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**EFFECTS OF CAPTIONED TELEVISION ON INSTRUCTION OF LEARNERS
WITH HEARING IMPAIRMENT IN KAREN INSTITUTE FOR THE DEAF IN
NAIROBI, KENYA**

By
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*Effects of captioned
television on*



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DECLARATION

This Thesis is my original work and has not been submitted for an award of any degree in any other university.

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DEDICATION

This work is dedicated to my late father Samuel Brown Onchari (1940-1985) whose integrity, humility, love and compassion left an indelible impression on my life.

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I am greatly indebted to my supervisors Dr. Nelly Were Otube & Dr. Samson Rosana Ondigi for their guidance and informed contribution which brought about the accomplishment of this work.

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TABLE OF CONTENTS

DECLARATION.....	ii
DEDICATION.....	iii
ACKNOWLEDGEMENTS	iv
LIST OF TABLES	viii
LIST OF FIGURES	ix
ABBREVIATIONS/ ACRONYMS	x
ABSTRACT	xii
CHAPTER ONE: INTRODUCTION OF THE STUDY	
CHAPTER ONE: INTRODUCTION.....	1
1.1 Background to the Study	1
1.2 Statement of the Problem	4
1.3 Purpose of the Study.....	5
1.4 Objectives of the Study	5
1.5 Research Questions	6
1.6 Significance of the Study.....	6
1.7 Limitations of the Study	6
1.8 Assumptions of the Study.....	7
1.9 Theoretical Framework.....	7
1.10 Operational Definition of Terms	10
CHAPTER 2: LITERATURE REVIEW	
CHAPTER 2: LITERATURE REVIEW	12
2.1 Introduction	12
2.2 Performance of Learners with HI	12
2.3 Background of Karen Technical Training Institute for the Deaf.....	14
2.4 Development of Education for Persons with HI in Kenya	16
CHAPTER THREE: METHODOLOGY	
CHAPTER THREE: METHODOLOGY	28
3.1 Introduction	28
3.2 Research Design	28
3.3 The Study Locale.....	30
3.4 Description of the Target Population.....	30
3.5 The Sampling Techniques and Sample Size.....	31
3.6 Research Instruments and Techniques	32

3.6.1 Questionnaires.....	32
3.7 Piloting of Instruments	34
3.7.1 Reliability.....	34
3.7.2 Validity	35
3.8 Data Collection Techniques.....	35
3.9 Data Analysis.....	36
3.10 Logistical and Ethical Considerations	37

CHAPTER FOUR: RESULTS AND DISCUSSION OF THE FINDINGS 38

4.1 Introduction	38
4.2 Gender Distribution of the Respondents.....	38
4.3 Attitudes of Learners with HI towards Captioning as an Instructional Tool	39
4.4 Effects of Captioned Technology in the Education of Learners with HI	40
4.5 Relevance of Captioned TV as an Instructional Tool For Learners with HI.....	42
4.6 Challenges Faced by Teachers When Instructing Learners with HI Using Captioned TV Programmes	43
4.6.1 Method of Instruction Preferred.....	43
4.6.2 The Use of Captioning as an Instructional tool for learners with HI.....	44
4.6.3 Extent to which Captioned TV Programmes have a Positive Influence on Learners.....	45
4.6.4 The Strengths and Weaknesses of Captioned TV Programmes as an Instructional Tool.....	47
4.7 KIE on the Concept of Captioned TV Programmes as a Mode of Instruction for Learners with HI	48
4.8 Discussions of the Findings.....	49
4.8.1 Attitude of Learners towards Captioning as an Instructional Tool.....	49
4.8.2 Effects of Captioned Technology in the Education of Learners with HI	49
4.8.3 Adaptation to Captioned TV Programmes by Learners with HI in their Environment.....	50
4.8.4 Challenges Faced by Teachers when Instructing Learners with HI using Captioned TV Programmes.....	51
4.8.5 KIE on the Concept of Captioned TV Programmes as a Mode of Instruction of Learners with HI.	52

CHAPTER FIVE: SUMMARY CONCLUSIONS AND RECOMMENDATIONS...	54
5.1 Introduction	54
5.2 Summary of the Findings	54
5.3 Conclusions from the Findings.....	56
5.4 Recommendations	56
5.5 Areas for Further Research.....	57
REFERENCES.....	58
APPENDIX I: QUESTIONNAIRE FOR LEARNERS WITH HI	65
APPENDIX II: QUESTIONNAIRE FOR THE TEACHERS AT KTTID	66
APPENDIX III: INTERVIEW SCHEDULE FOR THE PRINCIPAL	69
APPENDIX IV: QUESTIONNAIRE FOR KIE CURRICULUM DEVELOPER.....	70
APPENDIX V: OBSERVATION CHECKLIST FOR LEARNERS WITH HI	72
APPENDIX VI: PROPOSED BUDGET.....	73
APPENDIX VII: PROPOSED RESEARCH TIME PLAN.....	74
APPENDIX VIII: REAL TIME CAPTIONING	75
APPENDIX IX: EDITED AND VERBATIM CAPTIONING.....	76

LIST OF TABLES

Table 3.1: Target population.....	30
Table 3.2: Sampling Grid.....	32
Table 4.1: Method of instruction preferred.....	44
Table 4.2: Uses of captioning	44
Table 4.3 Extent to which Captioned TV Programmes have a Positive Influence on Learners.....	45

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ABBREVIATIONS/ ACRONYMS.

ADA	-	Americans with Disability Act
DIT	-	Directorate of Industrial Training
DVD	-	Digital Video Disks
EARS	-	Education Assessment and Resource Services
HDTV	-	High Definition Television
HI	-	Hearing Impairment
HREOC	-	Human Rights and Equal Opportunity Commission
IDE	-	Individuals with Disability Education
KIE	-	Kenya Institute of Education
KISE	-	Kenya Institute of Special Education
KNAD	-	Kenya National Association for the Deaf
KNEC	-	Kenya National Examinations Council
KSL	-	Kenyan Sign Language
KTTID	-	Karen Technical Training Institute for the Deaf
KSL	-	Kenyan Sign Language
MoE		Ministry of Education
MoEST	-	Ministry of Education, Science and Technology
NCI	-	National Captioning Institute
NCII	-	National Captioning Institute Incorporation
SAGA	-	Semi Autonomous Government Agency
SE	-	Special Education
SC	-	Simultaneous Communication
SCT	-	Social Cognitive Theory
SNE	-	Special Needs Education
SPSS	-	Statistical Package for Social Sciences
TIVET	-	Technical, Industrial, Vocational and Entrepreneurship Training
TIQET	-	Totally Integrated Quality Education and Training

ABSTRACT

The purpose of this study was to find out the effects of captioned TV programmes in teaching learners with HI at Karen Technical Training Institute for the Deaf (KTTID). The study investigated the effect of captioned TV programmes that would improve the instruction of learners with HI to enable more of them enter higher levels of education. The objectives of the study were: i) Finding out the opinions of learners towards captioning as an instructional tool. ii) Investigating the effects of captioned technology in the education of learners with HI, at KTTID. iii) Establishing whether learners at the KTTID could adapt to captioned TV programmes in their learning environment. iv) Identifying challenges that are likely to be faced by teachers when instructing learners with HI using captioned TV programmes and v) Establishing whether KIE embraces the concept of captioned TV programmes as a mode of instruction for learners with HI. The study adopted a descriptive survey research design. Population under study consisted of 204 persons. Sample size was a total of 78 respondents obtained using purposive sampling. Data was collected using 3 sets of questionnaires, observation checklists and key informant interview. Most data was analysed descriptively. The results indicated that up to 35% of the respondents were of the opinion that it was very good as an instructional tool, while 41% thought it was good. These results indicated a motivating influence of captioned TV characterized by increased rate of understanding of the programmes, improved learning behaviour and ability to remember. Up to 99% of the respondents indicated that captioning had improved their attentiveness. Behaviour of learners such as self-regulation and association with characters on the screen improved to the third, ten minute interval after introduction of captioning and then declined after the learners became used to the programme. Comprehension of the plot or theme of captioned material was more or less constant. In general, the use of captioned TV programmes on learners with HI increased the students' motivation, and improved their learning. In reference to the various uses of captioning, classroom instruction was ranked highest by the teachers with a mean rank of 1.6. In addition, development of effective communication skills was ranked second at a mean rank of 2.1. Use of captioning for language development by the respondent teachers was ranked third with a mean rank of 4.1. With regards to the strengths and weaknesses of captioned TV programmes, up to 25% of the respondents were of the opinion that students enjoyed the lessons as they were able to combine what they read on the screen with what was being projected in the pictures as opposed to when one approach was used. Up to 19% of the respondents indicated that students could remember more in captioning than in other learning methodologies. In addition up to 33% of the respondents reported that through captioned TV programmes, students could learn a lot. Various challenges that hindered the development of captioning for learners with special needs included, inadequacy of captioning equipment and the teaching staff that was unfamiliar with what captioning entailed. In addition there were low levels of awareness among the school administrators on the concept of captioning and its use in education of learners with HI.

CHAPTER ONE

INTRODUCTION

1.1 Background to the Study

Education takes very high proportion of the national budget and gross domestic product (GDP) expenditure in Kenya. In the present circumstances, it would be unnecessarily expensive, illogical and retrogressive to invest in an education system that does not realize its goals and objectives. Learners who do not acquire all the necessary skills and who fail to achieve the educational goals in the long run regress to illiteracy, Burns (2003). Education of learners with hearing impairment (HI) is a subject that has received much attention from scholars internationally and nationally. The number of learners with HI accessing education is on the rise since the last decade and on the decline for graduands at every subsequent development (TIQET, 1999).

