurs when there is a reduction in the hearing ability. The advent of hearing impairment in an individual calls for the use of appropriate and adequate communication modalities between the sender and the receiver. In this case, hearing impairment is used as a generic term indicating a hearing loss which may range in severity from mild to profound and it includes two subsets ‘deaf’ and ‘hard of hearing’ (Lokanadha, Ramar and Kasuma, 2007).

A Deaf person is one whose hearing loss precludes successful processing of linguistic information through audition, with or without a hearing aid. Similarly, IDEA defines deaf or deafness as a hearing impairment so “severe that the child is impaired in processing linguistic information through hearing, with or without amplification” and which adversely affects the child’s educational performance. Whereas, persons with the hard of hearing condition has a fluctuation in their hearing which condition may not adversely affect their performance if the necessary support is given. They in other words have some residual hearing sufficient to enable successful processing of linguistic information through audition and may benefit from the use of hearing aids though not a guarantee.

Further categorization of hearing loss can be as per the age of on-set either pre-lingual (before) or post-lingual (after) the acquisition of spoken language. Hearing loss could be defined in terms of their degree or severity, age of onset, part of the ear affected and or the type. Losses normally range from mild to profound and is measured in decibels (dB). Zero (0dB) is the designated point at which people with normal hearing can detect sound, mild deafness is considered to be between 15 and 20 decibels, moderate 40- 65 decibels, severe 65- 95 decibels and profound more than 95 decibels(Ingule, Rono & Ndambuki, 1996).

2.3.1 Hearing impairment and its implications

Generally, all persons with varying degrees of hearing loss have got difficulty interacting with the auditory input from within the environment. Persons with hard of hearing condition using amplification (hearing aids) may be able to perceive the auditory information to a certain extent, with some limitations. Such limitations are caused by factors like, noise levels, functionality of the hearing aid devices, and the users' attitudes, knowledge and skills to mention but a few.

To identify a learner with hearing loss, the following tips may be useful for the teacher, the child's failure to participate through oral classroom activities, frequently asking of pardon, cupping of the ear to perceive information, staring in disbelief or staring at a teacher when a question is asked and close looking at the teacher, when the learner articulates words poorly and other physical related problems.

Somehow, children with mild to moderate hearing loss (hard of hearing) may often function in the general education classroom with minimal adjustment, though this may not always be the case for every learner. For the child born deaf and lacked the exposure to the auditory input or stimulation within the environment the consequence may be severe. For example, they are unable to hear the flow of spoken language around them, neither to lip-read what is being spoken. Nonetheless, be it mild or severe, hearing loss often brings with it several challenges and the major one is communication competence. Support may be required in the development of communication competence for whichever hearing loss an individual is faced with.

2.3.2 Learners with hearing impairment needs

Today learners with hearing impairment are being educated together with their hearing counterparts in the same setting. Understanding the varied needs of learners' is one of the important factors for achieving success in such educational setting. This is why Vygotsky introduced the Zonal of Proximal Development in his social development theory. According to him, interaction between the learner and his environment known as the ZPD (Zonal of Proximal Development) must be established first.

The Zonal of Proximal Development (ZPD), is the distance between a student's ability to perform a task under adult guidance and /or with peer collaboration and the learners ability to solving the problem independently. Knowing how the ZPD operates in an ordinary classroom could be a better strategy in meeting the learner's needs. The range of skills according to Vygotsky that could be developed with guidance and support exceeds what can be attained alone. Because of that no social interaction can take place without communication. The support learners with hearing impairment receive in terms of communication will definitely lead to realization of potentials and improved performance.

Controversies like the oralism and manualism debates that began centuries ago with Samuel Heinicke in Germany and Abbe de l'Eppe in France, together with the Milan conference claims should not be seen as continuity in this twenty-first century (Paul & Quigley, 1994). Several other scholars too have highlighted the need to use different communication modalities with controversial views. It is important to mention that, the oralism communication modalities were at first adapted for use in many countries, including Uganda.

However, this was an idea refuted to by the Deaf community and Sign Language became an underground language for communication that time. According to 'The World Federation of the Deaf', if inclusion in schools and society is to be on an equal basis, sign language has to be used as one of the communication modality in the instruction process. Some opponents of oralism still too contend that denying learners with hearing impairment the oral-auditory input is like denying them a language to communicate.

Despite the continued controversies, the international congress on education of the Deaf held in Milan gave rise to the use of manual means of communication. Irrespective of that decree, considering the current educational provisions in place where instruction is provided for in the same setting, use of several communication modalities is absolutely required for use in a classroom.

In essence, education programs designed should be geared towards meeting the learners diversified needs, including those with special educational needs within the same setting. Inclusion then is about a paradigmatic shift which has implications for the way schools are organised, the way teachers teach and for the values which underpin the whole education

system (Mutasa, 2000). To reduce on to the academic related challenges experienced by learners with hearing impairment therefore, there is need to pay particular attention to issues that may cause hindrances to effective instruction.

2.3.3 Academic challenges

Learners with hearing impairment are among other special educational needs school children considered for inclusion. Their inclusion does not depend on whether the loss is severe or mild and level of intelligence, but the support given to the child. However, this is an area that has triggered a lot of controversies and not only among the educators but also the Deaf community. The Deaf community exists as a separate cultural- linguistic group within our society and has exhibited considerable cohesiveness for more than a century (Moore, 2001).

In a similar way, in one of the studies conducted in Australia and Norway, it was reported that “some countries and their school systems see education of the deaf students as different from regular education, particularly in the light of the philosophical, cultural, social and linguistic perspectives that they adopt about the status of “deafness”, sign language and of “deaf communities”, including the recognition of characteristics of such communities (Johnston, 2001).

Irrespective of that, learners with varying hearing losses have gone ahead to access the ordinary schools settings. For instance, in the (Ministry of Education report, 2008) it was reported that, out of 11, 787 children with special educational needs, learners with hearing impairment constituted 29.6% of that population, in the ordinary school settings. This is the group that constitutes the highest percentage among the rest. Therefore, the decisions teachers have to make and actions undertaken can at the end of the day deter learner’s progress.

The problem that seems to plague every teacher in the ordinary school setting is how to communicate to learners with hearing impairment. This is because a hearing loss often brings with it communication problems. Communication problems can contribute to social and behavior difficulties (Kirk, Gallagher, Anastasiow & Coleman, 2006). It further can lead to exclusion and low levels of academic performance as compared to other counterparts in the same setting. According to Vygotsky (1978), in the social world, deafness is considered a more severe handicap because it prevents mastering of speech, blocks verbal communication

and bars entry to world of culture, and therefore disrupts a person's social connections in a more substantial way than blindness”

Contrary, in one of the studies carried out in Norway, it was reported that the child's level of hearing loss, whether mild, moderate, severe or profound does not have any impact on the legal right to his or her education (Hyde, Ohna and Hjulstand, 2004). In view of this it can be argued that, any category of hearing loss simply requires modification of the physical, social and instructional environment to derive benefits from the general education (Lokanadha, et. al, 2007). Such modifications may include services from both specialist like educational audiologists and other related personnel in trying to address the academic related challenges that hearing loss present to the child in education. Such academic programs that mainstream learners with hearing impairment can further be supported by the trained personnel, such as specialist teacher, interpreter and speech-language pathologist if the schools can afford.

Other strategies that may make it possible for learners with hearing impairment to comfortably be accommodated in the mainstream classrooms may include a combination of other provisional aspects such as light provision, classroom arrangement, child positioning and teacher positioning during classroom communication. Enforcing the above will definitely mean improved service provision. Consequently, it can be argued that the practice of educating learners with hearing impairment with their hearing counterparts can lead to several advantages. Such as, learners can more efficiently learn to communicate with their hearing peers, feel less physically and socially isolated from other children and they can more easily access certain academic or vocational opportunities provided for in a wider community.

2.4 Inclusion and inclusive education

UNESCO's definition of inclusion stems from the pioneering 1994 Salamanca conference and emphasize that inclusion is a movement directly linked to improvements in the education system as a whole. Improvement can only be realized if quality education is provided to all learners, with or without special educational needs. It therefore, requires positive attitudes from the children and those implementing it so as to create a community for all (Ainscow, 1994; UNESCO, 1997).

The term “Inclusion or Inclusive education” has had different interpretations from country to country, setting to setting and individual to individual.

Milner (2000) description of the term where he referred to inclusion as a reform process aiming at ensuring that all learners regardless of their physical or sensory defects access the whole range of educational and social opportunities offered by the school. Educating learners with hearing impairment with their hearing peers could in part be referred to as the inclusionary provisions. In such broader context inclusion entails a framework within which all learners regardless of their conditions and disadvantages have equal accessibility to available social, political, educational and economical opportunity services in society (Vadey and Anongo, 2004). Discriminatory acts on the basis of gender, cultural or linguistic differences, abilities or disabilities, which inhibit the learning and development of learners, are to be avoided if inclusive practices are to take place in the mainstream schools.

In Uganda, this development of inclusive practices as mentioned earlier has been enforced through the Universal Primary Education (UPE) program. A total of 11, 787 government owned schools was reported in the annual school report of 2008. Right from its conception to its implementation it was incumbent upon all government aided schools to admit all categories of learners irrespective of the differences. UPE is defined as, the state Universal Primary Education program where tuition fees are paid by government, where the principle of equitable access to conducive quality relevant and affordable education is emphasized for all children of all sexes, categories and in special circumstances (Uganda Education Act, 2008). Consequently, several measures have been put in place to ensure that this is effectively implemented as stipulated in the guidelines. This of course includes, the training of teachers in special needs education, awareness raising on the learning needs of learners with special needs and policy provisions that streamline disability and special needs in education to mention but a few.

The increased teacher training, additional structure through SFG (School Facilitation Grants), reduction in teacher pupil ratio, funds to schools and curriculum modification. Furthermore, a system has been enforced whereby different services are being provided to learners with special educational needs during the national exams. Among such services are the interpretation services for learners with hearing impairment, appointment of special needs heads at the district level and the longest department of special needs education established in the Ministry of Education and Sports in 1983. Gradual improvement has been realized, although there are still constraints or challenges faced. Expectedly, inclusive education practices are not without some constraints (Vaughn & Schumn, 1995).

Outstandingly, the societal attitude and objections towards special educational needs children in the various communities are still among the other challenges exhibited. In specific to the classroom, challenges range from difficulties in securing the necessary social fusion between the teacher, non- disabled and special needs children to the problem of determining the appropriate instructional measures acceptable to all in an inclusive setting. It is crucial then, especially for the teachers to identify those aspects of learners' needs that have the greatest relevance for intervention, adjustment, learning and motivation within a classroom situation.

2.5 Teacher preparation for inclusive settings

Teachers are the back bone of every educational development in the nation. The whole system hinges on their committed effort exhibited in terms of their perception or views of the varying educational issues and practice within the various settings. Consequently, they are the controller of the pace and intensity of the teaching and learning process; and it is required of them to support the social and academic participation of each and every learner. The teacher should however, not deal so much with the biological factors, but as much as with the learner's social and academic consequences (Vygotsky, 1978).

In other words, the teacher should be mindful of the holistic development of the child. Basically, the teachers' role is to encourage learning and base the instruction on the learners' current level of functioning by utilizing his or her strength, past experiences and interests (Mayer et. al, 2002). Not focusing on the child's disability, but an endeavor to identify areas of need in the child and offer appropriate support. Instruction based on the child's level of understanding or yields to positive desired learning outcomes.

As far as classroom instruction is concerned, teachers in an inclusive environment need to acquire extra knowledge and skills that can enable them support learners with diversified needs. Change in teacher training will then be navitable in ensuring that this is effectively done, and this applies to both the in- service and distance trainers. Teacher development has to be at the heart of every initiative for developing inclusive practices in schools (Booth, Kari and Strømstad, 2003).

Teacher acquisition of knowledge influence their conceptual and practical development as well as professional undertakings like facilitating teaching and learning, provision of support and care to all learners' performance and improving classroom behavior (Wormanæs, 2008).

More to this are the teachers' perceptions which may be elicited in different ways including the working with and observation of other colleagues in the similar classroom context.

2.5.1 Teachers' perceptions

Teacher's perceptions are therefore imperative, if transformation is to be realized in the provision of services to children with special educational needs. A perception is a process of attaining awareness or understanding of information. Perceptions allow each and every individual to construct a "personal theory of reality" (Blake and Sekular, 2006).

In most countries where attempt has or is being made to implement inclusive practices, the adoption of the practice particularly in education has posed great challenges to teachers in the ordinary classroom settings. Striking a balance between the expected outcome of inclusion and the learner's divergent needs is still a problem. In the same way, the choice of a communication system that fits each and every other child seems to be complex. Moreover the principle of child development upholds that every child should be stimulated to learn in his or her respective classroom where possible in his or her own language. The added complexities come up with increased enrolments in those classes. In the case of Uganda for example, the annual school report of 2008 indicated an increase in numbers of learners total of 7,963,979 pupils' nationwide against 159,516 teachers (1:50) in primary schools. This figure is arguably thought to be high if teachers are to be able to offer quality services as required.

2.5.2 A reflective teacher and reflective teaching

Reflecting on something entails a frame work within which ideas are manipulated, in an effort to cause change. In particular, this study adopted the use of a video- stimulated material entitled "Teachers for All" which was sought relevant in helping teachers developing an understanding of inclusive practices by reflecting upon other people's practices. It consists of recorded audio-visual sequences of different classroom situations, followed by discussion questions.

'Reflection' refers to an activity or process in which an experience is recalled, considered and evaluated, usually in relation to a broader purpose (Richards, 1990). One develops an understanding of his or her own practice before and then through observing others practice his

or her thinking and practice may change from the original one. Acquisition of additional knowledge, experience and skills may vary from individual to individual depending on one's need. It may be an added advantage to teachers, in such a way that it would lead to improved performance in terms of, lesson organization, time management, teaching skill, classroom interaction, method or technique use, instruction procedures and so on.

Bartlet (1990), points out that becoming a reflective teacher involves moving beyond a primary concern with instructional techniques of "how" to questions of "what" and "why" that regard instruction and management techniques, not as ends in themselves, but as part of broader educational purposes. Asking the 'what' and 'why' questions can improve on the teacher's original perception and practice of what inclusion is supposed to be. Therefore, it was deemed necessary for this study to adapt the use of the video- stimulated material entitled "Teachers for All", to find out its influence on the teachers thinking and practice or performance in general. The video consists of sequences related to the teaching of children with varied special educational needs in inclusive classrooms, hearing impairment inclusive. Related sequences to the phenomena being studied were identified and teachers worked with them and these included finger spelling, partial inclusion, storytelling and hard of hearing learners.

Reflections on instruction of learners with hearing impairment together with the hearing in the same setting is paramount because of the impact hearing loss poses on an individual in terms of communication. This seems to be a challenge for most of the teachers in the inclusive classrooms. Affirmative of this view, Ademokoya (2008) notes that there must be a way out of these communication hurdles since inclusion has come to stay

As a central person in the classroom, a teacher in this case has to be supported to develop competence and a positive attitude towards effective instruction of all learners with and without hearing impairment in the same setting. This could then be further enforced through reflecting upon the current practice in relation to the desired outcome. In addition to effective instruction there is need to consider provision of other services such as, assistive technology, a communicative environment, specific accommodations, adjustments, personal support and relationship could also be among other considered factors in the facilitation of the child's learning.