In Africa and Kenya in particular, few studies on the teaching of learners with HI have been conducted. Hitherto, no research on the subject matter of effects on captioned TV technology in instructing learners with HI has been carried out. Low literacy levels of graduates with HI constitute an element of educational wastage in terms of time, human and material resources. It is a great loss, which a developing nation like Kenya can ill afford at the height of special education emergence in the education system. The participation indices in Kenya's special education, thus point to the available instructional methods of learners with HI, TIQET (1999). The literacy levels of learners with HI and high drop-out rates among them translate into significant wastage rates that are an important dimension of our schools inefficiency (TIQET, 1999).

Generally, the most important manifestation of schooling quality (however and whichever way defined) are literacy, greater cognitive abilities and better student performance in examinations and school completion (Deolakan, 1999). In other words, effective education has to do with how much learners learn and the proportion of cohorts who successfully complete the cycle through school output is partly determined by the quality and quantity of school inputs. The inputs of education

include human resources that include teachers and administrators, material resources such as school facilities, equipment and teaching aids. They also include material resources such as administrative and pedagogical practices, the school's organization structure and the teacher's time that is spent on actual teaching. Therefore, policies should be designed in such a way that they increase student learning per specified amount or on inputs (Otiemo & Gravenir, 2001).

In view of these inputs, learners with HI require Special Education (SE), which is developed in Kenya thus giving them a fair platform to fight on. There are various factors which have tended to impede the education of learners with HI. These include language barrier, which isolates them from the sound environment, letting them grow in silence. One communication skill of the deaf child to have escaped the scrutiny of researchers and educators until the late 80s is the ability to read (Bussey & Bandura, 1999). Learners born severely and profoundly deaf are unlikely to read well no matter what language is taught, (Conrad, 1984, Gaines & Yongxin, 1995). The average reading level of deaf learners when they leave school at the age of 19 hovers at the fourth grade, (Lewis 1995). Why is learning of and in particular reading a difficult task for learners with HI? There are at least two hypotheses to consider. The first is that reading as unknown language is difficult so that not knowing English may be one reason why deaf learners often fail to learn to read and comprehend well. Unlike young hearing children, who have great capability/potential facility with spoken language when they begin to read, deaf children have comparatively little knowledge of the spoken language encoded in print. A second explanation is that print symbolizes speech sounds; the deaf child may have difficulty learning to decipher and remember printed words, and this is the point that this study comes in with the technology of captioned programmes on TV with visual and prints, (Duhaney & Duhaney, 2000).

Bussey & Bandura, (1999) propose that for a learner, who is deaf, auditory perception is impaired but vision usually is not. Consequently, a common practice being adopted today by educators of learners with HI is to capitalize on this fact in teaching language to them. Such a method presumes that the ability to know and understand language is more important to the learner with HI than in the ability to speak

intelligibly. Visual approaches to communication and learning assume that the major handicap of deafness is a reduced or absent ability to receive or perceive language.

Several instructional methods have been designed to capitalize on the learners with HI replacing or simultaneously supplementing the auditory portion of speech with visual hand gestures. There are many different ways this might be accomplished, but the most common are cued speech, finger spelling and simultaneous communication (SC). The last method encompassing sign language which has not been without shortcomings, because the assumptions of these methods are all similar, first, that it is possible to adequately represent spoken language in vision (Adoyo, 2002). In SC, the gestures represent the words and morphemes of spoken language. Second, the methods assume that the learners can learn language in the same fashion as does the child who can hear, albeit through a combination gestured and spoken language as long as the deaf child is provided with a complete and frequently occurring visual language model.

Over the past two and half decades many schools in Kenya have abandoned strict adherence to oral methods and tried signing in the context of SC (Okombo, 1994; Adoyo, 1995). The change in educational practice is the consequence of several factors: First was a greater societal acceptance of ethnic groups and minority languages and second is education, a general dissatisfaction on the part of all concerned stakeholders, teachers, parents and deaf adults with the academic achievement of learners with HI. Third is increased knowledge and understanding of SE, (Kinaga, 1987).

TIQET, (1999) makes some very positive recommendations in relation to education and training for persons with special needs. In addition, although the Koech Report was not implemented in total, it should not escape our attention that most of the piecemeal reforms taking place in the special education sector today stem from it. Some of the recommendations that have relevance to the promotion of Special Needs Education (SNE) and in particular to this study are: that Kenya Institute of Education (KIE) develops learning and instructional materials for learners with language difficulties to meet their needs.

Thus, it is the researcher's view that introducing captioned TV programmes as an instructional tool for learners with HI, no doubt compliments the present modes of instruction and increase learner comprehension and participation in class.

1.2 Statement of the Problem

It is pertinent to note that while the educational opportunities for learners with HI continue to be of great concern, sizeable percentage of them continue to graduate with very low grades in language. Kenya National Examinations Council (KNEC), technical series in Karen Technical Training Institute for the Deaf (KTTID) for the years, 2004, 2005 and 2006 indicate mass failure in the trade theory subjects and support subjects such as English, Science and General Studies. Analysis of the results indicated that the learners performed dismally poor as compared to their hearing counterparts. The performance in language acquisition subjects was poor (scores as low as 8) as compared to the trade practicals; computers, clothing and textiles, carpentry and joinery, agriculture and masonry where they score distinction one, as indicated in the figure below.

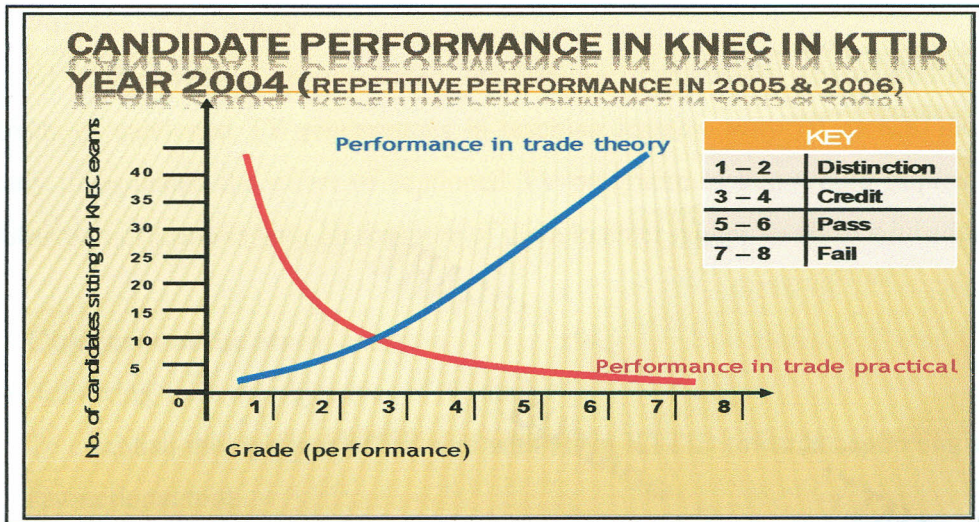


Figure 1.1: Candidate Performance in KNEC in KTTID in 2004

Source: KTTID, 2007

The feature of Kenya's SE and training system has been the poor performance of learners with HI. Whatever the system offers has been unable to produce HI graduates who can favourably compete in the present systems for education. Part of the reason for the poor performance is the lack of trained teachers in various fields to teach

learners with HI, irrelevant curriculum and the lack of concrete special education policies in Kenya. Access to quality education is a right for every child in Kenya. The children Act, CAP 586 laws of Kenya, 2003 and the Persons with Disability Act, 2003, have been loudly hailed as a new dawn of hope for the rapid development and effective protection of Kenya's children with special needs and this statute ranks as a pioneering human rights laws in Kenya's legislative history. Though the impending SE bill, places a lot of responsibilities on the government and stakeholders to provide proper infrastructure for the delivery of education services to those who require SNE, a lot is still to be achieved.

This study therefore focused on a complimentary instructional method that attempted to improve the literacy levels and language acquisition of learners with HI among others. Hitherto, no study has attempted to study this alternative as a mode of instruction and therefore this study looked into the effects of captioned TV programmes at KTTID, Nairobi Province.

1.3 Purpose of the Study

Based on the problem already stated, the purpose of this study was to find out the effects of captioned TV programmes in teaching learners with HI at KTTID. The study investigated the effect of captioned TV programmes that would improve the instruction of learners with HI for more of them to enter higher levels of education.

1.4 Objectives of the Study

The following were the objectives of the study.

1. To establish the opinions of learners with HI in KTTID towards captioning as an instructional tool.
2. To investigate the effects of captioned TV in the education of learners with HI, at KTTID.
3. Establish whether learners with HI at the KTTID can adapt to captioned TV programmes in their learning environment.
4. To identify challenges that are likely to be faced by teachers when instructing learners with HI using captioned TV programmes.
5. To establish whether KIE, embraces the concept of captioned TV programmes as a mode of instruction of learners with HI.

1.5 Research Questions

1. What are the attitudes of learners exposed to captioning as an instructional tool?
2. How effective will captioning technology be in the education of learners with HI, as assessed by teaching staff at KTTID?
3. How will learners with HI adapt to the captioned TV technology in their learning environment?
4. What are the challenges facing teachers using captioned TV for the education of learners with HI?
5. How do KIE and other stakeholders in the education system embrace the concept of captioning for special learners with HI?