2.6 A communicative environment

Communication is an essential aspect of normal development for all humans. It is a means by which information is exchanged, the interchange of feelings, thoughts and opinions using sets of codes and symbols which partners can understand and handle occur (Skjorten, 1997).

Partners with different backgrounds using similar communication modalities to exchange ideas and feelings can lead to effective understanding of each other without any constraint.

Communication is an inherently social phenomena and a transactional process of creating meaning. It is certainly at the core of interaction and mediation, as pointed out by Vygotsky (1978); Brunner (1996); and Feuerstein (1991). It is a key to improved interaction be it in a classroom or the community in which one lives. Communication is also one of the core concepts called for by (Englund, 1997) in the education system. Without communication, there will be no education, no matter how qualified and relevant the adaptation of content, methods and organization seems to be (Johnsen and Skjorten, 2001). It is a means and can be of different kinds, people can communicate through writing and reading, with technology such as telephones, hearing aids for the hard of hearing, speech, signs, to mention but a few.

This notion is in line with Vygotsky's' position on communication which focuses on the connections between people and the social cultural context in which they act and interact in shared experiences through use of tools such as speech & writing, signs to mediate their social environments. Tools according to him serve solely as social functions or ways to communicate needs and he believed that the internalization of these tools leads to high thinking. Such high thinking if applied in classroom learning for learners with hearing impairment can best be attained by use of multimodal communication.

A classroom is an education system where communication takes place between the teacher, learner and materials. For a classroom having both learners with and without hearing impairment, it is important to consider the choice and usage of appropriate communication modalities when transmitting information or knowledge. The communication modalities used in the classroom is one instructional strategy for improved performance associated with the education of learners with hearing impairment. Conspicuously, a hearing loss often causes a barrier to communication and learning. But hearing loss is not the issue because communication is the central tenant of classroom instruction and interaction (Bodner-Johnson and Sass-Lehre, 2003).

Experience has shown that speech is the most conventional medium of communication for all humans (Bakare, 1988). Nevertheless, with a variation in needs alternative modalities could be viable. In most cases difficulties arise because of the cultural and linguistic needs as well as individual barriers of learners. Comparing the classroom to a communication system where the flow of the messages between the teacher and the learner is effective, it is deemed necessary in today's educational institutions. The systems may not only benefit a learner with hearing impairment but other hearing classmates as well as the teacher. Therefore, communication serves as a model for teacher learner interaction and an avenue to facilitating the instruction process. Notably, lack of understanding and withdrawal is impeded by lack of communication with those around the child.

2.6.1 Classroom communication

Today's classrooms are more complex social systems than ever known because of the practice of inclusive learning practices and the fact that they include learners with diversified learning needs. This dynamics of classroom poses unique instructional demands on the teachers who have to think not only of the diversity this brings to the choice of methods but also the manner in which information is delivered and shared in the classroom. Classroom communication is about using suitable communication modalities to convey and decode ideas or meanings, to exchange views, explain processes or demonstrate skills (Buscemi, 1996). This view seems to conform to Ekwana, (2003) assertion that classroom communication is the most important issue to consider when discussing on successful teaching and learning experiences in a learner with hearing impairment.

However, even with this recognition, one of the challenges faced by learners with hearing impairment in inclusive settings is perceived deprivation of communication opportunities. Communication is a vital tool that may convey essentially the same educational information, the same meaning, and may be received through different ways (Vygotsky, 1978). The teachers' choice of multimodal communication approach is deemed to create a learning environment which supplies learners with hearing impairment with alternative means through which they can interact and develop their potentials in education. Thus for teachers to be able to support and compensate for their communication needs with the use of multimodal approaches demystify the disability and makes inclusion of learners with hearing impairment possible.

Given this frame factor it is imperative for teachers and all the child care givers to distinguish between the type of modality to use and the learners' needs. This if possible should be central in the decisions teachers make of classroom instructions. In addition, teachers are essential players in the classroom learning processes. Their ability to ensure that this is effectively done and try to use varied communication modalities that meets the learners with hearing impairments needs is assumed important. These notions are among the many strategies that the teachers may consider in pursuit of the provision of accessing inclusive classes and this seem to progressively fall behind the average child in achievement (Ingule, Rono & Ndambuki, 1996). This is because the learners and the teachers spend most of the time in communication endeavors, other than in actual school work.

The choice of communication modalities to use during instruction may be a challenge to most teachers. This is because the communication modalities chosen or identified for use should not only be capable of including a learner with hearing impairment or improve his or her academic performance, but it must be one that promotes learning in other classmates too. Once such a communication modality is established, both the social interaction and academic achievements of all learners will greatly be enhanced (Ademokoya, 2008). The teacher will equally become more motivated to work for the attainment of all the individual learners' needs and the broader educational goals.

In this case, experiences of others in a similar setting, practicing inclusion can be drawn upon on various related aspects needed to improve the system. A video-based material entitled "Teachers for All", as discussed before was adapted for use and teachers thoroughly worked with it during the data collection process. It motivated and improved their understanding of the inclusion practices and led to the realization of desired progress. As explained in the video, teachers ensured use of the various communication modalities and there were sign language translations and audio text versions all catering for the needs of varied learners with special educational needs.

2.7 Communication modalities

2.7.1 Definition of the modalities

Oral modalities include the auditory- verbal methods and the auditory-oral method; speech, and speech reading or lip-reading, (Kirk, et.al 2006). ‘Auditory-oral’ is simply an umbrella term used to describe strategies that rely on the effective and consistent use of amplification and emphasize the importance of intelligible spoken language as a goal’.

Whereas, manual communication is a general term for the visual transmission of information by pictorial or ideographical representations produced by the hands, arms face and body. Kirk, et.al (1983) asserts that, a manual approach is simply sending information with our hands and arms and receiving information with our eyes. This type of communication approach may not easily be used to teach children with hearing impairment, especially children who are deaf, because of their inability to perceive auditory information at all, with or without amplification. Manual methods include the various types of Sign language systems and finger spelling. The application of these methods depends on the severity of the hearing loss, the setting and teachers competence. There are several communication modalities that can be relied upon for use in classroom instruction where learners with hearing impairment are inclusive. Some of the communication modalities include the following;

2.7.2 Speech reading

Speech reading (the current, more accurate term for ‘lip-reading’) is an example of mapping from one communication channel to another, in this case from the auditory to the visual (Sapir, 2004). It is a visual interpretation of spoken communication and purposely used to teach children with hearing impairment. Particularly how visual information is used to understand what is being articulated around the mouth. In most cases, children with hearing impairment experience difficulty in perceiving speech sounds and speech production, due to lack of auditory input from within the external environment.

2.7.3 Gestures

Gestures are simply signals used to communicate meaning which can be interpreted within a particular context. It involves movement of hands, arms, facial expressions, and so on;

gestures such as pointing, nodding the head can be made and some are culturally determined. Gestures carry a lot of linguistic information, much as words do in spoken language.

2.7.4 Finger spelling

Finger spelling or dactylology is a communication system where the manual alphabet is used to represent each letter of the ordinary English alphabet. Letters of the English alphabet are represented by the different hand positions. It is occasionally used to spell out certain words, for instance academic words or new terminologies that may crop in during the communication process (with no signs or in abstract). Other functional words like the articles, prepositions, conjunctions, certain English Morphemes such as 'ed' and 'er', names of people and places are represented by the hands/fingers (Riekehof, 1990). The principle can be applied to any language which has developed an orthographical system. This communication modality is considered pertinent when interacting with learners with hearing impairment because it facilitates the interpretation of words that may not be easily expressed in signs.

2.7.5 Sign Language

Sign Language (SL) is the first (or preferred) language of nearly all persons with hearing impairment in Uganda. Based on the World Federation of the Deaf (1993) definition, Sign Language consists of a visual-gestural language, which involves the use of hands, eyes, face, mouth, head and the rest of the body. It is visual in such a way that, information is perceived visually and not auditory.

Sign Language is an independent and complete language with a unique vocabulary. It has a structure and grammar different from that of written and spoken English. It is considered an indigenous language for the deaf. Uganda is one of the countries in the world that has recognized and promoted sign language as an independent language of the minority deaf cultural cohorts. The Constitution of the republic of Uganda (1995), under cultural objective XXIV states that, *the state shall promote the development of sign language for the deaf; and d) encourage the development of a national language or languages.* By interpretation and implication, sign language is considered here as an independent language and rightful language and in its own entity.

2.7.6 Sign English Systems

This is an exact representation of the English Language through the use of signs, where a sign is used for every spoken word. They have been devised for the purposes of teaching in an educational setting and to help children with hearing impairment understand the English vocabulary.

2.7.7 Total Communication

Total Communication (TC) is a philosophy that involves using different methods of communication at any one time. It is more of a philosophy rather than an approach which includes the oral, manual, auditory, and written. It is also referred to as simultaneous method or combined method, that combines finger spelling, signs (one of the several Signed English Systems), speech reading, speech, and auditory amplification (Kirk, et. al, 2006). This method creates more restrictive environment for every child, and is the most commonly used in today's classrooms, more so the inclusive settings.

Ademokoya, (2008) believes this type of mode works best than others. Total communication is the bridge between oralism and manualism. It encourages use of several modalities at a specified period of time. Methods that fit to the child's need and help to reduce educational limitations that are likely to occur during the instruction process. Total communication provides unlimited opportunities for developing language competence within children with hearing impairment and those without (Ekwana, 2003).

In the classroom, there are situations when spoken communication might be appropriate. Other situations where signing might be appropriate and others would call for written and others simultaneous may work best (Solit, G., Taylor, M., and Bednarczyk, 1992). In other words the capacity to communicate need not only be restricted to speech or a sign alone but any modality is appropriate as long as it is perceivable, producible and understandable by those communicating.

2.8 Theoretical frame work and related literature

Discussion of this study is based on L. Vygotsky's formulated social and cultural theoretical frame work for the most comprehensive, inclusive and human practice of special education. The ideas and arguments advanced in this theory are of relevance to the phenomena being

studied, teachers' perceptions and application of Multimodal Communication during instruction.

As pointed out by Gindis (1999) in Vygotskian theory, the core aspect is the understanding of the nature of disability and finding means for compensating for it. It therefore implies that for teachers to support any learner, it would require the understanding of his or her needs before support is given. In specific, for a child with hearing impairment the major need would be communication.

Communication only takes place when two people interact, and interaction can't take place unless both parties use a common code. In Vygotsky's approach, the terms 'scaffolding' and 'mediation' were frequently used to refer to interaction. He brilliantly extended the concept of mediation in human- interaction to the use of signs as well as other tools (Vygotsky, 1978). Children can do better with the assistance of others, though they have something already within their mental process, which he referred to as the ZPD (The Zone of Proximal Development).

The zonal of proximal development according to Vygotsky furnishes educators with a tool through which the internal course of development can be understood. With reference to the phenomena studied, some of the psychological tools may supposedly be of great necessity in increasing the learners understanding, learning and development. Tools such as; various communication means such as, sign systems (language, writing and different symbolic systems), created by societies.

To study children's communication and the function of egocentric speech, Vygotsky set up a task situation that required children to engage in cooperative activity with others who did not share the same language (foreign speaking or Deaf children). The implication is that teachers have to identify and ensure use of varied communication modalities in classroom instruction that meets the needs of all. Deafness prevents mastery of speech, blocks verbal communication and bars entry to the hearing world, and therefore, disrupts the person's social connections in a more substantial manner" (Vygotsky, 1978). A contentious issue to be mindful of in the provision of services in the inclusive classrooms. Deafness and hearing impairment are two terms used to refer to hearing loss. A tenet for this theory then is to establish the learner's individual differences.

3 METHODOLOGY

3.1 Introduction

This study investigated how three teachers' perceived and applied multimodal communication in the instruction of learners' with hearing impairment in inclusive classrooms. Further explored how the video based material entitled 'Teachers for All' influenced the teachers thinking and practice.

In order to understand this phenomenon, the following questions were addressed. What communication modalities teachers' use in the instruction of learners with hearing impairment, why use the communication modalities mentioned how the use of communication modalities influenced instruction and challenges faced. Further focus was the teachers' perceptions on the video based material entitled "Teachers for All" and how the video made it possible to improve on the teachers' instructional practices.

The chapter presents the general conduct of the study by highlighting the research design, methods of data collection, selection of participants and criteria, research instruments and procedure for data collection, main data collection, organization and analysis of data, issues of validity, reliability, Generalizability and ethical considerations.

3.2 Research design

The phenomenon studied was teachers' perceptions and application of multimodal communication in the instruction of learners with Hearing Impairment. It was considered necessary because of the controversies revolving around the inclusion of learners with hearing impairment and communication challenges faced

To find out teachers perceptions and practice, a descriptive and explanatory qualitative case study design was applied. A qualitative case-study design is an empirical inquiry that investigates contemporary phenomenon within its real-life context when the boundaries between the phenomenon and context are not clearly evident and in which multiple sources of evidence are used (Yin, 1994). Consequently, the qualitative paradigm aims to understand the social world from the viewpoint of participants through detailed descriptions of their

cognitive and symbolic actions, and the richness of meaning associated with observable behavior (Wildemuth, 1993).

Though a case study investigates a single individual, group, incident or community in depth, the choice of the design was made with the assumption that it would widen the chances for interacting with the participants. It consequently led to the attainment of their views on the use of diversified communication modalities during classroom instruction, within the planned time frame. The great strength of case studies as applied here in this study was that it allowed the researcher to concentrate on a specific instance or situation and to identify the various interactive processes at work (Judith, 1999). A specific instance was identified and studied in depth, with different aspects taken into consideration during the process as presented in the discussion chapter.

3.3 Methods of data collection

The methods of data collection used were observation as the main, interview and school files. The study adapted some of the aspects in the Total Communication Checklist and Assessment developed by (Waldo, Bernes & Galen 1981) in the structuring of both the observation and interview guides. This was a checklist developed to check on the readiness for symbolic communication, preference for speech, preference for signing, and preference for communication boards.

The overall objectives of that checklist was to provide an indication of the students' awareness of interaction within the total environment, to indicate the student's present communication strategies and additional assessment, and to allow teachers and other staff contribute to the communication assessment and to determine the appropriate communication mode, which was considered of relevance to this particular study.

3.3.1 Observation

Participants for the study were observed from their respective classrooms. Observation studies are those that “involve the systematic recording of observable phenomenon or behavior in a natural setting” (Gorman and Clayton, 2005). Observing people in their natural setting enables the investigator to understand issues based on their perspective and data consists of detailed descriptions of their activities, behaviors, actions and the full range of interpersonal

interactions and organizational processes as part of human experience (Patton, 1990). Observation method also permits rich and detailed observations of few cases and allow building up of an understanding of the practices as they emerge in specific context (Durrheim, & Blanche, 2002). In this study few cases were worked with and observed from the classroom context. Although observation is considered superior to data obtained directly from research participants, it is more time- consuming and that some of the behavior or phenomena scheduled for investigation through observation necessitated a longer period of time to be able to obtain reliable data (Gall, Gall & Borg, 2007).

The observer assumed a non-participant observer role, by acting primarily as an observer and not participating in the classroom activities. In other words, interaction with the teachers and the learners was minimal. This was to maintain objectivity and a scientific outlook of the occurrences. During the process, both descriptive and reflective notes were made to cover and register all events taking place in the learning process in order to obtain rich and quality data.

3.3.2 Interview

Participants were interviewed based on the recorded classroom observations and the video material 'Teachers for All' sequences worked with. The interview process consisted of oral questions asked by the interviewer and oral responses generated by the research participants (Gall, Gall and Borg, 2007), to be explored in the process. Areas of concern to be focused on were clearly highlighted and systematically followed during the session. Areas such as, the communication modalities the teachers used, applied in what situations, the reason for choosing those particular modalities and the challenges.

During the process of interviewing, the interviewer built trust and rapport with the respondents (focused interaction) and recorded other non-verbal expressions necessary for the study. Time was agreed upon and the process elucidated different responses from different perspectives, thus reducing the comparability of responses (Miles and Huberman, 1994). This increased the richness of the information obtained. Further strength of the interview noted was that, it allowed freedom and flexibility to adapt to the content and probe in depth on the related aspects for the study.

However the limitation of interviews noticed was that they consumed a lot of time and if not controlled, issues other than those related to the phenomena studied could arise. Regardless of

the limitation, justification for the choice of interview was based on the fact that it enabled direct observation of the participant's emotions or feelings and led to attainment of their views, experiences, challenges and accomplishments. Evidently, there are many different types of instruments, methodologies and techniques available to researchers (Knapik, 2002; McCleod, 2001), and each type has its own approach to the gathering of data. The choice of the above mentioned methods were basically decided upon due the nature of the phenomena studied.

3.4 Video-based material 'Teachers for All'

A video-based material entitled "Teachers for All" was worked with in between the sessions. This is a material that consists of typical inclusive classroom instruction practices from other settings other than the studied area. It has sequences with the following titles, hearing, seeing, learning, moving and understanding inclusion. In specific sequences on hearing from the video-based material were worked with, the finger spelling in which the teacher was teaching new vocabulary to learners with hearing impairment, partial inclusion where a learner who is hard of hearing was included and storytelling to both learners with and without hearing impairment.

Each sequence was followed by discussion questions presented as texts. There are versions with sign language translations and voice descriptions describing what is going on in the video. Specific focus is on the instruction of learners with different kinds of disabilities and understanding of inclusion. The material was introduced to the teachers as a strategy to help them reflect upon their thinking and practice.

3.5 Selection of research participants

There were three research participants selected for the study. The targeted and accessed participants for the study were licensed and certified primary school teachers. Two with a training background in special needs education. One attended a two year full time course at the campus (conventional student), the other three year course off campus (distance education) commonly known as distance education and the third had a general training background of teacher education.

The three teachers were purposively selected from one inclusive school from three different classes. Purposive selection strategy was to engage the three cases which taught three different classes. That is lower, middle and upper respectively. The selection is in line with Merriam (1988) description that it necessitates the discovery, understanding, and gaining of insight of the phenomena studied. Based on this view, it was considered that informative views and fresh perspectives from the participants were credible enough to shed light on the phenomenon under study. In which case, the choice of purposive selection strategy did not only ease the data collection process, but yielded thorough information for the research project

3.5.1 Criterion for selection

In order to reach out to the participants for the study, the study area was reached out first. This was an inclusive school situated in the central part of Uganda. It was from the school that study participants were selected in lower, middle and upper streams, the targeted classes for the study. Further below are the characteristics of the sites and participants that were taken into considerations during selection.

School

A school for the study was based on the assumption that it had an inclusion orientation approach. The school where the study was carried out practiced inclusive education and had learners with hearing impairment in all classes. It had a population of 1001 pupils, 91 out of the total enrolment were children with special educational needs, of which 24 had varying degrees of hearing losses, spread out in all the classes and a unit for the new entrants attached.

Classes

As mentioned, class selection was spread out in lower, middle and upper streams and the classes selected had learners with hearing impairment instructed together with others. The reason for spreading out was basically to find out how the different classes were instructed by the teachers in terms of teaching the different subjects with the outlined content as specified in the curriculum, using varied communication modalities.

Teachers

Teachers as earlier mentioned were purposively selected based on the following criteria; distribution among gender (male and female), training background (general and special), experience in teaching (at least more than 5 years), had learners with hearing impairment in the class and willingness to participate in the study.

The three cases worked with, two had special needs training background and one general education training background All the three who consented to participate were female, with a teaching experience of more than five years. It is worth mentioning that in this study, the term teachers, participants and or cases will be used alternatively signifying similar aspect.

3.6 Research instruments used

The research instruments used included the observation checklist and interview guide with pre-determined themes of focus. During observation a video camera was used to capture all that was happening in the classrooms. Whereas an audio recorder was used to record the verbatim during interview. The instruments used enabled the capturing of all the required information for the study.

3.7 Procedure for data collection

3.7.1 Gaining access

Prior to the start, a letter of introduction was obtained from the University of Oslo to facilitate the research study process. To gain access to the study site, early contact and permission from the relevant authorities and schools was sought for. Thereafter, with the permission of the commissioner special needs education (M.O.Es), district officials were approached, who in turn too granted permission to carry out research in the identified schools for the study.

The head teachers in both schools for the pilot and main study areas worked with allowed me access to the teachers, with whom a meeting was held, and a thorough description of the project and the intention explained to. Those who freely willed to participate, consent forms were availed to them before starting the processes. Ethically, the participants were assured of anonymity of their identity and freelance to withdrawal at any time from the project.

Gaining access simply refers to making prior contacts or reaching out to the gatekeepers before the process of data collection begins. Identifying appropriate study area and contacting the relevant people and authorities to obtain permission are considered pre-requisites in the process of data collection in case study research (Gall et.al. 2007). All the gatekeepers were reached out in person and follow ups made where need arose, which eased the data collection process.

3.7.2 Pilot study

Using the prior developed instruments the observation and interview guide, a pilot study was conducted in one school situated in the central part of Uganda. This school was not the typical setting for the main study. The pilot study consisted of three teachers instructing learners with hearing impairment in ordinary classroom settings.

Two of the teachers co-taught the English lesson in primary two, one mathematics lesson in primary one. All the lessons were recorded on a video- camera, and interviews held immediately after teaching. Participants thereafter briefly worked with the video material entitled 'Teachers for All' and discussed questions that followed each sequence on hearing. On completion an evaluation form was given to each participant to be filled out.

A pilot study is a mini study or a small scale testing of procedures that one intends to use while carrying out a study plan in the main study, by revising the procedures based on what the testing reveals (Gall, Gall and Borg, 2007). It determines whether the procedure has merit and helps to correct obvious flaws. Pilot studies provide an opportunity to identify gaps that would have affected the main data collection process.

The findings for the pilot study revealed some irregularities especially in design of the tools and administering of interviews. Observation guide for instance, pre-determined aspects of focus were not well arranged and distracted the observer, thus unable to capture all the required behavior as it occurred. The other aspect was, observing and at the same time video record the lesson in progress was not possible.

Further, holding interviews immediately after the classroom observation was not practical at all. The reason being, thorough understanding of the lesson recorded was required before. In addition, dividing of the time for the planned activity seemed to be challenging to both the

participant and the investigator. This was partly due to technical problems of operating the camera together with the audio- recorder and classroom organization per say.

Lastly, introducing the video material at the end of both sessions and use of an evaluation form after working with it yielded no sufficient information to the study. In other words, there was no reliable information obtained on the materials influence concerning the teachers' prior thinking and practice.

3.7.3 Main data collection

Using the modified observation checklist and the interview guide with thematic areas of focus, the main data collection process was embarked on. Data was collected from the three cases conducting different lesson in middle, lower and upper during observation. Observed were the teachers' application of multimodal communication and other contextual factors in the classroom, such as the classroom size, population, and teacher's position, sitting arrangement, classroom atmosphere and others deemed necessary.

The communication modalities teachers used during the instruction process included speech alone, signs alone, speech and signs simultaneously, total communication and other non-verbal communication modalities, such as gestures, facial expressions, body movement, and mouthing. Case A was observed in reading & writing and English lessons from primary two class, case B observed in science lessons from primary four and case C observed in social studies lesson from primary six. Case A and B were observed twice and case C once due to other obligations assigned, and all lessons taught were recorded on the video camera.

Interview sessions were held with each individual case in one of the rooms at the school premises. Interviewed upon were the teachers' perceptions about the phenomena studied multimodal communication. All verbatim were recorded on the audio tape recorder.

Interviews were held after the participants had worked with the sequences in the video based material.

Data collection took approximately four months in the second and third term of the school calendar. This was considered an appropriate timing for the study, for the learners and the teachers were already well acquainted with the school routines. The procedures followed in carrying out both the observation and interview is as explained below.

3.7.4 Observation procedure

As mentioned, two of the cases were observed twice, each conducting a lesson of about 30 minutes and the other once in a 30 minutes lesson each. Case A in first reading and writing lesson conducted in the area language which is 'luganda', followed by an English lesson. Case B in both science lessons and case C in social studies only.

During observation the modified checklist was used and a camera to record the whole classroom session. The use of the camera easily facilitated the process and enabled the capturing of all the required information for the phenomenon studied. In the two observations carried out, the procedure followed was as follows;

- All the three participants each taught the first lesson of about 30 minutes in which they were observed and recorded.
- Thereafter, the video material entitled 'Teachers for All' was introduced to all and worked with in a group.
- Each of the three participant's re- taught the second lesson of about 30 minutes still, observed and video recorded as before.

3.7.5 Interview procedure

Interviews were conducted after viewing the recorded lessons. The modified interview guide was used to collect data. The interview session was held in one of the rooms at the school premises considered to be free from noise. Participants were interviewed individually and each session lasted for about 30 to 40 minutes. The interview was based each case's lessons taught and the sequence worked with in the video- based material 'Teachers for All', following the outline pre-planned themes.

To minimize the bias and misunderstanding in between the interviewer and the interviewees, clarification and repetition of unclear statements from time to time was ensured. The data collected was recorded on an audio tape recorder. The approach yielded much more relevant information for the study.

3.8 Video application

Principally, a thorough explanation about the material and the intention of introducing it was given before use. Both the participants and other teachers not involved in the study were guided on how to operate and work with the material. They worked with the material for about 30 minutes.

Sequences on hearing worked with were; finger spelling, partial inclusion, telling a story and learners who are hard of hearing. After which the three participants and other teachers discussed questions that followed on each of the sequence. However, participants for the study viewed the sequences again on an individual basis alongside own lessons taught. This was to enable them make a comparison of the two classroom situations, their own and others from else where with similar practices. This strategy increased the richness of the information obtained.

3.9 Organization and analysis of data

Data obtained for the two main research questions was organized, transcribed and presented in a logical manner. Transcriptions were from the video recorded data of the observations made and the tape recorder data of the interviews held. All transcripts were critically reviewed several times. Thereafter categorized, presentation and analysis of data was done under the earlier on pre-determined themes and other emerging themes. The process of analysis involved breaking down the data through an inductive approach, where data was explored in terms of both the general and particular units of meaning presented in them. Meaning and interpretation was drawn in accordance with the research questions guiding the study.

Data was presented and discussed case by case, and finally a cross-case analysis presented as reflected in chapter four and five. In addition, information obtained from the files of the school and the personal information from the cases was also presented. The analysis of information gathered during the data collection process is as presented in chapter four.

Organization and analysis of data refers to the process of selecting, focusing, simplifying, abstracting, and transforming the data that appears in written- up field notes or transcriptions (Gall, Gall and Borg, 2007). In the data display phase, the process entails representation of data in a more comprehensive way.

3.10 Reliability and validity

To ensure reliability and validity of the information obtained, each participant was observed and interviewed twice and carefully analyzed the data. Both the video and audio recordings were replayed to allow participants confirm or refute the results, thus amendments done. Carrying out the two observations during data collection was thought to increase the reliability and validity of information obtained.

The fixed or planned time for the lessons conducted (as reflected on the school timetable), was respected during observation, and the scheduled time for the interview maintained too. This enabled the accomplishment of all the planned observation and interview schedules in time, and yielded thorough information.

The use of multiple sources of data collection methods was another added strategy that enabled the checking out of reliability and validity for this study. In this study, four methods as follows were used, observation as the main, interview, a video-reflective material and the school files. The focus was majorly on the teacher as a focal person in the classroom.

The experience of having worked with children with hearing impairment for a longer time easily facilitated the understanding and interpretation of the information communicated in signs. In the same way, the personal knowledge about the culture and language used in the area where the study was carried out easily facilitated the understanding and translation of the lesson taught in the local language area 'luganda'. Supposedly, these were very crucial aspects mainly in the transcribing of the rightful information.

Much as all this was done, but it is important to point out that, my presence in the class during observation might have hampered the teachers' flexibility in teaching. Looking at what happened, it seemed as if the teachers tried to be artificial so that it gives a good impression of the classroom discourse. Despite that, cases worked with were assured of flexibility or freelance to withdrawal at any time from the project and anonymity of their identity.

The results of the study were carefully presented by not disclosing the participant's identity as mentioned and fabrication or falsification of data was avoided. Where gaps arose, the study further acknowledged that.

Reliability refers to consistency throughout a series of measurements (Cauvery et.al, 2008, Gall, et.al, 2007). A descriptive an explanatory study like this requires careful interpretations

in order to be relevant, throughout. Whereas, the term validity refers to the degree to which a study accurately reflects or assesses the specific concept that the researcher is attempting to measure. In this study both internal and external validity were considered in the assessment of the different aspects studied as highlighted in the presented chapters. Internal validity refers to the rigor with which the study is to be conducted. For instance, the study's design, the care taken to conduct measurements and decisions concerning what was and what was not. While external validity refers to the extent to which the results of the study are generalizable or transferable in the case of qualitative case study design.

3.11 Generalizability

A research study's findings are considered generalizable when they can be applied to individuals or situations other than those in which the findings were obtained.

Generalizability is the extent to which research findings and conclusions from the study conducted and sample population can be applied to a population at large. With case study research the results are not generalizable, the decision is dependant on whoever wishes to use the information.

3.12 Ethical considerations

Ethically, permission to conduct the study was sought for from the relevant authorities followed by identification of participants. In the same way, informed consent from the participants identified was obtained, by signing of a written form availed.

In a more detailed manner, the intentions and purpose for the study were highlighted before the actual data collection process began. However, there was flexibility exercised in case of a mishap in between the process. A part from allowing the participants withdrawal which did not happen anyway, one, was allowed to skip the second observation to attend to other school duties.

Confidentiality was guaranteed and careful publication of data obtained given due consideration, names of the participants, neither the school nor the recorded data disclosed the participants names to ensure anonymity of their personality. Pseudonyms for participants were used here in referred to as teacher A, B and C and confidentiality maintained. This also applied to the raw data recorded which was properly stored, accessed by the concerned only

and discarded or erased on completion. Lastly but not least, a formal letter in appreciation was written to all those who contributed to the success of the study.