1.6 Significance of the Study

This study was meant to contribute to effective learning in KTTID and KIE. Some of the contributions include:

- a. Help the teaching staff to improve their understanding of communication needs of learners with HI and supplement the urgently needed knowledge to facilitate the provision of effective educational services to learners with HI.
- b. Enable KIE to develop captioning programmes targeting learners with HI.
- c. Guide key stakeholders to understand challenges and areas of concern regarding captioning targeting learners with HI?
- d. Serve as a useful reference material for SE researchers, curriculum developers (KIE), education administrators, and other interested individuals in the welfare of the learners with HI.
- e. Bridge the existing gaps in literature and thus create new knowledge in the field of SE in Kenya.

1.7 Limitations of the Study

The major limitations of the study were:-

- a. The study was conducted in only one institute in Kenya and the results may not be generalized to other training institutions in the country.
- b. The study was limited to effects of captioned TV technology for learners with HI and did not investigate other instructional methods.

- c. The study did not examine the viewpoints of other key players in the education sector such as the government and parents.

1.8 Assumptions of the Study

This research was undertaken on the following assumptions:

That; that instruction of learners with HI is as important to educationists as instruction for regular learners. It also assumed that learners who do not acquire the necessary skills, fail to progress in the present educational system. It also assumed that learners with HI have a right to quality education and can achieve better results if trained well. The researcher also assumed that all the respondents provided reliable information that was useful.

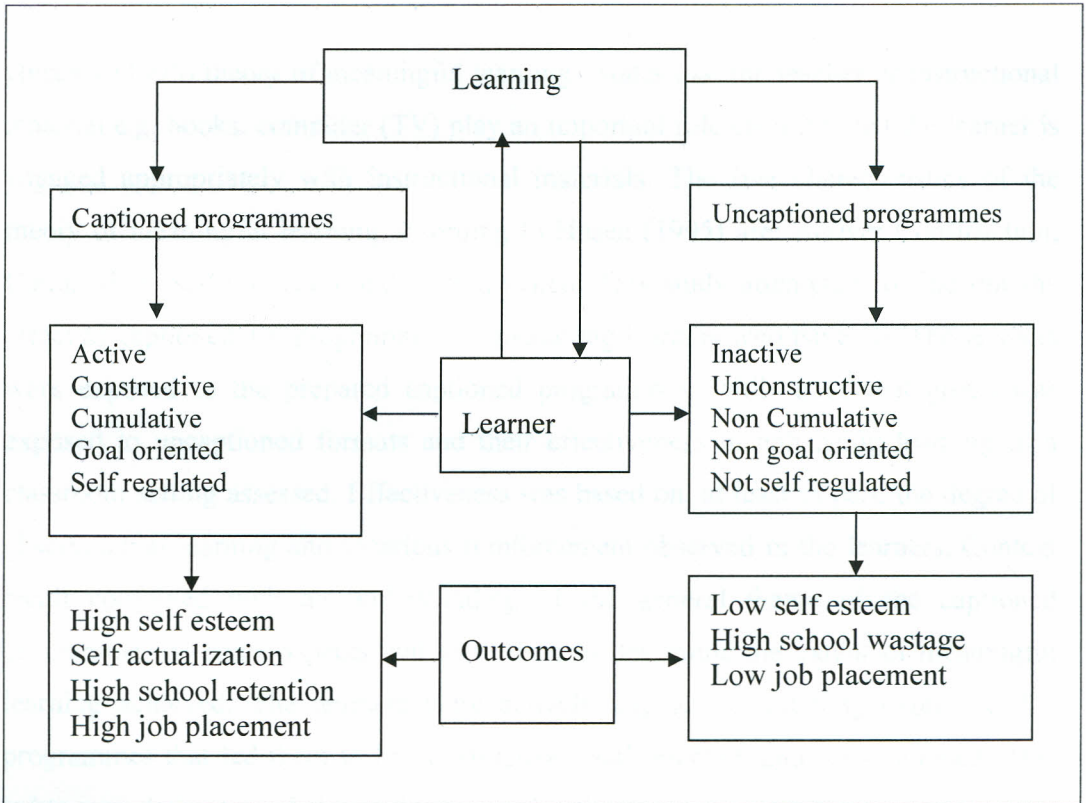
1.9 Theoretical Framework

This study was based on two theories; the Social Cognitive Theory (SCT) and Theory of meaningful learning (ML) (Husen, 1995). Bandura and Walters (1963) broadened the social learning theory with the principles of observational learning and vicarious reinforcement and (Bandura, 1997) provides the concept of self-efficacy while refuting the traditional learning theory for understanding. The reciprocal nature of the determinants of human functioning in SCT makes it possible for therapeutic and counseling efforts to be directed at personal environmental or behavioural factors. Strategies for increasing wellbeing can be aimed at improving emotional, cognitive, or motivational processes, increasing behavioural competencies, or altering the social conditions under which people live and work (Pajares, 2002).

In relation to this study, teachers in KTTID have the challenge of improving the academic performance and confidence of learners with HI. As Pajares, (2002) observes, using the SCT as a framework, the teachers can work to improve the learner's emotional status and correct any faulty self-beliefs and habits of thinking (personal factors). Teachers can also improve their academic skills, self-regulatory practices (behaviour), alter the school and classroom structures that may work to undermine student success (environmental factors). Captioning will be viewed as an environmental parameter, which will influence both the personal and behavioural aspects of the learners with HI. The SCT explains how people acquire and maintain certain behavioural patterns, while also providing the basis for intervention strategies

(Bandura, 1997). Evaluating behavioural change depends on the factors of environment, people and behaviour. SCT provides a framework for designing, implementing and evaluating programmes.

Figure 1.2: A Conceptual Model of the Study



Source: Adapted from Husen's (1995) theory of meaningful learning.

There are social and physical environments. Social environment include family members, friends and colleagues. Physical environment is the size of a room, the ambient temperature, or the availability of certain foods. In this study, captioning is construed as an environmental factor. Environment and situation provide the framework for understanding behaviour (Parraga, 1990). The situation refers to the cognitive or mental representations of the environment that may affect a person's behaviour. The situation is a person's perception of the place, time, physical features, and activity (Glanz & Lewis, 2002).

The three factors; environment, people and behaviour are constantly influencing each other. Behaviour is not simply the result of the environment and the person, just as the environment is not simply the result of the person and behaviour (Glanz et al., 2002). The environment provides models for behaviour. Observational learning occurs when

a person watches the actions of another person and the reinforcements that the person receives (Bandura, 1997). The concept of behaviour can be viewed in many ways. Behavioural capability means that if a person is to perform behaviour, he must know what the behaviour is and have the skills to perform it.

Husen's (1995) theory of meaningful learning states that the teacher or instructional material e.g. books, computer (TV) play an important role ensuring that the learner is engaged appropriately with instructional materials. The five characteristics of the theory of meaningful learning according to Husen (1995) are: Active; Construction; Cumulative; Self-regulated and Goal-oriented. This study attempted to find out the effect of captioned TV programmes in instructing learners who have HI. The learners were exposed to the prepared captioned programmes, while a control group was exposed to uncaptioned formats and their effectiveness in enhancing learning in a classroom setting assessed. Effectiveness was based on, at least in part, the degree of observational learning and vicarious reinforcement observed in the learners. Content recall combined with an understanding of the general theme of the captioned programme are some aspects that were used to determine the extent of meaningful learning achieved. The learners were actively engaged in watching captioned TV programmes that led them to be constructive, goal-oriented, and self-regulated. This led to cumulative knowledge and self-actualization hence positive learning processes.

1.10 Operational Definition of Terms

- Caption:** Captions are words displayed on a television screen that describe the audio or sound portion of a programme. Captions allow viewers who are deaf or hard of hearing to follow the dialogue and the action of a program simultaneously. They can also provide information about who is speaking or about sound effects that may be important to understanding a news story, a political event or the plot of a programme (NIDCD, 2006).
- Communication:** The exchange of thoughts, messages or information, as by speech, signals, writing, behaviour or through various media e.g. films and TV (Burgstahler, 2006).
- Deaf person:** Is one whose hearing is disabled to an extent (usually 70 dB or greater) that precludes the understanding of speech through the ear, without or with the use of a hearing aid (Kirk, Gallagher & Anastasiow, 2003).
- Deafness:** A hearing impairment that is so severe that the child is impaired in processing linguistic information through hearing, with or without amplification that adversely affects a child's educational performance (Kirk, Gallagher & Anastasiow, 2003).
- Disability:** An actual loss of function resulting from some physical disorder, restriction, or inability to perform an activity in a manner considered to be within the range that is assumed normal for a person (Lewis & Doorlag, 1983).
- Handicap:** The burden imposed on a child because of the interaction of a deviant characteristic within an environment (Lewis & Doorlag, 1983).

Hard of Hearing Person: Is one whose hearing is disabled to an extent (usually 35-69dB), that makes hearing difficult but does not preclude the understanding of speech through the ear alone, without or with a hearing aid (Ysseldyke & Algozzine, 1995).

Hearing Impairment: An impairment in hearing, whether permanent or fluctuating, that adversely affects a child's educational performance but that is not included under the definition of deafness (Ysseldyke & Algozzine, 1995).