Ethics is a branch of philosophy concerned with questions of how people ought to act toward each other, which pronounces judgments of value about actions and develops rules to guide ethical choice (Gall et. al, 2007). Apart from respect to the participants of the study and other related aspects mentioned below, the investigator respected and maintained good relationship with the rest of the school administration.

Durrheim & Blanche (2002) argue that, research designs should always reflect careful attention to the ethical issues embodied in research projects. The essential purpose of ethical research planning is to protect the welfare and the rights of research participants. Which aspect was carefully considered throughout the whole process.

4 PRESENTATION AND ANALYSIS

4.1 Introduction

The purpose of this study was to find out teachers perceptions and application of multimodal communication in the instruction of learners with hearing impairment in inclusive classrooms. In an attempt to gain in-depth understanding of the phenomenon studied, three cases were used to attain the required information. Two of the teachers had background training in the teaching of learners with special educational needs and one had general teacher education training background.

Data was collected using observation as the main method, supplemented by interviews and analysis of school data records. During observation, video recording was done and audio-recording for the interviews respectively. In order to maintain confidentiality participants of the study were referred to as case A, B and C. Case A teacher of primary two, case B teacher of primary four and case C teacher of primary six.

4.2 Background information about the school

This study was conducted in one of the schools practicing inclusion, situated in the central part of Uganda. Originally, the school started on a church foundation basis before it was taken over by the government. At the time of the study, the school had a total enrolment of 1001 pupils from primary one to primary seven (521 boys and 480 girls), according to school statistics. Out of the total school population, 91 are learners with special needs (52 boys and 39 girls). Learners with hearing impairment constitute a bigger population of those with special needs. According to school authorities and the school data obtained, out of the 91 learners with special educational needs, 50 are perceived to have varying hearing losses. Each class accommodates more than 50 pupils except for the preparatory class, for learners with hearing impairment. There are 21 teachers (6 male and 15 female), some with special needs education training background and others with general training background.

4.3 Presentation of findings

Presentation of findings is guided by the related research questions outlined in chapter one. The communication modalities teachers used to teach the planned content, motivate and give feedback, encourage learners' active participation and evaluate the lesson, why the teachers used the communication modalities mentioned, how the use of the communication modalities influenced instruction and the challenges faced. Further the teachers' perceptions on the video-based material entitled 'Teachers for All' and how the video material influenced the teachers' instructional practices, in the inclusive classrooms.

'Teachers for All' is a video-based material that teachers worked with after being observed in the first lesson conducted. It consists of recorded audio-visual sequences reflecting similar classroom practices in both Uganda and Kenya. The teachers worked with sequences on hearing, partial inclusion, finger spelling and signs, story telling and learners who are hard of hearing. Presentation of the findings is made case by case in respect to the research questions and finally the cross-case analysis.

The keys below were developed to guide the reader in understanding the quotations made from the transcripts of both the video text and interview verbatim, and some borrowed from (Jeffersonian transcript notation, 1984)

Key: used symbols

Symbol	Meaning
{ }	Indicates communication modalities used
'Italics'	Indicates participants own words(interview verbatim)
“ ”	Indicates sentence spoken in local language
()	Indicates sentence spoken in English
...	Indicates omitted words
T	Abbreviation for teacher
L	Abbreviation for learner

- - -	Indicates spacing of letters in finger spelling
(#)	Indicates a pause
+	and
ALL CAPS	Indicates signed words

4.4 Case A

4.4.1 Background information

This is a teacher of primary two. She has got an educational training background in special needs education with 10 years working experience. The class has a total enrolment of 130 pupils. 7 out of these are perceived to have hearing loss ranging from mild to profound. There were no authentic records to confirm the nature and degree of hearing losses. The classroom practice and setting is inclusive in nature. That is, the class is made up of learners with different learning needs, but having limited space according to what was observed. The sitting arrangement is organized in groups where learners with special needs are mixed with others but placed at the front. The teacher conducted English, reading and writing lessons.

4.4.2 Communication modalities used

Lesson observation of case A indicates the use of various communication modalities to instruct learners with hearing impairment. The first lesson conducted was reading and writing. This lesson was conducted in luganda, the local language of the area. The teacher began by asking the class to repeat the poem. T.

“Tuddemu ekikwate, “Edembe ly’abaana” (Repeat poem, freedom of children) {speech}

L. T. “Kale...Tusoomo ebigambo bino” (Now, we read these words) {speech}

L. Read/ sign after the teacher... “Okutambula ekiro” (move at night), “okulwana” (fight), “okuvuma” (abuse), “okuwuliriza” (listen) {speech}

The second lesson conducted was English. In the lesson review the vocabulary learnt was ‘thank’, ‘greet’ and ‘help’. Later the teacher introduced the new lesson with the following

vocabulary 'obey', 'share' and 'give'. Example of how the lesson progressed is as below.

T. How do we sign this word? - greet {speech, followed by sign}

L. PLEASE {Sign}

T. Who can sign for them this one, everybody... {speech}

T. Today we are going to look at other new words {speech and signs simultaneously}

T. Can you read/sign after me {speech and sign simultaneously}

T. You... point {sign}

L. GREET {sign}

Based on the extracted examples from the lessons taught, the communication modalities used to teach the two lessons were speech, signs, speech and signs simultaneously. Speech seems to be pre-dominantly used especially in the first lesson taught. This is confirmed by the teachers' response from the interview '*I used speech often and limited signs because of the language in which the lesson was conducted, I could not sign all the word*'. Unlike the first lesson, in the second lesson taught there seemed to be a variation in use of the communication modalities.

To motivate and give feedback to the learners, the teacher used two main communication modalities, speech and signs. For instance, she said '*Asante Sana*' (Kiswahili expressions to say- thank you very much) {speech alone}, followed by GOOD {sign}. Asante sana was used twice and good once.

In the first lesson, more of the non-verbal communication modalities were used to encourage learners' participation. This is an example of what happened.

T. Come... (pause)...write {sign}

L. Smile and shake head.

T. Try- {sign and facial expression; smile, raised eyebrows}.

L. Maama (mother)...

T. Aha... continue {hand movement}

While in the second lesson the teacher said, '*let me ask my friend here to come and sign*' {speech and sign concurrently}. At times as observed the teacher used signs alone to encourage learners with hearing impairment to participate. For instance, when asked '*who can sign for me this one?*'

A similar situation did happen when the teacher was evaluating the lesson. Sometimes she used speech and or signs. The teacher helped learners with hearing impairment to sign the short phrases “Kirabo bamukuba” (They are beating the girl), “Nasadde anvuma” (She is abusing me). Kirabo and Nassadde are names of pupils in the class. Further asked the learners to fingerspell the names like K-I-R-A-B-O {finger spell} and sign some words such as BEAT {sign}. As part of the evaluation, learners with hearing impairment signed again all the words learnt and the teacher demonstrated actions give and share. One of the learners was called to the front and given a pen while the teacher kept asking the class ‘*what am I doing?*’

From the above presentation, the communication modalities the teacher used were speech, signs, speech and sign simultaneously and other non-verbal communication modalities. However, speech seemed to have been pre-dominantly used in instruction, especially in the first lesson. Finger spelling was only used by the learners to spell names.

4.4.3 Why the mentioned communication modalities were used

This is what the teacher said, ‘*I was often using speech and some signs to involve all the learners in the lesson and help them understand*’.

‘I used those modes because of the category of learners in the class; children who are Deaf have to learn through signs and the hearing through speech.’

From the teachers’ response, the reason for using the mentioned modalities was to involve all the learners in the lessons taught and enable learners with hearing impairment in particular to understand the content.

4.4.4 How use of communication modalities influenced instruction

Use of the communication modalities easily facilitated the instruction process and enabled the teacher to encourage learners with hearing impairment participation in the lessons taught. For instance, an attempt was made by some of the learners with hearing impairment to write luganda sentences on the chalk board. Similarly with the teachers’ assistance they were also able to sign the few phrases written by their peers as well as fingerspell names.

The teacher was also able to adjust the vocabulary of the content area in the first lesson. When asked, the teacher said ‘*to a certain extent the communication modalities I used enabled me to*

form simple and short phrases that were easily understood by learners with hearing impairment’.

Further findings of the study as presented, in the second lesson taught, learners with hearing impairment were able to remember and sign all the English words. This was confirmed by the teacher during interview *‘Use of different communication modalities enabled me teach what I was supposed to teach and all learners were able to understand what is being taught, because they were able to sign all the words.*

The other response was *‘Children get to know what is taught, what to say, when and how, more so when added with other non-verbal modes of communication, such as facial expression. If for instance, show a happy face, it will motivate the learner and create a good atmosphere within the classroom setting, and facial expression/ gestures may sometimes be used unknowingly’.*

Presentation of findings seem to reveal that, application of the different communication modalities enabled the teacher to re-phrase simple and short statements that were easily understood by learners with hearing impairment thus able to teach the content area planned.

4.4.5 The communication challenges faced

Findings show expressed displeasure of how the reading and writing lesson was conducted. This was realized in her tone of voice which tended to lower at certain intervals of the interview sessions and the utterances like *aaa....., hmmm... ‘Teaching using different communication modalities in a lesson conducted in luganda is very challenging. I ended up not explaining everything to the learners with hearing impairment’.* Observed, not all the content area was communicated to learners with hearing impairment, but the key concepts in the lesson were.

Furthermore the teacher said it was challenging to apply the different communication modalities because sometimes one modality would be predominantly used over the other which poses limitations to particular group of learners. This is what was said, *‘I think it is challenging to use more than one mode of communication, sometimes you may talk much and forget others and or sign and leave out the rest’.* Added on to say that *‘not always children with hearing impairment may get what they are supposed to get and it is also time consuming’.*

The findings showed difficulties experienced in balancing the application of the communication modalities more so when a lesson was conducted in the area language.

4.4.6 Perception on the video- based material ‘Teachers for All’

The video was perceived by the teacher as a good and educative material which could lead to realization of improved instructional strategies. The teacher was able to notice use of varied communication modalities in the instruction of learners with hearing impairment in the sequences worked with. But the concern was only on the teacher pupil ratio in the class. This was what the teacher said, *‘In the sequences I have watched, I have seen the teachers using different communication modalities in the different subjects, relating to their pupils’ very well and the classes are small, but now like in mine where I have 130 pupils both with and without special needs, how can I help each individual learner’.*

4.4.7 How the video improved the teachers’ instruction

The findings showed that the teacher improved on the instruction of learners with hearing impairment after working with the video material ‘Teachers for All’. For instance, in comparison with the lessons taught, the teacher mostly used speech in the first lesson, while in the second lesson tried to balance use of other communication modalities. A difficult was experienced in only the lesson conducted in the area language. Despite that the English lesson was the opposite.

The other finding is related to participation, the teacher managed to encourage learners with hearing impairment to participate by both signing the taught vocabulary and writing sentences on the chalk board in the second lesson taught.

4.5 Case B

4.5.1 Background information

This is a teacher of primary four. The teacher has a general education teacher training background. A SNECO (Special Needs Education Coordinator) in one of the clusters in the district. The teacher has attended short courses on special needs education. The class has got a population of 87 pupils and only two (2) out these are learners with hearing impairment. This

is an inclusive class with relatively a good learning environment, though limited space. The sitting arrangement of the pupils is in groups of mixed abilities. She conducted two science lessons, on different topics.

4.5.2 Communication modalities used

The communication modalities used by the teacher was speech alone and few signs, in support with other modalities such as Finger spelling, gestures (like pointing and body touch) and facial expression. For instance, this is how the first lesson was conducted.

T. What is missing in her (the pregnant mother's) meal? {speech}

T. Touch learner X and point to the chalkboard {body touch and pointing}

L. Stare

T. FOOD WHAT {sign+ facial expression- raised eye brow or question on face}.

L. P- O- S- ... {finger spelling}

T. Nod head to mean no {facial expression- raised eyebrows}

When interviewed, the teacher said, *'I was using mostly speech, little signs, gestures and facial expressions'*. In the second lesson observed was the teacher's frequent use of speech, supported by a few signs and other non-verbal communication modalities such as facial expression and gestures to teach the planned content. For instance, when reminding the learners of the previous lesson learnt *'Organs of the digestive system'* speech was used. The same with lesson introduction *'Disorders of the digestive system'* {speech alone}. For instance, asked learners with hearing impairment, EAT-SICK-NO-WELL {Signed English} followed by question on face {facial expression- eye brows down and a forward & tilt of the head}. The interpretation is that what can happen to the digestive system when bad/ poisonous food is eaten. The teacher further tried to clarify the question by touching on the mouth and pointing at the behind like something coming out (diarrhea) and response got from a learner with hearing impairment was EAT-GROW {sign}. With no comment given the teacher proceeded on with other learners.

When interviewed the teacher said, 'I used speech more often, but I also tried to use a few signs, finger spelling and sort of... (pause) we can call them facial expression. She gave an example, that when I was talking about vomiting I demonstrated and showed learners with hearing impairment what happens when you have diarrhea, changed the facial expression-mood on face' {facial expression-scared or face in agony}.

Besides using speech in the second lesson taught the teacher at this point in time tried to use some little signs together with gestures and finger spelling. There was constant writing of the information on the chalk board. At the end of the lesson, she identified key concepts, and impelled learners with hearing impairment to finger spell them. Words such as; V-O-M-I-T, C-O-N-S-T-I-P-A-T-I-O-N and D-I-A-R-R-H-O-E-A {Finger spelling} and others.

To motivate learners with hearing impairment the teacher used more of the non-verbal communication modalities, the gestures, facial expression and body language. For instance, when showing learners with hearing impairment one possibility of a disorder, she twisted her body, touched different parts and so on. Furthermore, to give feedback to learners the teacher used a verbal remark 'very good' when a learner with hearing impairment finger spelt M-E-A-T as one of the foods that should be eaten by a pregnant mother. Verbal remark means speech was used. For instance, the teacher used more of the gestures, body touch, pointing (hand movement) and facial expression. An example of what partly transpired from the interview is as below.

Interviewer: Did you actively or encourage learners with hearing impairment to participate in the lesson?

Interviewee: To some extent, that is why I was using some little signs and gestures.

Interviewee: Yes at times when am teaching, I forget it is an inclusive class and don't sign neither gesture to the learners with hearing impairment, I continually use speech and remember afterwards.

She expressed displeasure when interviewed that, 'I wonder why learners with hearing impairment were not able to participate in the lesson, although I tried to make them understand, maybe I needed to use a visual material'. The same happened when an activity was given, the teacher constantly pointed to the work on chalkboard as well as speaking.

Findings in both lessons showed constant use of speech in the instruction of learners with hearing impairment. In support with little signs (as referred to by the teacher) and other non-verbal communication modalities, the finger spelling, gestures facial expression and body touch.

4.5.3 Why the mentioned communication modalities were used

The teacher said, 'I used those communication modalities because I wanted to involve all the learners' and make learners understand the topic I was teaching, disorders of the digestive system. For instance, if they fingerspell the words like what I made them to do, they are able to remember the spellings. Signing the words also helps learners with hearing impairment to know the signs of the words, though some signs are not related to the words, say 'diarrhea', can only sign a latrine and show them it is watery'. I also kept writing and at the same time talking, because if I write the content on the chalkboard it is easy for learners with hearing impairment to see and connect the ideas.