Special Education: (UNESCO, 1983) defines special education as a form of education provided for special children who would otherwise not benefit from regular educational programmes. In essence, special education should be seen as effective teaching that takes into account the child's special needs.

Subtitling: Subtitles are a form of open captions where the spoken dialogue in one language is translated and captioned in another (Burgstahler, 2006).

Television: Also referred to as TV. A boxlike apparatus with a screen that receives broadcast signals and turns them into pictures and sound: a colour/ black -and -white

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CHAPTER 2

LITERATURE REVIEW

2.1 Introduction

This chapter reviews literature related to the study under the following sub-headings: Performance of learners with HI, background of KTTID, development of education for persons with HI, background of KIE, captioning types available for persons with HI globally and nationally and challenges faced in using captioned TV.

2.2 Performance of Learners with HI

Studies on the education of learners with HI show that a majority of them retrogress in their studies instead of progressing. They repeat steps in education and eventually drop out of the system, which contribute a lot to hurting their self-image and prospects for future success (Karanja, 2003). Most important in developing countries, learners who enter an educational system and eventually fail to complete the duration of study or succeed, raise the costs per year of school. Proponents of schools of thought for learners with HI propose remedial teaching, Individualized Educational Programme (IEP) and meeting their special needs (SN) through adaptive programmes (Lang, 2004). One of the reasons offered as an explanation for failure of retention is lack of improved academic achievement, that students are often retained in programmes that are not beneficial to them in the first place, and that teaching methods fall in the second place, (Ndurumo, 1993). As far as the educational system is concerned, a learner with HI who drops out of school is lost forever and is viewed as a complete failure that has wasted not only his family investments, but also his own talent or capability and is wasted in terms of time spent in school. The potential dropouts spend a lot of time in school and eventually fail to acquire relevant skills due to poor language acquisition eventually leading to wasted resources. Failure to secure adequate training relevant to the process of socio-economic development is likely to transform these graduands into social misfits include vulnerable to social ills as indiscipline, juvenile delinquencies and agents of poverty among others (Karanja, 2003).

Some of the methods used to teach learners with HI include; chalk and black board, paper and pen, oralism, articulation, speech reading, auditory training hearing aids,

cued speech, finger spelling, lip reading, sign language (SL) and simultaneous communication (SC), (Gallimore, 1993). The Ministry of Education (MOE) acknowledges that some of these methods are similar to those of teaching of the regular learners but have been adopted or adapted to meet the SN of learners with HI (MoEST, 2003). In an appraisal exercise in the same report (MoEST, 2003) indicates that literacy of learners with HI is very low as compared to regular learners. In support, Kinaga, (1987) reveals that research on the academic achievement shows that learners with HI lag behind hearing counterparts academically and he also takes into account the role school environment plays in academic achievement. He states that;

Educational occupation occurs as a result of societies' inability to adequately help deaf people develop and use their abilities rather than the result of inherent deficiencies in their abilities. The problems of a learner with HI can be created by the environment including those in charge of their education (Kinaga, 1987).

Ndurumo, (1993) observes that learners with HI are often blamed for their inability to grasp information during classroom teaching when speech and speech reading are used as methods of instruction. The methods have several shortfalls alongside the other teaching methods. Auditory training is another method for teaching learners with HI, which fewer personnel are conversant with and thus unavailable and unaffordable to many learners. Articulation, lip reading and hearing aids are other methods that are equally challengeable, as they require audiology technicians, hearing therapists and autolaryngologist than teachers to use them (Mammor & Pettito, 1979). This makes the education of learners with HI both complex and expensive and yet they must be taught to achieve the set educational goals. Therefore, a variety of methods should be employed that include manual methods. However, simple or complex as the sole or a supplementary means of language development, such methods include the use of signs based on ideas or pictures coupled with captions (Hang, 2004) for the education of the deaf.

Education of the deaf worldwide has been one of the most controversially discussed topics. The issue has been the difficulty in finding an appropriate classroom communication system that effectively provides access to curriculum content. Subsequently, there have been changes in search for a better teaching methodology (Gallimore, 1993). In recent developments regarding the education and welfare of the

deaf and in relation to language development, research suggests that deaf children can improve their linguistic competence by captioning TV programmes. The opportunity to generate narrative captions to describe student produced videos is highly motivating for deaf students, so much so that they persist in the effort until their captions efficiently and effectively describe the video (Loeterman, Kelly, Morse, Rubin, Parasnis & Samar, 1995).

Personal captioning is particularly effective in accelerating language competency for deaf children because from research, deaf children learn language better and faster when they are active participants in the process (De Villiers & Pomerantz, 1992). Despite these assertions, information is lacking on whether television captioning can effectively be used to teach the learners with HI.

2.3 Background of Karen Technical Training Institute for the Deaf

To offer learners with HI tertiary and higher education, the Government of Kenya (GoK) with the initiative of Kenya Society for Deaf Children (KSDC) established the Karen Technical Training Institute for the Deaf (KTTID). KTTID is situated along Karen road near World Vision International. A legal notice through the MoE saw KTTID open its doors to students in September 1990. The MoE designated it as a National Technical Institute for Deaf children in line with objectives of Technical, Industrial, Vocational and Entrepreneurship Training (TIVET). The institute's main functions include:

- i. Provide and increase training opportunities for learners with HI that will enable them to be self-supporting
- ii. Develop practical skills and attitudes, which will lead to income-earning activities in the urban and rural areas;
- iii. Provide technical knowledge, vocational skills and attitudes necessary for manpower development and
- iv. Produce skilled artisans, craftsmen, technicians and technologists for both formal and informal sectors.

Like other institutions for learners with HI, KTTID is faced with major challenges in the area of curriculum, academic performance of the learners with HI that is of much concern, inadequate trained staff, and the available teaching methods (GoK, 2003).

Learners with HI require specialized education because of their inability to meet the receptive and expressive language deficits nagging them. A child who has not heard the sounds of the language will not be able to decode print if taught in the usual methods of matching sounds to print. Learners with HI do not also develop literacy skills and it is suspected to be a consequence of not identifying the educational problem and irrelevant teaching methods, (NCII, 2006).

Challenges facing the learners with HI in the institute include low language acquisition, poor academic performance especially in trade theories, inability to comprehend, short memory, low literacy, and inability to express oneself (Vilviz, (2000). He further paints a grim picture that in Kenya today, only 0.1% of the learners with HI can be traced in higher education e.g. tertiary, diploma, university, undergraduate, masters and doctorates. And it is against this backdrop that this study was based, to examine the effects of captioned TV programmes as a complementary instructional method for learners with HI in KTTID.

The institute prepares students in various fields that include; building construction, motor vehicle mechanics, clothing textiles and design, food and beverage technology, fine arts, information and communication technology, agriculture and animal husbandry besides providing a wide exposure to the general field of special education. The institute serves as the only technical training institute for the deaf in East and Central Africa, admitting students from all parts of Kenya and other parts of the African continent (Uganda, Tanzania, Ethiopia, Rwanda, Eritrea, Somalia and Mozambique).

Selection of students to the institute is done annually and has a capacity of 160 students: 80 boys and 80 girls. The examining bodies are Kenya National Examinations Council (KNEC) and Directorate of Industrial Training (DIT). The period of study ranges from 1 to 3 years depending on the course pursued. The institute has since trained hundreds of deaf youth who are gainfully employed in various sectors while others are self-employed and a few have proceeded for further education. The students have access to TV, video facilities and electricity making KTTID ideal in ascertaining the effect of captioned TV programmes in instructing learners with HI.

2.4 Development of Education for Persons with HI in Kenya

Deaf education in Kenya has faced a downward trend in recent decades. Findings over the years (Ndurumo, 1993; Okombo, 1994; Adoyo, 1995) show that the deaf have consistently trailed behind their hearing counterparts in academic performances. Education achievement for persons with HI in Kenya stands in sharp contrast with hearing persons. Some deaf persons attain doctor of philosophy degree, but the average deaf person is grossly under educated. This gross under education is due to failure of the education system to develop the intellectual capacity of learners with HI and to some extent, is evidence of tremendous impediment to academic and other learning resulting from deafness. It is worth noting here that the education system and educational trends for the deaf have contributed to gross under education of the deaf in Kenya.

Studies on the deaf child's performance in Kenya and later generalized to other countries (UNESCO,2003) that included 93% of learners of age 16 years and above showed that only 5% achieved tenth grade level or better, most of these being hard of hearing or post lingual deafened. Up to 60% were at tenth grade or below and 30% were functionally illiterate. A deaf twelfth grader may be very well be 20 years old and achieving at fourth grade level. All inquiries have pointed to teachers' lack of competence in the language of instruction (sign language) as the major obstacle to their academic development. Even though Simultaneous Communication (SC), a form of contrived sign system developed to represent the morph syntactic structure of spoken languages is popular in schools and training institutions, studies by (Erting, 1986; Mammor & Pettito, (1979) revealed that during its use, teachers fail to represent spoken language accurately due to modality difference. Johnson, Liddel and Erting (1989) reporting on the demerits of SC, argue that it suffers not only from distortion, but also from omission of obligatory words, which do not fit the rhythmic pattern of spoken languages. Retrogression of learners with HI is also of very much concern to educationists, as there is a serious decline in each cohort progressing to the next level of education.