According to the teacher's response above, the reason as to why the teacher used the communication modalities mentioned above was to involve and enhance learners understanding of the lesson content.

4.5.4 How use of communication modalities influence instruction

The teacher said, 'Use of various communication modalities help learners to be alert all the time. I can just look at the child whose attention is away and then he or she comes back to the lesson or use simple gestures and draw learners attention'. The teacher added on to say, 'the communication modalities used facilitated the teaching of the planned content and enabled learners with hearing impairment to a certain extent understand what was being taught'.

Summary of the findings indicates that, the communication modality used enabled the teacher to teach what she was supposed to teach although not comprehensively and to maintain learners with hearing impairment attention.

4.5.5 The communication challenges faced

This is what the teacher said '*at times when am teaching, I forget that it is an inclusive class and don't sign to learners with hearing impairment neither use gestures, I continually use speech and remember afterwards, and I also lack Sign competence skills*'. Sometimes, I frequently use gestures to communicate to learners with hearing impairment'.

Observed was the teachers' difficulty to use signs to instruct learners with hearing impairment. This was exhibited in a number of ways, for example when reviewing the

previous lesson ‘Organs of the digestive system’. Apart from mentioning it, no organ was named. Secondly, while introducing the day’s lesson ‘disorders of the digestive system’, none of the words was signed. She was only able to use speech at this point.

In a formal interview the teacher said *‘the topic was difficult and most of the words were complicated. This made learners with hearing impairment less active in the lesson. May be I needed to use a visual material to help all the learners associate the words with the pictures’*.

The findings indicate that the teacher had difficulty to use the visual modalities because may be lacked the skill to do so and that the concepts were abstract. The teacher mostly used speech in the instruction of learners with hearing impairment. However, to try making learners with hearing impairment comprehend/understand the information taught or supplement the communication modality used, the teacher used other non-verbal communication modalities, the gestures, finger spelling and facial expression.

4.5.6 Perceptions on the video- based material ‘Teachers for All’

The teacher perceived the video-material in relation to other contextual factors that can either facilitate or hinder effective instruction. This is what the teacher said, *‘when teaching there is need to use concrete objects, because some of the concepts are difficult to explain to the learners and the classes in the sequences seem to be very small and yet ours the population is too large’*. Added on to say, *‘this is possibly why the teachers in those sequences interacted with the pupil’s very well’*. The teacher identified a particular sequence in which finger spelling was used and said *‘it is helpful in signing different words, names and those words with no signs’*.

4.5.7 How video improved the teachers’ instruction

Observed were some of the indicators that the teachers’ instruction of learners with hearing impairment slightly changed after working with the ‘Teachers for All’ video material. For instance, the intensity at which the teacher applied multimodal communication after working with the material differed greatly. A part from frequent use of speech, the teacher tried to apply other communication modalities and other techniques in the instruction of learners with hearing impairment. A change too was noticed in the way the teacher related with learners with hearing impairment from within an inclusive classroom. The closeness, care and

measures in introducing lesson content were far different compared to what happened in the first lesson taught. The teacher made an effort to make learners understand the content, even though the concepts in the content seemed abstract.

4.6 Case C

4.6.1 Background information

This is a class teacher of the beginners or preparatory class for children with hearing impairment, as well as a deputy in charge of special needs. Apart from being a class teacher of the preparatory class, the teacher conducts lessons in other classes. The teacher has got background training in special needs and teaching experience of five years. The lesson conducted was a social studies lesson in primary six. Primary six's enrolment totals to 67 pupils and 8 out these are learners with hearing impairment. According to the teacher in this class there are two categories of learners with hearing impairment, Deaf and hard of hearing. This teacher was observed once as previously stated, due to some technical reasons.

4.6.2 Communication modalities used

The teacher equally used the following communication modalities, speech, signs, speech and signs simultaneously in combination with finger spelling. This was noticed at the different phases of the lesson. For instance, during the introductory phase, the teacher first drew the map of East Africa on the chalkboard, with indicated places for lakes to be named. Partly the lesson was started as follows;

T. Heading... (pause)... East African lakes. We are going to name these lakes; we have 1-10 lakes {sign alone followed by speech}

T. Let me name one lake. This lake... K-Y-O-G-A {finger spelling and speech}.

T. Aha... others {speech and sign}

L. E-D-W-A-R-D, G-E-O-R-G-E {Finger spelling} and so on.

While learners with hearing impairment finger spelt the names of the lakes, the teacher mentioned letter by letter to the rest of the class, and if a name was mentioned through voicing, she also finger spelt it out using the sign alphabet, to learners with hearing impairment. In a formal interview, she said that *'Apart from using speech, signs and finger*

spelling, I used total communication when explaining the importance of the lakes, for instance, I said for tourist attraction {signed it also, wrote, drew and demonstrated}. This was to help them understand the concept 'tourist'.

To motivate and give feedback the teacher said, *'I used two communication modalities, speech and signs depending on the category of learner who was and had given an answer. If for instance, it was a learner with hearing impairment, I clapped in {signs -hands in air and twisted a couple of times}. I also gave verbal remark followed by a sign, like good she has tried, oh... that is good. I also encouraged the rest of the learners in the class to appreciate their peers. Where my deaf child says the answer very well, I moved near her or him and touched or used the sign name to appreciate him or her'.*

Observed were the following communication modalities the teacher used in encouraging learner participation, speech, signs, speech and signs simultaneously and finger spelling. She most of the time prompted learners with hearing impairment to give answers to the questions asked and gave them chance to contribute as much as they could. Where one felt not sure, she kept on building his or her confidence by use of a sign or sign together with speech. For instance, she said to one of the learner with hearing impairment, *'Come and try, write name of the lake here' {sign and speech}*. To evaluate the lesson the teacher used speech and signs simultaneously. An activity based on what had been taught was given and learners were told to draw the map in their books, answer questions that followed; fill in gaps and give the functions/uses of the lakes.

Presentation of the findings showed that, the teacher equally balanced the use of varied communication modalities. The communication modalities used were signs followed by speech or vice versa, sometimes the two concurrently and finger spelling.

4.6.3 Why the mentioned communication modalities were used

In a formal interview the teacher said *'use of various communication modalities helps in delivering the subject matter to the learners'*. The example given was, *'learners with hearing impairment understand best if I use sign language and other non-verbal communication modes, their language of instruction and the hearing speech of course'*. Added on to say that, *'some of the learners with hearing impairment in the class can lip-read what is on the teacher's mouth'*.

The other reason given was, *'It is also easier to grasp the ideas and information delivered if you use a mode understood best by a learner'*. For instance, finger spelling was used to facilitate the understanding of spellings, names of people, places, and other words with no signs', and so on.

To summarize the findings, reasons as to why the teacher used varied communication modalities was, to be able to deliver the subject matter to the learners and help them understand what was being taught as mentioned in the teachers response.

4.6.4 How use of communication modalities influence instruction

The teachers' response was that use of the communication modalities lead to improved understanding and that most of the modalities used supplemented each other. This is how the teacher put it, *'if an object is signed, it can also be finger spelt or lip-read around the mouth. In so doing, the pronunciation, the visual articulation and the spelling of either a word or an object is acquired by a learner with hearing impairment'*.

The findings seem to indicate that use of the communication modalities enabled the teacher to teach the lesson and promoted learners with hearing impairment understanding.

4.6.5 The communication challenges faced

The teacher said, *'I never had any communication challenge, apart from other physical aspects within the classrooms and those related to curriculum provisions'* According to the teacher, no challenge was faced in using varied communication modalities during classroom instruction.

4.6.6 Perceptions on the video- based material 'Teachers for All'

The teacher said, *'it is a nice experience working with and observing other peoples practice'*. One of the sequences identified by the teacher was story telling where the teacher in the sequence used two communication modalities alternatively, speech and signs. The teacher said, *'there could be a variation in communication modalities used when teaching different subjects'*. *'For instance in this sequence the teacher first used speech to tell a story about animals, then signed to learners with hearing impairment'*.

Further said, *'my thinking about inclusion has also been changed, the care or close relationship you give to learners with special needs, like those with hearing impairment is very important'*. This is in part meant the socio atmosphere in class is necessary in realizing the effective instruction of all learners.

4.6.7 How the video improved the teachers' instruction

The teacher was observed once and this was after working with the video- material. It was not possible to find out whether there was any improvement in the teachers instruction. Nonetheless as mentioned above, although the teachers thinking may not be a basis for concluding that there was improved instruction, but it made her reflect upon other teaching techniques that can be used to facilitate instruction, and other classroom factors leading to realization of improved progress. But all in all, the lesson conducted by this teacher was efficiently taught.

4.7 Cross- case analysis

The three cases recognized the importance of multimodal communication in the instruction of learners with hearing impairment. The communication modalities used were speech, signs, speech and signs simultaneously, total communication and other non- verbal communication modalities such as finger spelling gestures, facial expression and body movement. Speech was the pre-dominantly used communication modality especially by case A and B. Case C tried to balance use of the communication modalities, though in most cases much may be spoken than signed.

Case A and B perceived it as a challenge in terms of application during the instruction process. The reasons given were switching on from one modality to another was deemed to be very difficult, more so if the teacher lacked skills in signing. Further the cases perceived it to be time consuming especially in situations where the content was abstract; there was difficulty in signing some of the words, thus meeting all the learners' needs from within the same setting.

Despite the two teachers' perceptions, case C considered the application of multimodal communication to be easy and a requirement in the instruction of learners with hearing

impairment together with their hearing counterparts in the same setting. As expressed, it is not challenging if one is competent in the use of other visual modalities like signs.

Furthermore, the data indicates that the teachers seemed to have applied varied multimodal communication in the instruction of learners with hearing impairment. The communication modalities applied as mentioned were speech, signs, speech and signs simultaneously, total communication, finger spelling supplemented with other non- verbal communication modalities such as gestures, facial expression and body movement. The pre-dominantly used communication modality was speech especially by case A and B, unlike Case C who tried to balance use.

Similarly significant changes were noticed in the way each of the cases applied one modality over the other and the extent to which a particular modality was used. In addition, subjects taught and video- material sequences worked with seemed to have caused a variation in the application, as presented in the above results obtained. Improvement in both case A and B's instruction was realized in the second lesson observed compared to the first one. Case C was further able to reflect upon different classroom practices.

In summary, there was improved performance realized in the teacher's instruction of learners with hearing impairment using varied communication modalities. Like wise, a part from use of the communication modalities, the teachers' attitude towards inclusion of learners with hearing impairment seemed to have changed. This was observed in the interaction, closeness, support given to the learners during an activity and the discussion held with the cases studied.

4.8 Conclusion

Findings from this study showed that teachers had a variation in the way they perceived and applied multimodal communication in the instruction of learners with hearing impairment, in inclusive classrooms. There were different communication modalities used in the instruction process and this largely depended on the teachers' competence and training background. At one point, the nature of the lesson taught also determined how efficient a particular teacher used the communication modalities.

Similarly, findings indicated that teachers had different perceptions on the video material 'Teachers for All' worked with in the process and it improved on their prior instructional practices.

5 DISCUSSION AND CONCLUSION

5.1 Introduction

The intention of this study was to find out how teachers perceived and applied multimodal communication in the instruction of learners with hearing impairment in inclusive classrooms. It further explored how the video based material entitled ‘Teachers for All’ influenced the teachers thinking and teaching practices. The study was guided by the basic research questions mentioned in chapter one. The data collected was transcribed, translated, coded, reduced and findings of the study presented as it appears in chapter four. In this chapter, only the relevant information is presented under the main subthemes of discussion, conclusions and recommendations. The findings are discussed case by case following the research questions outlined in chapter one.

5.2 Discussion

The following research questions guided the discussion. The communication modalities teachers used in the instruction of learners with hearing impairment when teaching the planned content, motivating and giving feedback to learners, encouraging learners active participation and evaluating the lesson. It also focused on why teachers used the communication modalities, how the use of the communication modalities influenced instruction and the challenges teachers faced. Further, the teachers’ perceptions on the video based material entitled ‘Teachers for All’ and how it improved on the instructional practices

5.3 CASE A

5.3.1 The communication modalities used

Findings revealed that the teacher used a variety of communication modalities. These included speech, signs, a combination of speech and signs. In addition other non-verbal communication modalities like facial expression, mouthing and body movement were used. Speech was identified to be the most predominantly used communication modality for instruction. This finding is revealed in the teachers’ response, *‘I used speech often because of*

the language in which the lesson was conducted, that is 'luganda'. The use of speech as a medium of instruction in the inclusive classrooms typifies the traditional ways of teaching in ordinary schools. According to Ademokoya (1996), speech has been the most conventional form of communication used prior to the adoption of inclusive educational practices. Besides, provision of inclusive education to learners with hearing impairment is still a recent phenomenon where teachers are yet adjusting or coming to terms with instructional practices that can work.

However, in one of the studies carried out teachers said using the local language is impossible because of the ethnic groups existing in class. Further observed that, majority of the learners did not speak luganda (Mukama, 1991). Which would definitely be cause for communication breakdown? This may partly be the reason of the teachers' failure to effectively communication all the lesson content to learners with hearing impairment. Sign language being their mother tongue or local language may not be easily be communicable.

Own observation seemed to reveal that when the teacher used speech as the main medium of communication of giving instruction, the teaching learning process was predominantly teacher centered. That is, learners were less active and involved in the lesson process. This goes to suggest that speech alone has little return in the instruction of learners with hearing impairment. In view of this finding it is apparent that without appropriate choice of communication modality, teaching and learning for learners with hearing impairment would be at stake. This finding is in line with Ekwana (2003) commenting that classroom communication is the most important issue to consider when discussing on successful teaching and learning experiences for learners with hearing impairment. He further observed that one of the greatest challenges learners with hearing impairment face in inclusive learning setting is deprivation of communication opportunities.

In the second lesson observed after the teacher was introduced to and worked with the video based material, there was an increased use of signs. This was especially noticed when the teacher taught new vocabularies to the learners. The teacher gave particular attention to the use of signs when instruction was directed towards learners with hearing impairment. It stand to reason therefore that such a communication modality is capable of fostering a better reintegration of a learner with hearing impairment and improve his or academic standards (Antia & Levine, 2001).

Further findings revealed that a combination of signs and speech were used in the instruction process. For instance, when the teacher was introducing the lesson and when the learners with hearing impairment were required to make contributions and respond to questions raised. Similarly, there were times when the teacher used either of the two that is signs and speech supported by other non- verbal communication modalities. For example, the teacher spoke and concurrently signed phrases like, *'let me ask my friend here to come and sign'*. She continually made gestures like facial expression, smile, and raised eyebrows to encourage learners with hearing impairment.

Non-verbal communication modalities are very essential in the instruction process. Research findings by Ganstrom, House and Karlsson, (2002) suggest that the use of several modalities are not only of great interest to creating a less restrictive environment, but also important to many people with sensory impairments. Ademokoya (1996) contends that they help to concretize the information being communicated to learners with hearing impairment during classroom instruction. For instance, physical gestures such as hand and arm movements, pointing, eye-contact (for interpersonal reasons), and so on are thought to increase the richness of information conveyed while communicating especially in a face-to-face interaction. In the same vein, noticed was where the teacher used more than one communication modality there was increased attempts by learners including those with hearing impairment to participate in the class interaction.