A survey carried out in Kenya by Adoyo (1995) also reveals that many teachers in schools for the deaf have great difficulties in communicating ideas to deaf pupils

through SC. What is amazing is that while deaf pupils are instructed in SC, they use KSL while on their own with ease. The deaf children develop a system, which represents the expression of the human linguistic biological capacity in the manual/visual modality, which is SL as opposed to spoken language.

The combination of teaching and processing a language is the central and perhaps the most difficult problem in the education of deaf children. Although deafness itself may have no effect on intellectual potential, the deafness may lead to impoverished communication skills that may limit development severely, unless the children are provided with compensatory tools, during their education. The specialized techniques that have been developed for teaching the deaf are many and varied. Some of them are lip reading, oralism through the use of other senses than hearing, manual communication including sign language and finger spelling, the use of hearing aids to utilize residual hearing and many variations of these (Ysseldyke & Algozzine, 1995). Dedicated educators have struggled for years to improve the educational programmes and a variety of models has been developed, and in most cases, no single method has been used or recommended exclusively. This supports the study on the effects of captioned television as a complementary instructional tool for learners with HI.

2.4.1 Language of Children who are Hearing Impaired in Kenya

There is no international SL, but different national sign languages are available due to the fact that signs are culturally determined. Different sign languages have developed in different parts of the world. KSL is the visual gestural language that serves as the primary means of communication for deaf people in Kenya (Adoyo, 2002). KSL is a complete language as studies by Akach (1991), Okombo (1994) and Adoyo (1995) show that like other sign languages, it is a formal, socially agreed on, rule governed symbol system that is generative in nature. The components of KSL are not phoneme (sound) combinations that form words as in spoken languages, but rather are phonological combinations such as hand shapes, hand positions, hand movements and orientation of the palm that form signs.

While speech is auditory, vocal and temporal, signs used in KSL are best described as visual, motor and spatial. KSL consists of movements, of shapes, and positions of specific body parts, such as hands, arms, eyes, face and head. Concepts are executed

with manual and other systematic non-manual signals. Though different in the modes of expression, KSL and other spoken languages are equivalent in their communicative potentials (Adoyo, 2002). Due to demographic factors in a country that has 43 indigenous spoken languages, regional variations have manifested in KSL lexicon. However, as a result of socio-linguistic factors such as language growth and emergence, convergence (that is a situation in which different languages come together through the social interaction of their users to become one language) and wave phenomena (the process of diffusion by which innovation in some regions where a language is used are spread to other regions from which the innovation in question did not originate), the variations have been able to converge into one major variety (Okombo and Akach 1997). The Persons with Hearing Impairment communicate using this standard variety, which has proved a major marker in defining the community, resulting in a strong establishment of culture, a sense of identity, and understanding (Adoyo, 2002).

2.5 Background of Kenya Institute of Education

Kenya Institute of Education (KIE) is the National Curriculum Developer and Educational Research Centre in Kenya. The institute is a specialized Semi Autonomous Government Agency (SAGA) under the MoE. It is charged with the responsibility of developing curriculum and curriculum support materials for all tiers of education and training except the university. The vision of KIE is to provide leadership in quality curriculum development and research for relevant and sustainable quality education and training in Kenya. It also has a mission to conduct educational research and develop relevant quality curriculum and support materials. KIE's functions are very broad to accommodate many emerging issues that have to be addressed through education (KIE, 2006). Some of them include:

- a) Development and production of learning/teaching materials;
- b) Conduct research and prepare syllabuses;
- c) Prepare teaching and evaluation to support all syllabuses and organize seminars on the same;
- d) Conduct in service courses and workshops for teachers;
- e) Organize orientation programmes for education officers and keep them informed;

- f) Transmit programmes through mass media to support educational developments and
- g) Professional training programmes, which include; sign language, Braille, speech therapy, physiotherapy, tactology etc

According to (KIE, 2006), Special Education Division (SED) was established in 1978 as a section under the Primary Division. It was elevated to a division in 1997 due to increased demand for SE services occasioned by increased awareness since mid-1980s. The awareness was enhanced by, among others, the establishment of the Kenya Institute of Special Education (KISE), the Education Assessment and Resource Services (EARS) and introduction of SE programmes at universities like Kenyatta University and Maseno University. Awareness was also brought about by the involvement of organizations of and for the handicapped in matters pertaining to SE. Functions of the division are the same as those of the institute except that they focus on the education of children with special needs. SED's ten sub-sections include; Visual Impaired (VI), Hearing Impaired (HI), Physically Handicapped (PH), Gifted, and Talented (GT), communication disorders, psychosocially different, vocational and technical education, SE teacher, multiply handicapped, research, and evaluation. (<http://www.kie.go.ke/special.htm>).

Despite having the full mandate to prepare curriculum, KIE is faced with challenges and constraints that include:

- a) Ineffective quality assurance mechanism for special needs learners
- b) Lack of inclusive national skills training strategy
- c) Low priority on special education at all levels
- d) Bureaucratic curriculum development structure
- e) Inadequate and inappropriate technical training infrastructure, equipment and facilities
- f) Low level personnel with outdated skill qualifications
- g) Inability of training programmes to respond to the changing teaching strategies (MoEST 2003).

In 2003, the GoK through Sessional Paper No 1, 2005 proposed that SN learners be educated, made self-reliant, be equipped with both skills and technical knowledge.

This can only be made possible through relevant curriculum that supports and incorporate modern teaching methods. It is becoming evident that there is goodwill however, little has been done to prepare curriculum that is HI complaisant and supports alternative teaching methods. The MoEST has strategies that can be fruitful if put in practice. These include supporting KIE's strategic plan and a comprehensive SE curriculum policy. Currently, KIE is preparing captioned TV programmes that target hearing Kiswahili readers and sponsored by United Nations Educational, Scientific and Cultural Organization (UNESCO). The programmes after preparation are handed to UNESCO for their own use. Therefore, they currently do not prepare any captioned programmes targeting learners with HI.

2.6 Captioning Types Available for Persons with HI

According to National Centre for Accessible Media, (NCAM, 2006), Captions are created from the transcript of a programme and a caption specialist separates the dialogue into captions and makes sure the words appear in sync with the audio they describe. A specially designed computer software programme encodes the captioning information and combines it with the audio and video to create a new master tape or digital file of the programme. Captions in a video are text located somewhere on a picture and where this is done, they are referred to as non-broadcast applications. There are two types of captions: closed and open captions. Closed captions are captions that are hidden in the video signal, invisible without a special decoder. Open captions are captions that have been decoded, thus becoming an integral part of the picture. These cannot be turned off (Burgstahler, 2006).

There are various instructional methods for learners with HI and the view that no single type of material should constitute the entire instructional programme should be upheld (Dunn, 2006). The difficult task is finding a way of balancing the use of the various types of materials as well as finding instructional time to address all the various needs of learners with HI. Captioning is one of the special adaptive instructional tool that can be used as an educational tool (refer to appendix 1) and may offer learners with HI a new approach to providing access to classroom teachings and discussions (King and Quigley, 1985). This is confirmed by (Jensema, 2003) that captions availed to children who are deaf enable them to experience what their

hearing counterparts have enjoyed all along and it is hoped to be the signal to end their exclusion from significant areas like social and cultural life.

Closed captioning is the most important development in this century that has brought the deaf and hard of hearing people into the mainstream (NCAM, 2006). In the USA, in the early 1980s, the National Association of Broadcasters established a captioning system that was technically visible. A silence was broken and persons with hearing impairment across USA could turn on their television sets with a caption decoder and finally understand what they had been missing on television, (National Captioning Institute Inc., 2006).

A relatively new concept is the captioned TV for learners with HI that was introduced to supplement the regular instructional materials for teaching children with hearing impairment, (Jensema, 2003). Captioned TV and films make up part of the special and adaptive instructional materials (refer to appendix VIII & IX) that follow the principles and techniques for attracting the attention of children reinforcement techniques, frequent repetition, rehearsal and motivation. They represent a form of interactive graphical communication that provides considerable enjoyment for millions of children, both deaf and hearing (Levitt, 1985).

Jensema, (2003) notes that an average hearing child spends 30 hours a week viewing TV and that deaf children spend the same amount of time. He further indicates that because of this, it is estimated that deaf children spend more time reading captions than they do with printed material. Clymer & McKee (1997) established that deaf students better understood print in conjunction with pictures; with print alone, reading comprehension scores were lowest and this established the difficulty that children with HI have with understanding written information without visual cues. Hence, the use of multimedia reading material such as captioning benefited these students. Frazier & Ryan (2005) also observe that various types of captioning make the classroom experience more equitable for deaf and hard of hearing children as the audible information being displayed in text on the screen enables the deaf student to easily participate in the learning process. The authors further argue that captioning technology helps to maintain the deaf students' interest and motivation. Motion

pictures capture the children's attention and entertain them while they learn (Scherer, 2004).

Burns, (2003)'s report on Universal Primary Education's (UPE) goals by the year 2015, identified inadequate provision of education to learners with disabilities of which the right of education is one of the most fundamental needs of a person. On the other hand, Muuya's, (2002), study based on a survey targeting head teachers of both special schools and units, reported high rates in pupil enrolment, whereby the highest was recorded in the category of those with HI. However, the study did not spell out what exactly the deaf may require in order to access the curriculum adequately. In Kenya, the Kenya National Association for the Deaf (KNAD)'s recommendations to the Taskforce on constitutional review was that all locally produced television programmes must have subtitles (Open Captioning) and or interpreting services to ensure full information access by deaf persons (Majiwa, 2001). Their recommendations were accepted when parliament passed a law on the same in 2003 and is contained in the Persons with Disability Act, 2003.