Further findings indicate that the teacher constantly motivated and gave feedback to the learners using verbal rewards such as, good, very good and thank you very much (Asante sana) , and still the communication modality used was speech. However much motivation and feedback are essential stimulants in classroom instruction, but the approach used to giving feedback may be less important if the person being rewarded is not able to comprehend what is being said. According to Heward, (2000) the greatest disadvantage hearing loss poses on an individual is deprivation of communication opportunities.

By implication this finding and the quote by Heward presupposes that teachers make use of communication modalities that are understood by all learners during classroom instruction. For instance, while giving feedback or motivating learners with hearing impairment, 'clapping' in signs where rotation of hands in the air occurs could be the best alternative.

5.3.2 Why the mentioned communication modalities were used

Reasons for using the communication modalities mentioned was based on the presence of the two categories of learners in the class. The presence of both the hearing and learners with hearing impairment necessitated use of more than one communication modality. The use of varied communication modalities was also meant to enhance learners involvement in the lesson taught and realization of improved understanding. Utterance by the teacher '*I used those modes because of the category of learners in the class. Children who are Deaf have to learn through signs and the hearing through speech*'. '*I was also often using speech and some signs to involve all the learners in the lesson and help them understand*'.

According to Ekwana (2003) as far as classroom communication is concerned, the use of appropriate communication modalities in the instruction of both learners with and without hearing impairment is very important for all to maximally benefit from the inclusive education program. Without establishment of such common communication modality, there will be no education, no matter how qualified and relevant the adaptation of content, methods and organization seems to be (Johnsen & Skjørten, 2001).

In view of the discussions made so far, there seems to emerge some form of separation in the way the teacher gives instructions to learners in inclusive learning settings. The teacher seems to have constructed two groups of learners in the class. That is, one using speech and another signs upon which instruction is based. This construct if not understood in context may be seen as a form of segregation in the conceptualization and application of communication modalities in inclusive learning settings.

5.3.3 How use of communication modalities influenced instruction

Findings of this study showed that the use of the communication modalities to some extent enabled the teacher to teach the lessons planned. This is represented in the response given, '*use of different communication modalities enabled me teach what I was supposed to teach*'. According to her learners with hearing impairment were able to understand what was being taught because they were able to sign some words. However as observed, not all the required content information as planned by the teacher was communicated to learners with hearing impairment. It is typical of the inclusive settings that not all the information is always communicated to learners with hearing impairment. Even when the information is spoken and

signed simultaneously, most of the things are said than signed (Mba, 1995). It has got an implication in that learners with hearing impairment may not be able to comprehend all that seems to be relevant in pursue of quality education.

It was noticed in some instances that the teacher had to simplify and re-phrase some content information that was meant to be learnt by learners with hearing impairment. For example, she was able to identify key words in the story that seemed to carry more than one meaning and signed them to learners with hearing impairment. Words or statements like ‘Kibi okutambula ekiro (bad to move at night), bamukuba (they are beating her or him) and so on.

Whereas the teacher was not able to sign what was in the story to the learners with hearing impairment, to some extent learners were slightly able to understand the part of the lesson content. This finding is in line with Moores (2001) who observed that learners with hearing impairment lack the ability to comprehend length information. It therefore serves to justify the teachers’ strategy to simplify the information to learners in a situation where the teacher was perceived to have limited skills in expressing herself in modalities that could easily be understood by learners.

On the other hand, the strategy the teacher used had loopholes in that it may limit learners with hearing impairment in gaining the whole content of what was being taught as compared to the rest. In comparison with today’s academic standards required it may lender learners with hearing impairment less privileged. Certain subjects require comprehension of the whole content area to be able to realize improved progress academically.

It is against this background that several researches done indicate retarded educational outcomes for learners with hearing impairment. The performance has not been parallel to those of their hearing peers (Braden et.al, 1994). Simply because most of the information is communicated in a manner that does not make learners with hearing impairment fully understand.

5.3.4 The communication challenges faced

As presented in the fourth chapter, the teacher had difficulty in using more than one communication modality. There were moments when she only concentrated on the hearing learners because of the communication breakdown. The communication modality used by the teacher was speech and could not easily be understood by learners with hearing impairment.

For instance, while the teacher was reciting the story in ‘luganda’ the area language of the area together with other learners, learners with hearing impairment were left unattended to. As observed, this caused some kind of disruptive behavior and inattentiveness amongst learners with hearing impairment.

Finding an appropriate communication modality to use in classroom instruction seems to be very challenging. According to Vaughn & Schuman (1995) inclusive education is not without constraints and the greatest threat confronting inclusion of learners with hearing impairment is the difficulty in using appropriate communication modality during classroom instruction. Experience has proved that determining an appropriate communication modality to use in an inclusive class may be more challenging, especially in the teaching of different subjects (lesson content).

Labon (1997) stresses the need for teachers to depart from the practice of teaching the whole class the same content at the same time. He contends that, they should prepare one main lesson with variations which are responsive to individual learners needs. Or else, it is imperative to conclude that learners with hearing impairment as the linguistic- minority group in a class may be subjected to more limitations in terms of attaining the relevant knowledge and skills in the different academic related subjects taught.

5.3.5 Perception on the video- based material ‘Teachers for All’

The teacher was able to perceive use of varied communication modalities in the sequences worked with, despite the fact that no example of any modality was mentioned. Further, identified some strategies teachers in the sequences used to maintain the good learning classroom environment. Nonetheless, the teachers concern was on the teacher pupil ratio, classroom contextual factor which may hinder progress. For instance, this class had a total of 130 pupils. This is typical of the UPE classes in Uganda, and it is the teachers’ responsibility to find ways of overcoming the dilemmas that come by. The inclusion policy entails a framework within which all learners regardless of their conditions are required to receive appropriate services and support (Vadey and Anongo, 2004). Such perceptions seem to indicate that the teacher was aware of the need to use multimodal communication in the instruction of learners with hearing despite other influencing contextual factors within the classroom.

5.3.6 How the video influenced the teachers' instruction

The findings indicated improved performance after the teacher had worked with the video material 'Teachers for All'. It seems the use of the communication modalities identified in the sequences by the teacher led to improved performance in the lesson taught thereafter.

Likewise, it might have been due to the nature of the lesson taught before, that there was a limitation in use of the communication modalities to appropriately instruct learners with hearing impairment. There may be no particular conclusion drawn, but the changes noticed in the teachers' instructional strategy after working with the material could be a basis upon which one could say there was improved performance in the instruction of learners with hearing impairment.

The other finding was related to participation where the teacher managed to encourage learners with hearing impairment to participate actively in a lesson taught after working with the material. They were able to sign the words and write sentences on the chalk board.

5.4 CASE B

5.4.1 The communication modalities used

The commonly used communication modality by this teacher was speech, in the teaching of the two science lessons. This was followed by few signs and other non-verbal communication modalities such as finger spelling, gestures (pointing & body touch) and facial expression.

This response from the teacher re-affirms the statement, *'I used speech more often and few signs together with other non-verbal communication modalities finger spelling and facial expression.* For instance, when the teacher was explaining the conditions of vomiting and diarrhea to learners with hearing impairment, she changed the facial expression (mood on face) to bring out the clarity of the information conveyed. But the effort was fruitless because none of the learners was able to comprehend what the teacher was trying to communicate.

Learners with hearing impairment learning in an orally pure or auditory environment will definitely fall behind their peers academically. They can not comprehend the information neither participate as expected. Assumption is that, listening to a lesson for a learner with hearing impairment in this type of setting is like trying to do a puzzle with half the pieces missing.

Contrary, (Ekwana, 2003) believes that oral communication makes learning more readily mediated than writing, signing, gesticulating, and pantomiming, and so on. This is just because the conventional medium for all humans have always been speech. Based on this argument, it is likely that the teacher in discussion was accustomed to that kind of approach when instructing the class. Since this has always been the practice in the ordinary school settings.

Nevertheless, as observed use of speech limited learners with hearing impairment participation and understanding of the taught content. The ordinary classroom teacher could not give adequate interpretations as she was not competent in signing, neither could the learners contribute because of the inability to perceive what was communicated. Noted was also misinterpretation of the two communication modalities gestures and signs by the teacher. A gesture is a form of non-verbal communication in which visible bodily actions communicate particular messages, whereas signs could be conventional or abstract. Use of gestures in the teaching and learning process may not bring out clarity of the whole information to learners with hearing impairment. Most of the lesson content at that level tends to be abstract and requiring use of appropriate communication modalities to be able to prepare all learners for today's competitive academic world. The teacher in discussion seemed to have used more of the gestures than signs in classroom communication.

In addition various classroom related factors in this class such as participation, motivation of learners and feedback, interpersonal relationship between teacher and learners with hearing impairment, peer and peer, were all fostered through the use of the oral medium of communication. This was a typical example of deprivation of both the social and academic inputs to learners with hearing impairment, in inclusive classrooms. The implication is that there would be slim chances for such a learner to realize success in the academic subjects taught (Ademokoya, 2008). Further being incompetent in signing also affected the teachers' quality of teaching and understanding of children's contributions.

5.4.2 Why the mentioned communication modalities were used

The reason for using the communication modalities according to this teacher was basically to involve all learners and make them understand the topic that was being taught. But since the lesson was mostly conducted through speech, less was perceived by these learners with hearing impairment. Their participation in other words was minimal because of the teachers'

inability to use the appropriate communication modality. Learners with hearing impairment understand better when things are presented to them visually and not auditory. This is in agreement with what Knight & Maltby (2000) who said, hearing loss greatly impacts on the learners performance more so where things are presented in abstract and this may be a cause for further accusations like being un-attentive, uncooperative or academic inept. This has got an implication in that pedagogical challenges will continually be experienced by learners with hearing impairment.

In conclusion, possibly instruction of learners with hearing impairment do require the teachers skillfulness, academic related modifications and improved collaboration to ensure effective service provision in a classroom discourse.

5.4.3 How use of communication modalities influenced instruction

Quoting the teachers utterance, *'Use of various communication modalities helps learners to be alert all the time. I can just look at the child whose attention is away and then he or she comes back to the lesson or use simple gestures and draw learners attention'*. Interpretation of the response meant that use of various communication modalities enabled the teacher to capture learners' attention. Alternatively, it might mean that there was focused attention to what was being taught which definitely may result in improved understanding of the lesson content. On the other hand, this may not fully be true because of what transpired during the instruction process. Learners with hearing impairment seemed confused and not easily following the lesson.

5.4.4 The communication challenges the teacher faced

The challenges faced by the teacher, as presented in the fourth chapter are not very different from what has just been discussed above. Using the teachers own words, *'At times when am teaching, I forget that it is an inclusive class and don't sign to learners with hearing impairment neither use gestures, I continually use speech and remember afterwards, and I also lack Sign competence skill'*. *The topic was also difficult and most of the words were complicated'*. This has been common practice in most of the inclusive classes today.

Plausibly, the teachers training background also limited the expression. Otherwise, learners with hearing impairment academic performance has to be understood in the context of the child's needs, level of understanding and environmental set up.

Not taken into consideration, such aspects cause's limitations amongst learners with hearing impairment in several ways, thus a failure to compete at the same level with others. This is one of the reasons as to why in the Ugandan context, the word 'kasiru' is still being used by the immediate communities and some teachers in schools to refer to a child who is deaf as such. Deafness in the sense that it encompasses all category of hearing loss, since all use signs to communicate. It is therefore important for teachers handling inclusive classrooms to acquire additional knowledge and skills that can enable them improve on their instructional practices within these settings.

Teacher development has to be at the heart of every initiative for developing inclusive practices in schools (Booth, 2003). It is the only way challenges can be reduced if not eliminated completely. Similarly, teachers in inclusive classes whether general or special trainers should recap the lessons or consult each other before delivery. This simply is to ensure that they are able to communicate the rightful information in the expected way possible. This however does not refute the idea that subjects taught may tend to be more abstract as learners move from one class to another which poses difficulty in presentation of the information in the most appropriate way possible. And in most cases, some words lack signs, thus requiring use of other techniques to explain all that needs to be so.

5.4.5 Perception on the video- based material 'Teachers for All'

According to the teachers' response, finger spelling as one of the communication modalities used in the sequences worked with was identified and linked to what was done in one of the lesson taught. The teacher used finger spelling to spell the abstract concepts like constipation, digestive system and others. In other words the perception appears to mean that there are instances when instructional techniques used tend to be similar in the teaching of certain concepts and dependent on the content.

Further the teacher perceived the video-material in relation to other contextual factors that can either facilitate or hinder instruction. It is as reflected in the teachers response, '*when teaching there is need to use concrete objects, because some of the concepts are difficult to explain to the learners and the classes in the sequences seem to be very small and yet ours the population is too large*'. Teaching and learning materials are enhancers in the learning

process especially for learners with hearing impairment and several other factors in a classroom situation can limit the instructional process.

5.4.6 How video influenced the teachers' instruction

There was improved performance in the second lesson after the teacher worked with 'Teachers for All' video material. The teacher was able to use few signs and other non-verbal communication modalities as presented in chapter four.

Similarly, after working with the material the teacher was able to create a bond in between her and the learners with hearing impairment. Unlike in the first lesson, the socio-atmosphere in the classroom slightly improved in the second lesson taught. For instance, an indicator is the many times the teacher tried to beckon learners with hearing impairment to participate and during an activity there was increased support given. This was the identified and assessed evidenced that the teacher utilized some of the skills attained from the 'Teachers' for All' video material sequences worked with.

5.5 CASE C

5.5.1 The communication modalities used

The teacher balanced use of the three communication modalities, speech, signs, finger spelling and total communication. Balanced use of communication modalities is one way of realizing improved understanding in not only learners with hearing impairment but the entire members of the classroom. However, even though there was balanced use of the communication modalities, experience has shown most often more information may be spoken than signed. Considering use of other measures like applying total communication may to some extent reduce on such occurrences.

Notwithstanding, total communication modality works better than other communication modalities in an inclusive education arrangement since it allows for a resourceful use of verbal and non-verbal communicative skills (Ademokoya, 2008). It both facilitates better social interaction and classroom instruction amongst all learners in an inclusive class. Which the teacher in discussion also adapted for use.

A single modality may tend to be superior of the other and at another time one supplements the other as observed in this lesson. Different content area may also require use of specific communication modalities. For instance, names of lakes necessitated both the teacher and learners with hearing impairment to finger spell them. Noticed, while learners with hearing impairment finger spelt the names of the lakes, the teacher mentioned letter by letter to the rest of the class, and if a name was mentioned through voicing the same procedure was followed. This has got a positive impact in that there would be improved interaction and understanding not only among the peers but also the teacher.

Observed, it is not only learners with hearing impairment who constructively benefitted from this kind of practice but also the rest of the learners. This type of strategy where constant reminder of the lesson content was enforced through application of different modalities not only yields to positive outcomes but also leads to improved attention and continued participation of learners in the different classroom activities. Learners with hearing impairment in this class were equally seen to be active as their hearing counterparts. And chances of retaining the learnt information are high.

In addition, the socio-atmosphere in the classroom provided increased flexibility in the classroom. Constant feedback was given to learners with hearing impairment which boosted their morale. Observed, when an answer was given by a learner with hearing impairment, the teacher constantly reminded other peers to appreciate him or her by clapping in signs. Apart from telling the peers to do so the teacher too did the same.

Clapping in signs, involves waving of the hands in air, twisted a couple of times. It was considered as the most appropriate way of motivating and showing appreciation to learners with hearing impairment, since they are not able to perceive the auditory information as is the case with the rest. In real life, motivation leads to positive outcomes in terms of learning and development. It is essential in a classroom realm. . Education without enforcement of the two kills learner's ambition to learn. Research suggests that, this process realized and enforced results in high-quality learning and conceptual understanding (Deci, Vallerand, Pelletier and Ryan, 1991).

Frequent social approval should be a teacher's most trustworthy device when academic achievement is to be realized. Against this discussion therefore, learners with hearing

impairment given the optimal opportunities to learn as suggested in the results can ably enhance the competitive nature in them.

5.5.2 Why the mentioned communication modalities were used

Explanation given by the teacher for using the communication modalities mentioned was, *'use of various communication modalities helped in delivery of the subject matter to the learners and eased their understanding of information taught'*. The findings may be rooted on the perspective that, information delivered in the best modality understood by both the learner and the teacher is easily grasped than that where no common medium is used. Finding a functional communication modality for all learners in an inclusive class is very important; for it maximally benefits all learners within that setting and improves the academic standards (Ekwana, 2003). Conclusively, it seems the teacher had varsity experience in working with learners with hearing impairment which enabled the successful teaching.

5.5.3 How use of communication modalities influenced instruction

The communication modalities influenced the instructional process in such a way that it led to clear understanding of the lesson and increased participation of learners with hearing impairment. As pointed out by (Levine , 2001) , the major difficulty faced by children with hearing loss is obtaining sufficient access to oral communication , but if there is a divide of the communication modalities between the auditory and visual, it creates less restriction on their participation and the understanding of information.

Already presented, the teacher ensured balanced use of the communication modalities, the visual and auditory in the lesson taught. The other contributory factor to realized achievement could be the teachers' background training. Successful facilitation of an inclusive classroom may largely rely on the teachers' attitude, expectation and competence.

5.5.4 The communication challenges the teacher faced

According to the teacher no communication challenge was faced as reflected in the response presented. However, as much as the teacher said had no challenges, but as prior mentioned not every information spoken may be signed. Possibly, this could have been the reason as to

why at one point, the teacher was failing to obtain an answer from the learners with hearing impairment. Just because they had either missed out on a point or had not understood.

In any inclusive classroom communication challenges are bound to occur. For instance, based on own experience of teaching learners with hearing impairment, several words may not easily be signed or even lack a sign, thus requiring use of other techniques. Supported Solit, Taylor and Bednarczyk (1992) argued that, different situations may require appropriate use of particular modalities over the other.

On the other hand, the teachers' sentiment can not be banished. Because according to what happened in the class, the easiness and cordial relationship made the whole lesson a success. In addition, increased participation and the supportive environment all are were among other factors to judge the basis for success. Success of every educational program hinges on the committed effort of the teacher in understanding the varying needs of learners and offering the required support.

5.5.5 Perception on the video- based material 'Teachers for All'

A sequence on storytelling was identified where the teacher in the sequence used two communication modalities alternatively, speech and signs. For instance in the sequence, the teacher first used speech to tell a story about animals and then signed to learners with hearing impairment. Choice of the communication modality depends on the teacher and may vary depending on how competent one is. It may be even choice or subject taught and varying from teacher to teacher.

The statement that, *'my thinking about inclusion has also been changed in relation to the care or close relationship you give to learners especially those with hearing impairment'*. It could be interpreted to mean that the teacher observed the importance of providing a suitable atmosphere in the classroom. This was another contextual factor contributing to the success of classroom communication and instruction.

5.5.6 How video influenced the teachers' instruction

The teacher was observed once and this was after working with the video- material. It was not clear whether the material improved on the instruction practice. Nonetheless as discussed above, the teachers thinking changed which could be one reason of the attributes to improved

success. Possibly the material worked with might have led to that kind of thinking and the instruction strategies used by the teacher. All in all the teacher showed competence and willingness to instruct and involve learners with hearing impairment in the lesson.

5.5.7 Cross-case analysis

The teachers used varied communication modalities which were speech, signs, speech and signs simultaneously and total communication. Added were other non- verbal communication modalities such as finger spelling gestures, mouthing, facial expression and body movement. Conversely, much of the classroom communication was mostly dominated by speech, especially with the teacher in primary two during the teaching of the reading and writing lesson and the teacher in primary four while teaching the science lessons. Observed was the teacher in primary six who balanced use of the communication modalities.

The technique for applying one communication modality over another differed from teacher to teacher and lessons taught determined choice. For example, one modality was seen to be supreme over the other in some of the lessons observed which was absolutely expected in any setting. And other contextual factors seemed to have influenced how the teachers communicated and instructed the classes as discussed above. Contextual factors such as teacher learner relationship, physical set up of the classroom, classroom management, pupil ratio, content design, teachers preparation and attitude, to mention but a few. According to the social constructivist theory, our knowledge is shaped or constructed through the social influences and interactions within our environment (Vygotsky, 1978). Therefore, to effectively use the communication modalities identified by the teacher, there was need to put into consideration other contextual factors that might be of an advantage or disadvantage to successful instruction.

In the same way, perceptions on the video material ‘Teachers for All’ differed from teacher to teacher and relevant issues were pointed out in relation to classroom communication.

Analysis of the perceptions indicates a general agreement to usefulness of the material in helping to reflect upon own thinking and practice. According to Blake and Sekular (2006), perceptions allow each and every individual to construct a ‘personal theory of reality’. If teachers were able to identify key aspects in the video- sequences worked with, then this was an indication of how relevant it was to work with it in this research project. In summary, improved practice was noticed in the three cases worked with in this study.

5.6 Conclusion

The choice of communication modalities to use in the instruction of learners with hearing impairment from within an inclusive classroom is very contentious. As discussed, hearing impairment and inclusion is still one of the major issues that cause controversies amongst the different stakeholders. Therefore, an inclusive class of hearing and non-hearing requires teachers' commitment and skillfulness to be able to reduce the impact hearing loss poses onto the learner.

Further, hearing impairment as a disability disrupts one's social connections in a more substantial way than any other impairment. But as Vygotsky put it, the sensory or neurological impairment itself may not be the problem but the societal perceptions and support given. Support in terms of developing communication competence, which would definitely call for use of alternative communication measures to ensure integration. Therefore, understanding the nature, degree and the consequences of hearing loss is very fundamental to each and every other teacher. Knowledge gained could in part help to reduce on the limitations faced. It should be however noted that, one category may prefer use of particular communication modalities over the other.

There are varied communication modalities that can be used during classroom instruction. The choice of the modality largely depends on teacher competence and skillfulness. It is in other words the teacher to determine or choose which modality fits what and when is it appropriate to use this or that. Although this may too depend on the subjects taught. The cases worked with used the four main communication modalities differently, the speech, signs, speech and signs simultaneously and total communication.

Use of communication modalities that may facilitate effective instruction requires that teachers are supported by the different professionals or expatriates such as the deaf adults, interpreters, fellow experienced teachers and others. The expatriates may be more skilled in use of signs like the deaf adults or interpreter. Signs are basic semantic units of Sign language, much as words are basic to spoken language (Richard and Marianne, 1998). Signs are symbols. They represent concepts which are visually perceived. Sign Language is a visual/gestural language based on the use of hands, face and the rest of the body parts. Sign

language has all the characteristics of a language and it is the official language for persons with hearing impairment.

Sign Language documentation in the Uganda government constitution was another developmental milestone that supported use of the visual/manual communication modalities, under cultural objective XXIV, it states that... *the state shall promote cultural values that are consistent with fundamental rights, freedom and human dignity, and one of them is to promote the development of Sign Language for the deaf (Uganda Constitution, 1995)*. Hitherto, this has been the Deaf communities plight and biggest achievement ever realized. Therefore teachers' use of the visual modalities is no harm at all but could be an avenue to improved inclusionary practices. This however does not mean that it should be only signs used in the classroom, but together with the teachers attitudes a change could be realized.

Teachers should constantly reflect upon what they think, do and how they do it. It may help to reduce the experienced barriers to learning in the inclusive classrooms. This was the main reason for working with the video- based material entitled 'Teachers for All'. Similar or differentiated approaches can be applied as long as they do help the teacher to reflect on own practice, thus transformed minds and practices in inclusive settings.

Within the context of this paradigm 'Deafness and its academic and social implication, it is very pertinent that, each and every other person in the system gets involved in the provision of equitable educational services that provides optimal learning opportunities to learners with hearing impairment in inclusive classrooms.

In summary, although much information about this phenomenon has been presented and discussed in the previous chapters, further critical consideration on the issue of classroom communication and inclusion of learners with hearing impairment may be deemed necessary.

5.7 Recommendations

- Programs on Sign language instruction in schools should be developed and run on a regular basis convenient to the teachers' schedules, which could enhance on their skills.
- Sign language dictionaries with academic related words should be developed for use in the classroom to support classroom teachers during instruction, and this possibly is the responsibility of the deaf community as the users of the language. The dictionary

could be valuable to learners with hearing impairment in that it would not only help them know the signs, but also learn various English words that are used to signify similar concepts conveyed in a particular signs. That is if the dictionary presents the signs in a logical manner.

- Lastly improved support to learners with hearing impairment and collaboration of the relevant stakeholders should be enhanced in the designated Universal Primary Education Schools in Uganda. And possibly development of favorable language policies to be used in schools.

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APPENDIX 1: INTRODUCTORY LETTER



UNIVERSITY
OF OSLO

Department of Special Needs Education

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Your ref:
Our ref: 06/09 ST/dh
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Date: June 8, 2009

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FACULTY OF EDUCATION

TO WHOM IT MAY CONCERN:

This is to certify that **NSEREKO, Harriet**, date of birth 15.01.1969, is a full-time student pursuing a course of study at the Department of Special Needs Education at the University of Oslo, Norway, leading to the degree of Master of Philosophy in Special Needs Education (M. Phil. SNE).

This is a continuous two-year programme run on the "sandwich" principle, which involves periods of study and field work/research in both Norway and the home country. The student is currently in the second semester of the initial study period in Norway and will be working on the collection of data and the writing of a thesis during the autumn semester 2009. This involves a period of field work in Uganda from 1 July to 31 December 2009. The student will then return to Norway for the final part of the degree. The period of study will be completed at the end of May 2010.

The main responsibility for supervising the research, developmental work and thesis remains with the Department of Special Needs Education, University of Oslo, Norway. However, we would kindly request that the relevant authorities give the student the access required to the schools and educational establishments necessary in order to undertake field work and research. We would also be most grateful for any assistance that is afforded to the student which enables her to carry out this work, particularly the use of facilities such as access to telephone, fax, e-mail, computer services and libraries at the various educational establishments.

Yours sincerely

A handwritten signature in cursive script, appearing to read 'Steinar Theie'.

Ass. Professor Steinar Theie
Academic Head of International Master's Programme
Department of Special Needs Education

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APPENDIX 11: LETTER OF PERMISSION

Ms. Harriet Nsereko
P.O.Box 23305
Kampala
Mob: +256772584059
Email: tabharriet@yahoo.co.uk

24th August 2009

The Commissioner,
Special Needs Education/ Career Guidance and Counseling
Ministry of Education and Sports

Dear Sir/Madam,

Re: Permission to conduct Research in Primary Schools

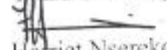
I am Harriet Nsereko, a staff of Kyambogo University, in the Department of Special Needs Studies. Currently I am pursuing a two year Master of Philosophy Degree in Special Needs Education (M.phil. SNE) at the Department of Special Needs Education, University of Oslo- Norway (See letter of introduction attached).

As part of my study programme, I have come home to collect data for my research project. The title of my study is "Multi-modal Approach to Communication in the Instruction of Learners' with Hearing Impairment in Inclusive Classrooms".

The research is in partial fulfillment of the requirements for the award of M.phil.SNE of the University of Oslo. The purpose of this letter is to request for your permission to allow me conduct this educational research in Inclusive primary schools in the selected districts of Masindi, Luweero and Wakiso.

Thank you for your considerations.

Yours Sincerely,


Harriet Nsereko
M.Phil student- Department of SNE
UiO- Norway.

cc. Vice Chancellor, Kyambogo University
Deputy Vice Chancellor, Academic Affairs
Ag. University Secretary
Ag. Dean, Faculty of Special Needs and Rehabilitation
Ag. Head, Department of Special Needs Studies

*This is a genuine activity,
Permission granted.*
fp Commissioner - for
Special Needs Education
MINISTRY OF EDUCATION & SPORTS
25/8/09

APPENDIX 111: LETTER FROM DISTRICT EDUCATION OFFICER

Ms. Harriet Nsereko
P.O. Box 23305
Kampala.
Tel: 0772584059
Email: tabharriet@yahoo.co.uk

9th September, 2009

The District Education Officer
Luwero District.

Dear Sir/ Madam,

Permission to conduct research in Luwero Boys

I am Harriet Nsereko, a student at the University of Oslo- Norway, persuing a Master of Philosophy in Special Needs Education (M.phil). As part of the requirement, am supposed to conduct research in my home country. Currently, I am back to Uganda to collect data for my research project.

My research project is about, use of 'Multimodal Approaches to Communication in the Instruction of Learners with Hearing Impairment'. For active participation, learners with Hearing Impairment require use of specific modes of communication from within and outside the classroom. However, this is an area that poses a number of challenges to the educators in the inclusive settings in terms of communication. There fore, it is necessary to investigate what the current practice is, and teachers are the targeted participants for the study, who will be purposively selected. Apart from the collection of data, a video based material will also be introduced to the teachers' to enhance their teaching skill.

The reason for this letter therefore, is to request for your permission to allow me conduct research in the school mentioned above. (For further information, refer to copies of introduction attached).

Thank you for your kind response.