All television stations shall provide a sign language inset or subtitles in all newscasts and educational programmes, and in all programmes covering events of national significance. (GoK 2004 page: 308).

The concept of captioning is relatively new in Kenya. Currently, both the public and privately owned TV stations are having minimal captioning while KIE, the sole curriculum developer for educational and development materials for schools produce very limited captioned programmes, that are not targeted for learners with HI.

2.7 Global Overview of Captioning for Persons with HI

Literature has been reviewed for USA, the Netherlands and Australia. Literature available shows that the three countries have forged ahead in the use of captioning as an instructional tool for learners with HI.

2.7.1 Captioning for Persons with Hearing Impairment in the USA

According to the National Captioning Institute Inc., (NCII, 2006) the Americans with Disabilities Act (ADA) of 1990 requires that businesses and public accommodations ensure that disabled individuals are not excluded from or denied services because of

the absence of auxiliary aids. Captions are considered one type of auxiliary aid. Since the passage of the ADA, the use of captioning has expanded. Educational, informational, entertainment and training materials are captioned for deaf and hard of hearing audiences at the time they are produced and distributed. The Television Decoder Circuitry Act (TDCA) of 1990 requires that all TVs larger than 13 inches sold in the United States after July 1993 have a special built in decoder that enables viewers to watch closed captioned programming.

NCII, (2006) confirms the potential for captions as a learning tool for acquiring English language and reading skills. NCI and NCII are also looking at how captions can reinforce vocabulary, improve literacy, and help people learn the expressions and speech patterns of spoken English. For example two styles of line 21 caption display are currently in common use: pop on and roll up and a third display style, paint on was added to the decoder specification in 1985.

2.7.2 Captioning for Persons with Hearing impairment in the Netherlands

The Netherlands has a long tradition of using open subtitles to translate foreign TV programs and cinema movies for audiences. About 20% of all programs on Dutch public and commercial TV are foreign, most of them in English. Since 1980, the year when teletext was introduced, closed captions for the deaf and hard of hearing also have been available on Dutch programs. In that year, 22 programs were captioned via teletext. Since then, there has been a gradual increase in the number of programs being captioned, but only on the public broadcasting stations (Van Son, Verboom and Van Balkom, 1998). They now produce captions for slightly more than half of their Dutch language programs, or up to 16,000 programs a year (Schilperoord, Groot and Son, 2005).

In the Netherlands, as in most other European countries, closed captions for the deaf summarize texts rather than render them verbatim. Caption editors argue that in this way TV viewers have enough time to both read the text and watch the program. They also claim that the meaning of the original message is properly conveyed. However, many deaf people demand verbatim subtitles so that they have full access to all original information. They claim that vital information is withheld from them because

of the summarizing process (Schilperoord et al., 2005). Open subtitles and closed captions provide a summary of what is being said in the program.

2.7.3 Captioning for the Persons with Hearing Impairment in Australia

In Australia, The Australian Capital Territory (ACT) is committed to improving access to government information and services. The persons who are deaf and people with a hearing loss should be able to receive the message of a government TV commercial or video to the same extent as hearing people. Persons who are deaf and people with a hearing loss can receive these messages via captions. Captions become the 'sound track' for these people. Federal legislation requires that all free to air news, current affairs and prime time broadcasts be captioned since 1 January 2001.

The Australian Association for the Deaf (AAD, 2004) indicates that all media broadcast channels, regardless of whether they are the main channels or multi-channels, should meet some minimum requirements for captioning. As from may 2003, all prime time programmes, news and current affairs programmes regardless of the time of broadcast must contain captions. This is within the Human Rights and Equal Opportunity Commission (HREOC)'s negotiation process that demands that by 2007, 70 per cent of all programmes broadcast between 6.00am and midnight will be captioned.

2.8 Positive Contribution of Captioning in the Education of Learners with HI

Early studies of the educational utility of TV, (Boyd and Valder, 1972), investigated deaf students understanding of a film that was captioned by teachers of the deaf. The study found that captions adjusted to the linguistic level and reading rate of the viewers significantly and improved information gain. Braverman and Hertzog (1981), report that captioning rates affect comprehension but the language level of the captions does have a significant effect on comprehension. Baker (1985) points out that a reduced captioning rate necessitates simplifying the language level of the captions and in a series of studies, demonstrate that the combination of a reduced rate and a reduced language level improve programme comprehension for school children.

According to Jelinek & Jackson (2001), captioning normally addresses the deaf viewers' communication needs by enhancing their general language and reading skills

and message comprehension. Using specially constructed captions, Nugent (1983) compares deaf and hearing students' comprehension for programmes with visuals only, captions only, visuals and captions together. For both groups, comprehension is highest for the condition with both visuals and captions. Nugent notes that students with HI's scores on captioned videos are equivalent to hearing students' reading the captions without visuals (giving an idea of the importance and effectiveness of captions in education of learners with HI).

In a similar study, The National Captioning Institute (NCII, 2006) also observes that students with HI who view TV with captioned TV programmes have higher comprehension scores than those who watch the programmes without captioning. The importance of captioning in deaf education can be appreciated from the observation by (NCII, 2006), who observe that children who are deaf or hard of hearing watch as much, if not more television, than their hearing peers. NCII, (2006) observes that TV plays a key role in influencing children's learning and socialization skills across their lifespan and by middle to late childhood, children begin to recall more information central to the plot. This study, therefore, sought to investigate the effects of captioned TV in the education of learners in KTTID to support captioning as an additional instructional tool.

2.9 Challenges faced in designing Captioned Programmes for the Education of Learners with HI

The use of captioning involves reading as an essential skill for understanding captions and, by extension, comprehending the script of the programmes. The process of reading involves the use of an applicable knowledge base, memory processes and linguistic adequacy with a word based language. For individuals who are HI, it may also require skill with a spoken language (in Kenya, English or Swahili) that they have not mastered. Issues of literacy, conceptual knowledge and memory constraints come to bear on the comprehension of TV captions (Skutnab, 2001).

As noted earlier, the research by Schilperoord *et al.*, (2005) documents a prominent finding that summarizing captioned material, making them less explicit and altering the implied meaning. This raises the issue of caption content; its effectiveness in communicating the desired information is affected by paraphrasing of the original

message. Levit (1985) explores the educational opportunities offered with technological advances as teaching aids. He argues that there is a danger that teachers of the deaf will not be able to incorporate these advances into their daily routines because their training does not prepare them to work with the new generation of special adoptive instructional materials.

2.10 Effects of Captioning on Learners with HI and the Social Cognitive Theory

Lang (2004) observes that assistive technologies that include “considerate” text and engage deaf students cognitively will be more effective than those, which focus on passive viewing. Captions of science films, TV shows, or classroom lectures, however, may not be enough to provide meaningful access to information for deaf learners, even when the captions are edited. Importantly, the reading level of captioned materials should be on a level commensurate with that of the students. In one study, two versions of a technical film, captioned at approximately 8th and 11th grade reading levels, were shown to 32 deaf college students (Hertzog, et al 1989). Fifteen of these students also received supplementary instruction from a teacher. Data from a comprehension test were analyzed to determine effects of instruction, level of captioning, test type (recall or recognition), and subject reading ability. While both high and low reading groups benefited from instruction when students viewed 8th grade level modified captions, only the high reading group benefited from instruction when they viewed the 11th grade level original captions.

Self-esteem is associated with academic success for both normally hearing and deaf students. Joiner, Erickson and Crittenden (1966), for example, found that deaf students in a residential high school with relatively high self-esteem tended to have high grade point averages. Koelle and Convey (1982), studying a similar population, found out that self-esteem was positively related to performance on the Stanford Achievement Test for hearing impaired students. Captioning, with its inherent ability to accelerate deaf learning through “minds on” engagement, is a veritable tool for development among learners with HI. As earlier mentioned, Loeterman, *et al.*, (1995) demonstrated that the opportunity to generate narrative captions to describe student produced videos is highly motivating to deaf students.

2.11 Summary of the Literature Review

The deaf like any other group of students with disability or Special Needs Education (SNE) are entitled to education regardless of their disability (Roberts & Gibbens, 1996). However, the central problem of teaching the deaf can be solved with the right methods and tools. The effectiveness of the teaching techniques used in teaching learners with HI in Kenya has not been addressed. In addition, Kenya lacks professionals in the area of SE in general (Karugu, 1994). Bishop, Taylor & Froy (2000) observe that communication presents significant problems for the deaf. They are extraordinarily dependent on their teachers for the exact delineation of their linguistic environment.

In light of the social cognitive theory and research on learners with HI, captioning accelerates learning by enhancing the learners with HI's ability to symbolize that is, extract meaning from their environment, construct guides for action, solve problems cognitively, support forethoughtful courses of action, and gain new knowledge (NCII, 2006). Captioning also enhances learning through observation improving attention, retention, production and motivation. Self-reflection, through which people make sense of their experiences, explore their own cognitions and self-beliefs, engage in self-evaluation and alter their thinking and behaviours, is eventually refined.

CHAPTER THREE

METHODOLOGY

3.1 Introduction

This chapter focuses on the research methodology that was used in the study. Detailed descriptions of the research design, location of the study, target population, sampling techniques, sample size, research instruments, piloting, reliability and validity procedures for data collection and methods that were used in data analysis are presented in the subsequent sections.

3.2 Research Design

The main purpose of this study was to find out the effects of captioned TV programmes in teaching learners with HI in KTTID, Nairobi district, Kenya. This study adopted a descriptive design utilizing qualitative and quantitative approaches. The descriptive research aimed at getting information that describes a situation, behaviour, attitude of the individual and the community (Kane, 1995). This is in line with the studies, which lead to find out the effects of captioned TV on instructing learners with HI. It provides clues for subsequent research that is more specific and aims to uncover the nature of facts in the given situation. Therefore the rationale for adapting a descriptive design is that it is useful in gaining insight into the general picture of a situation without utilizing the whole population (Mugenda & Mugenda, 1999). As the researcher will not study the whole population in Karen Institute for the Deaf, this method is therefore suitable for this study. Lokesh (1984), further states that, descriptive research studies are designed to obtain pertinent and precise information concerning the current status of a phenomena and whenever possible to draw valid general conclusions from the facts discovered.

As stated earlier, this design combined both qualitative and quantitative approaches. This is deemed appropriate in the light of the fact that no single method is adequate in investigating a problem with rival causal factors (Patton, 1990). In addition, this combination allows flexibility while examining multiple factors in an attempt to obtain the pertinent information (Obonyo, 1994). This is further supported by Kasante (1996), that triangular techniques are suitable when a more holistic view of educational outcome is sought. As explained by Kane (1995: 245):

Many studies take an exclusive qualitative or quantitative approach. Very few combine the two approaches. It is found that use of complementary methods reveal discrepancies which a single method cannot. The information you get will be stronger if you use triangulation, that is, as many techniques, methods and possible explanations as you can.

Therefore, this research used questionnaires, interview schedule and observation checklists. Questionnaires catered for quantitative aspects while interviews formed the main thrust of the qualitative aspects. Qualitative strategy enabled the researcher to collect data in the actual context in which the phenomena occurred. As a result, it gave a more holistic picture. This implies that, it provides a big description of societal dynamics including, values, systems, and perspectives within a given cultural context (Abagi, 1996). The approach is appropriate because it has a high analytical content and it is the best way of getting in-depth information including sensitive and personalized experiences which are unlikely to be obtained in other methods (Kane, 1995). The careful reporting methodology of the descriptive survey also promotes replication, later by other researchers and retesting of the findings (Babbie, 1992).

On the other hand, quantitative method has the advantage of getting responses of the same questions from a large number of people and these responses can be quantified for conclusions to be drawn from them (Bell, 1993). Quantitative approach was applied in this case to get information from learners and teachers. The quantified information summarized the results while at the same time complemented the qualitative data. The above reasons form the basis for which the descriptive research design was used. As anticipated, the design was most appropriate for this study, and obtained exhaustive and accurate accounts of the study.

3.2.1 Variables under study

A variable is a measurable characteristic that takes different values among subjects (Mugenda and Mugenda, 1999). In this research design, the independent variable was captioning, while the dependent variable was the learning process of learners with HI. Learners with HI's learning experience was evaluated on captioning.

3.3 The Study Locale

The study was conducted in Karen Technical Training Institute for the Deaf (KTTID), Nairobi, Kenya. The institute was established in September 1990 by the Kenya Society for Deaf Children (KSDC). KSDC handed over the institution to the government and a legal notice through the MoE saw KTTID open its doors to students the same year. MoE designated the institute to meet the objectives of Technical, Industrial, Vocational, and Entrepreneurship Training (TIVET) aimed at producing skilled human resource for industrial development among learners with HI. The centre is situated within Lang'ata Division of Nairobi Province along Ngong/Karen road which is approximately 13 kilometres to the south of Nairobi city centre. It is surrounded by major institutions like Karen Blixen Museum, Karen Hospital and the Headquarters of World Vision International. Singleton (1993) observes that the ideal setting for any study is one that is directly related to the researcher's interest. Having taught in the institute, the researcher had professional interest to do research in the area of captioned technology as a teaching and learning tool.

3.4 Description of the Target Population

KTTID was purposively selected because it is the only tertiary institution in Kenya that accommodates learners with HI from all social and economic status both locally and foreign. According to the institute's registration records, there are 150 learners with HI and 51 teachers. While from KIE, the number of personnel in the special programmes that include media is three. Thus, the sum total of the target group is 204 persons (see table 3.1)

Table 3.1: Target population

Target Population	Female	Male	Totals
Learners	83	67	150
Teachers	28	23	51
Special Curriculum Developers	0	3	3
TOTAL	111	93	204

Source: (KTTID, 2006 & KIE, 2006)

3.5 The Sampling Techniques and Sample Size

3.5.1 Sampling Procedures

The researcher selected the institute purposively because it is the only one of its kind to have been established in Kenya. Accessibility and proximity also influenced the choice thus time saving and cost-effective. A total of 78 persons were sampled for this study. This number represents 38% of the total number of the population which is adequate to constitute a sample in a study of this nature (Mugenda and Mugenda, 1999). The overall goal of sampling is to select a subset of a population with a distribution of characteristics that matches the population. The result is representative sampling (Rosenberg, 1993). Orodho (2004), also states that purposive sampling, the investigator relies on his/her expert judgment to select units that are representative or typical of the population. The general strategy is to identify important sources of variation or criteria in the population, and then to select a sample that reflects this variation (type of school, class of learners). In this study, KTTID was selected as a single unit and was thought to be typical in important respects and second year learners selected as a unit representative that corresponded to key population differences. The teachers, second year learners, institute principal, and KIE curriculum developer were chosen according to a certain specified criteria: female and male.

The researcher sought out those respondents with maximum knowledge on captioning. The sample of the study is as shown in table 3.5.2. This was composed of all second year students as per the school records, in 2nd term of year 2006. The 69 second year students were purposively selected as they were more settled compared to first year students and as compared to third years who were preparing for final examinations. They were also more conversant with the institute's harmonized sign language as compared to first years. The seven teachers were selected from each of the seven courses offered at KTTID. This gave variety to the responses that also reflected the different technical persuasions of the learners. The principal was required to provide some feedback regarding the institution's strategy with regard to captioning in the education of the learners. The curriculum developer from KIE was selected to represent key stakeholders' interests in education.

3.5.2 Sample Size

The sampling grid below summarises the sampling selection. The sample size for the study comprised 78 respondents.

Table 3.2: Sampling Grid

Type of Respondents	Male		Female		Total %
	#	%	#	%	
Learners with HI	28	40.58	41	59.42	100.0
Teachers	3	42.85	4	57.14	100.0
Principal			1		100.0
KIE curriculum developer	1				100.0
Total	32		46		100.0

3.6 Research Instruments and Techniques

The study utilized a combination of instruments as suggested by Kane (1995). Use of complementary methods reveals discrepancies that a single method cannot. Also combining different approaches is adequate for solutions to casual problems. Mwiria and Wamahu (1995) support this idea. The researcher used sets of questionnaires, an interview schedule and observation checklists as data collection tools that covered all research questions, refer to appendixes I, II, III, IV and IV. Questionnaires were constructed for the learners, teachers and the KIE curriculum developer. An interview schedule was prepared to collect data from the principal and observation checklists for learners.

3.6.1 Questionnaires.

Kothari (1993) highlights that a questionnaire gives the respondents' adequate time to give well thought out answers. The questions in the questionnaire for the learners were a mixture of open-ended and forced response types and were divided into two sections. There were three questions in section one and five questions in the second section. Both sections were seeking to establish the opinions of the learners towards captioning as an instructional tool, refer to appendix I. Kothari and Pals (1993) observe that whereas the open-ended types of questions give respondents freedom of

response, the forced types facilitate consistency of certain data across respondents. Questionnaire for the teachers focused on the amount of knowledge the teachers have on teaching special education, evaluation and the effectiveness of captioned TV programmes as an instructional tool. Refer to appendix II. The questionnaires were given to the teachers to fill independently. The researcher also visited KIE and made arrangements with the director to meet the curriculum developer Mr Mwangella Jackton. With the director's permission, Mr Mwangella was informed of the significance of the study and for familiarization purpose of the instruments to use. A questionnaire was given to him to fill independently. The researcher left the Questionnaire with the specialist and collected it a week later. The purpose of the questionnaire was to elicit information on captioned TV programmes, opinions, challenges and recommendations. Refer to appendix IV.

3.6.2 Interview Schedule

An interview is a verbal technique for obtaining data. According to Satyanarayana (1983), interviewing is an appropriate instrument in any study because it helps the interviewer to cover all the dimensions of the investigation through probing of the respondents. An interview schedule was prepared with open ended questions and used to interview the principal and Prasad (1983) argues that it is possible for the researcher to encourage the respondents to express themselves more freely through an interview. This also gave the researcher an opportunity to meet one of the stake holders of special education, the institute principal and discuss issues that may arise in the course of the interview. Refer to appendix III.

3.6.3 Observation Checklists

Mugenda and Mugenda, (1999) observe that the researcher must define the behaviour to be observed and then develop a checklist. This permits one to spend time recording what is observed rather than how to record it and enhances the accuracy of the study. Observation also involves establishing oneself in the community (such as the school), active data collection and writing up results. This is an invaluable technique of acquiring a rounded view of a situation.