Yours Sincerely,

Harriet Nsereko
M.Phil student- Department of SNE
UiO- Norway



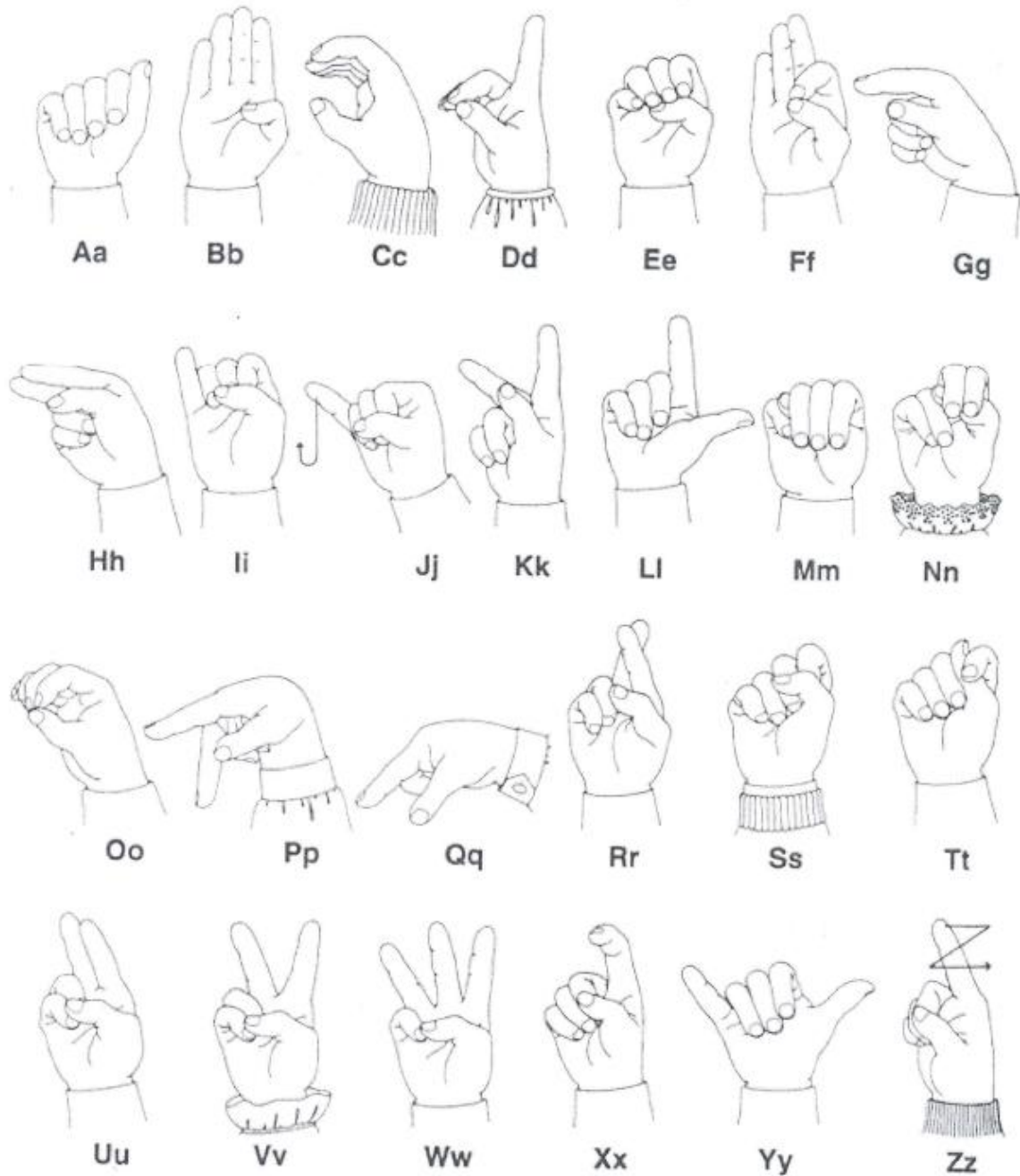
*Permission granted
and p/ce accord her
the necessary assistance
possible
J. M. Nsereko*

*Note: For can also
visit Lukemera C/U
and Bahitta hwoogi p/s
For more information on
your research*



APPENDIX 1V: SIGN LANGUAGE ALPHABET

Sign Language Alphabet



APPENDIX V: INTERVIEW GUIDE FOR TEACHERS

Sex: Case

Background training:

Teaching experience: Lesson taught:

Date:

Introductory remark:

This is not to evaluate your performance, but supplement information to what has been observed. I would like to have an interview with you so as to attain your own views on the just concluded lesson taught. We are going to use your recorded lesson and the ‘Teachers for All’ sequences worked with concurrently. Feel free to share with me and where you need more clarification, do not hesitate to ask.

Themes of focus

- **Performance Evaluation**
The lesson conducted by the participant.
- **Communication modalities**
 - (a) Any used(Yes/ No)
 - (b) Which one?
 - (c) Why use?
 - (d) Experience in using more than one modality.
- **Lesson Content**
 - (a) Covered/ Not covered
 - (b) Indicators
 - (c) Involvement of Learners with Hearing Impairment
- **Influence**
 - (a) Modality used in classroom instruction
 - (b) Of the video sequences worked with
- **Challenges**
 - (a) Challenges faced with.
 - (b) How overcome the challenges

Other suggestion:

Thank you for the Cooperation.

APPENDIX VI : OBSERVATION CHECKLIST FOR TEACHERS

Sex: Qualification:

Setting: Class:

Classroom population: Lesson taught:

Date: Time:

What Multi-modal Approaches to Communication do teachers use in the Instruction of Learners with Hearing Impairment?

Multimodal Approach	Mode/ Modality	Exhibits(Observabable behavior) When;-
	Sign Language	
Manual	Gestures	
	Finger Spelling	
	Speech	
Oral	Lip- reading	
	Oral- auditory	
Simultaneous	Total communication	
	Writing	
	Reading	
Others	English supported systems	

The Instructional strategies use (Individual, Group and Whole class approach)

Multimodal Approach	Mode/ Modality	Exhibits(Observabable behavior)- How;-
	Sign Language	

Manual	Gesture	
	Finger Spelling	
	Speech	
Oral	Lip- reading	
	Oral- auditory	
Simultaneous	Total Communication	
	Reading	
	Writing	
Others	English supported systems	

Other Contextual Factors

Factor	Exhibit
<ul style="list-style-type: none"> Stimulating or bias free learning environment 	
<ul style="list-style-type: none"> Classroom size or physical space & instructional material used 	
<ul style="list-style-type: none"> Teacher position 	
<ul style="list-style-type: none"> Attention and participation 	
<ul style="list-style-type: none"> Placement of learners with Hearing Impairment in relation to the chalkboard 	
<ul style="list-style-type: none"> Teacher preparedness or skillfulness 	
<ul style="list-style-type: none"> Teacher pupil & pupil relationship or collaboration and equal involvement 	
<ul style="list-style-type: none"> Classroom management 	

General comment:

Signature Observer:

APPENDIX VII: LETTER OF INFORMED CONSENT TO TEACHERS

I warmly extend my sincere greetings to you. I am currently a student, at the University of Oslo pursuing a Masters degree in Special Needs Education. As part of the course, I am required to conduct research in the home country. The focus of my study is on Multimodal communication in the Instruction of Learners with Hearing Impairment, in inclusive classrooms.

Data will be collected through Observation as the main method, followed by interviews. During classroom observation, video recording of the lesson in progress will be done and a recorder for interview verbatim respectively.

In between the process, a video based material entitled ‘Teachers for All’ will be introduced and worked with to find out how it influences on your thinking and practice. Participants are to be purposively selected, those willing to participate and have children with Hearing Impairment in their class.

I there fore seek your consent to participate if you are willing to, and if not you are free to withdrawal. All information provided will solely be used for research purposes and treated with utmost confidentiality.

On this note, you are requested to decide voluntarily by signing below and no name is required, neither the schools name.

Thank you for your cooperation.

Research Participant,

.....

APPENDIX VIII: SUMMARY OF FINDINGS

Case A

Main research questions

1. How do teachers perceive and apply multi-modal communication in instruction of learners with hearing impairment

2. How does the video based material entitled ‘Teachers for All’ influence the teachers thinking and practice.

s.no	Sub-question	Findings	Quotes/examples
1	What communication modalities do teachers use in the instruction of learners with hearing impairment	The most commonly used communication modality to teach is speech	<i>‘I mostly used speech, followed by signs to teach the lesson’.</i> <i>I could not sign all the words in the lesson conducted in the local language of the area ‘luganda’.</i>
		Signs were used when the teacher wants to specifically communicate to learners with hearing impairment	T. How do we sign this word? – ‘greet’. T. “Tuddemu nga nebano banaffe bweba signing” (We repeat as our friends also sign). <i>‘let me ask my friend here to come and sign</i>
		In some cases non verbal communication like facial expressions, gestures were used to accompany speech and signs	T. Try- { <i>sign and facial expression; smile, raised eyebrows</i> }.
2	Why teachers use the communication modalities mentioned above	<i>‘I used those modes because of the category of learners in the class; children who are Deaf have to learn through signs and the hearing through speech.’</i> <i>‘I was often using speech and some signs to involve all the learners in the lesson and help them understand’.</i>	
3	How the use of the communication modalities mentioned above influence their instructional practice	<i>‘Use of different communication modalities enabled me teach what I was supposed to teach and all learners were able to understand what is being taught, because they were able to sign all the words.</i> <i>‘Children get to know what is taught, what to say, when and how, more so when added with other non-verbal modes of communication, such as facial expression...</i>	

		<i>'to a certain extent the communication modalities I used enabled me to form simple and short phrases that were easily understood by learners with hearing impairment'.</i>
4	Challenges teachers face in using the communication modalities mentioned above	<i>'I think it is challenging to use more than one mode of communication, sometimes you may talk much and forget others, and sometimes you may sign and leave out the rest. Further, at times children with hearing impairment may not get what they are supposed to get and it is time consuming shifting from one mode to the other'. aaa....., hmmm... 'Teaching using different communication modalities in a lesson conducted in luganda is very challenging. I ended up not explaining everything to the learners with hearing impairment',</i>
5	Influence of the video material 'Teachers for All'	<i>'In the sequences worked with, i have observed teachers using different communication modalities in different subject's.</i>

Case B

s.no	Sub-question	Findings	Quotes/examples
1	What communication modalities do teachers use in the instruction of learners with hearing impairment	The most commonly used communication modality to teach is speech, followed by a few signs and other non-verbal communication modalities.	<i>'I used speech more often, but I also tried to use a few signs, finger spelling and sort of... (#pause) we can call them facial expression. She gave an example, that when I was talking about vomiting I demonstrated and showed learners with hearing impairment what happens when</i>




			<i>you have diarrhoea, changed the facial expression- mood on face' {facial expression-scared or face in agony}.</i>
2	Why teachers use the communication modalities mentioned above	<i>'I used those communication modalities because I wanted to involve all the learners'.</i> <i>'I used those communication modalities mentioned to make learners understand the topic I was teaching, disorders of the digestive system</i>	
3	How the use of the communication modalities mentioned above influence their instructional practice	<i>'Use of various communication modalities helps learners to be alert all the time. I can just look at the child whose attention is away and then he or she comes back to the lesson or use simple gestures and draw learners attention'</i>	
4	Challenges teachers face in using the communication modalities mentioned above	<i>At times when am teaching, I forget that it is an inclusive class and don't sign to learners with hearing impairment neither use gestures, I continually use speech and remember afterwards, and I also lack Sign competence skills'.</i>	
5	Influence of the video material 'Teachers for All'	<i>'The topic was difficult and most of the words were complicated'.</i> <i>Finger spelling is helpful in signing different words, names and words with no signs.</i>	

Case C

s.no	Sub-question	Findings	Quotes/examples
1	What communication modalities do teachers use in the instruction of learners with hearing impairment	Balanced use of the communication modalities; speech, signs, and finger spelling. Total communication was applied once.	<i>'Apart from using speech, signs and finger spelling, I used total communication when explaining the importance of the lakes, for instance, I said for tourist attraction {signed it</i>

		<p><i>also, wrote, drew and demonstrated}. This was to help them understand the concept 'tourist'.</i></p> <p><i>' I used two communication modalities, speech and signs depending on the category of learner who was and had given an answer.</i></p>
2	Why teachers use the communication modalities mentioned above	<p><i>'Use of various communication modalities helps in delivering the subject matter to the learners'.</i></p> <p><i>'It is also easier to grasp the ideas and information delivered, if you use a mode understood best by a learner'.</i></p>
3	How the use of the communication modalities mentioned above influence their instructional practice	<p>Use of the communication modalities lead to improved understanding according to teacher C, and most of the modalities used supplemented each other in a way, i.e. she said, <i>'if an object is signed, it can also be finger spelt or lip-read around the mouth.</i></p>
4	Challenges teachers face in using the communication modalities mentioned above	<p><i>'I never had any communication challenge, apart from other physical aspects within the classrooms and those related to curriculum provisions'.</i></p>
5	Influence of the video material 'Teachers for All'	<p><i>There could be a variation in the communication modalities used when teaching different subjects.</i></p>

APPENDIX IX: JEFFERSON TRANSCRIPT NOTATION

Symbol	Name	Use
[text]	Brackets	Indicates the start and end points of overlapping speech.
=	Equal Sign	Indicates the break and subsequent continuation of a single utterance.
(# of seconds)	Timed Pause	A number in parenthesis indicates the time, in seconds, of a pause in speech.
(.)	Micro pause	A brief pause, usually less than .2 seconds.
. or 	Period or Down Arrow	Indicates falling pitch or intonation.
? or 	Question Mark or Up Arrow	Indicates rising pitch or intonation.
,	Comma	Indicates a temporary rise or fall in intonation.
-	Hyphen	Indicates an abrupt halt or interruption in utterance.
>text<	Greater than/Less than symbols	Indicates that the enclosed speech was delivered more rapidly than usual for the speaker.
<text>	Less than/Greater than symbols	Indicates that the enclosed speech was delivered more slowly than usual for the speaker.
	Degree symbol	Indicates whisper, reduced volume, or quiet speech.
ALL CAPS	Capitalized text	Indicates shouted or increased volume in speech.
<u>underline</u>	Underlined speech	Indicates the speaker is emphasizing or stressing the speech.
:::	Colon or Colons	Indicates prolongation of sound.
(hhh)		Audible exhalation.
(text)	Parenthesis	Speech which is unclear or in doubt in the transcript.

APPENDIX X: WALDO'S CHECKLIST

Name _____ Completed by _____

Date _____

SECTION I: READINESS FOR SYMBOLIC COMMUNICATION

Primary Considerations	YES	MARGINAL	NO	NEED FURTHER INFORMATION
Does the student indicate wants and needs in any way?				
1.01 Has facial expression or laughter to indicate pleasure.				
1.02 Has facial expression to indicate discomfort or anger.				
1.03 Can indicate in some way that they want more of a preferred activity, food, etc.				
1.04 Looks at or gestures to obtain a preferred object, activity, etc.				
1.05 Points to pictures, uses manual signs, or says words to express wants and needs.				
Does the student respond to reinforcement?				
1.11 Refuses some activities or foods.				
1.12 Shows preferences for certain foods.				
1.13 Shows preferences for certain toys, recreation items, or activities.				
1.14 Shows preferences for certain people.				
1.15 Positive reinforcement procedures have been effective recently in a learning situation.				
Does the student exhibit behaviors which would interfere with learning activities?				
1.21 Is frequently ill.				
1.22 Seizures.				
1.23 Tantrums.				
1.24 Displays self-stimulatory behaviors.				
1.25 Displays self-abusive behaviors.				
Does the student exhibit adequate attending skills to warrant structured training?				
1.31 Establishes eye contact with objects and people.				
1.32 Follows moving objects with eyes.				
1.33 Transfers eye gaze from one object to another.				
1.34 Follows simple instructions like "look" or "wait".				
1.35 If not confined to a wheelchair, remains seated in a chair for 2 minutes at a time during a structured activity.				
Does the student exhibit cognitive skills prerequisite to language?				
1.41 Looks for objects not in sight.				
1.42 Uses objects correctly (such as playing with toys, brushes hair, etc.)				
1.43 Retrieves or looks for a dropped object.				
1.44 Matches simple objects.				
1.45 Shows an understanding of turn-taking as evidenced by attempting to imitate motor models.				