The areas observed were the manner in which the available captioned TV programmes were utilized in instructing the learners, their response to the use of

captioned TV programmes as instruction tools and the problems encountered in actual classroom teaching-learning. Other incidental facets of the problem under study were also observed and noted by the researcher. (See appendix V). Observations by the researcher were made thrice a week for 10 weeks. The researcher observed all activities during viewing of the programme and in every lesson.

3.7 Piloting of Instruments

Van Teijlingen and Hundley, (2001) emphasize the role of piloting in ascertaining the validity of research instruments. It is generally agreed in principle that observational studies are subjective. To ensure reliability and validity, a considerable amount of time was spent in the TV room and classroom for observation in order to establish rapport with the respondents. The researcher put down as much as possible what was observed in the viewing/learning of the learners. Interview schedule was also piloted.

The pilot study was undertaken at Reverend Charles Muhuro School for the Deaf in Nyeri, Central province. The school was purposively selected and Form three students were used for piloting, because they were in the transition period. The school is integrated, so the researcher purposively picked the 26 learners with HI in Form three and included the head teacher and five teachers. Reverend Muhuro School for the Deaf was purposively selected for the pilot study because it has similar characteristics to Karen Institute for the Deaf. They include: teaching learners with HI inline with the MoE's objectives and preparing the learners for KNEC examinations. A questionnaire was also piloted on the school. Following the pilot report, the instruments were revised to remove any ambiguous items in them.

3.7.1 Reliability

Reliability is the measure of the degree to which a research instrument yields consistent results after repeated measurements are taken of the same subjects under similar conditions (Gay, 1992). Reliability of the instruments was tested using the test-retest method. The instruments were administered to the subjects selected for piloting.

The following steps were followed in determining the reliability of the instrument using the retest method:

- i. The developed questionnaire was given to pre-test group respondents not included in the study sample.
- ii. The completed questionnaires were analyzed manually.
- iii. The same questionnaire was given to the same respondents after a period of two weeks.
- iv. The completed questionnaires were again scored manually.
- v. A comparison of answers made in (ii) and (iv) was analyzed.

From the two respondents (ii and iv), Spearman rank order correlation was employed to compute the correlation coefficient in order to establish the extent to which the contents of the questionnaires were consistent in eliciting the same responses every time the instrument is administered. A correlation coefficient (r) of 0.8 was arrived at. According to Orodho (2004), a correlation coefficient about 0.75 should be considered high enough and indicate reliability of the instrument.

3.7.2 Validity

An instrument is said to be valid if it does what it is intended to do (Orodho, 2004). The content validity was ascertained through the pilot study. Supervising lecturers from Kenyatta University Special Education and Educational, Communication and Technology Departments conversant with this area of study were also consulted. The researcher's supervisors were also consulted and the feedback given enabled the researcher to assess the content. The instruments were trying to measure and determine if the set of items accurately represented the items under study. Their recommendations were incorporated in the final questionnaires.

3.8 Data Collection Techniques

Upon getting a research permit from the Ministry of Education [MOEST], the researcher visited the selected institution and secondary school under study to familiarize and seek permission from the heads of the institutions. The teachers were requested, through the Principal and the head teacher, to assist in identifying the selected learners for familiarization purposes before the instruments were administered. The teachers were educated on the purpose and significance of the study. During such meetings, arrangements were made as to when the observation routines of the TV room, classrooms and interviews would be made and also distribute the questionnaire to the teachers.

The questionnaires for teachers were given to the respondents to fill independently, after which they were collected for analysis. The questionnaires for learners with HI were researcher administered. This gave the researcher an opportunity to clarify the meaning of the questions where learners with HI could not interpret the meaning of some terms and content. The researcher also visited KIE and made arrangements with the Director to meet the curriculum developer. With the Director's permission, the producer was informed of the significance of the study and for the familiarization purpose of the instruments to use. A questionnaire was given to the curriculum developer to fill independently. Observations by the researcher were made thrice a week for 10 weeks using an observation checklist. The researcher observed all activities during viewing of the captioned TV programmes in every lesson. Conclusions were made on every observation item and documented in respective spaces in the observation checklist. An interview with the Principal was also conducted. The researcher booked an appointment with the Principal's office for the interview. The unstructured questions in the interview schedule guided the interview.

3.9 Data Analysis

This research yielded data that required both qualitative and quantitative analysis. The data was analysed using SPSS programme which is normally used for such social science studies. According to Semakula (2000), quantitative analysis entails analyzing numbers about a situation by choosing specific aspects of that situation. On the other hand, qualitative analysis entails analyzing in words or pictures by collecting data, recording peoples' experiences not selecting any chosen aspect. The two types of questionnaires (for learners and teachers) yielded quantitative data and open ended responses generated from interview schedules yielded qualitative data.

Quantitative data was analysed and tabulated using descriptive statistics such as frequencies, means, standard deviations, percentages and ratios. These were chosen because they easily communicate the findings to the majority of the readers (Cooper and Schindler, 2001). This type of mode of presentation gave a quick visual impression of the quantifiable variables affecting the effects of captioned TV on instructing learners with HI in KTTID. Frequency distribution tables showed how many times a score or response occurred and percentages gave the proportions of a

sub-group to the total group-very useful in cases where the differences between, for instance, male and female learners with HI's responses were of interest.

The mean values helped inform the researcher about how the variables of interest were weighted for all the scores in each response category.

The information that was generated through interview schedules and observation schedules was transcribed into written texts through note-taking. The data was examined for completeness and relevance, data was categorised to ascertain the theme, and then data was coded and then entered to arrive at the descriptive analysis. The usefulness, adequacy, and credibility in answering the research questions were also taken into consideration. Whereas quantitative analysis helped to numerically establish how learners with HI performed from viewing captioned programmes, the qualitative analysis helped to describe the teaching and learning processes of learners with HI. The data collected allowed the researcher to analyse the responses and gain an understanding of the learners', principals', teachers' and KIE curriculum developers' perspectives on the effectiveness of captioned TV on instruction of learners with HI. This enables the triangulation of data sets using both the qualitative data and the quantitative data gained.

3.10 Logistical and Ethical Considerations

The researcher obtained a letter from the School of Education at Kenyatta University addressed to the Permanent Secretary, Ministry of Education Science and Technology. The ministry issued a permit authorizing the researcher to conduct the research and informed the Provincial Director of Education, District Education Officers and head teachers of the schools under study. The researcher presented a copy of the final proposal to the ministry. The confidentiality and identity of the respondents was kept, their privacy was not invaded, and this was made known to them from the start.

CHAPTER FOUR

RESULTS AND DISCUSSION OF THE FINDINGS

4.1 Introduction

The findings of the study are presented in this chapter based on the data collected from the respondents and as per the research objectives that included:

- a. Establishing the opinions of learners towards captioning as an instructional tool
- b. Investigating the effects of captioned technology in the education of learners with HI, at KTTID
- c. Establishing whether learners at the KTTID can adapt to captioned TV programmes in their learning environment
- d. Identifying the challenges that are likely to be faced by teachers when instructing learners with HI using captioned TV programmes and,
- e. Establishing whether KIE, embraces the concept of captioned TV programmes as a mode of instruction of learners with HI.

A response rate of 96 per cent was achieved from the 69 questionnaires filled. These were adequate for analysis. In addition, a total of 93 observations were made and one interview schedule for the principal, KTTID. Discussion of the results was done as per the objectives of the study.

4.2 Gender Distribution of the Respondents

The sample selected for the study constituted 59% girls and the rest 41% boys as indicated in figure 4.1 below.

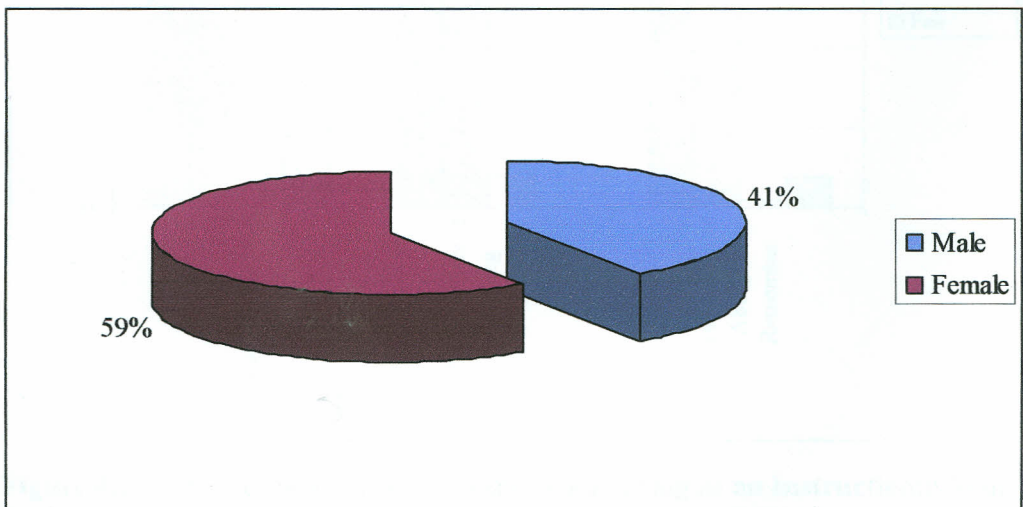


Figure 4.1: Gender Distribution of the respondents

This was because as indicated earlier, the target population had more girls (83) as opposed to boys (67). To be able to capture the gender specific factors related to use of captioned TV programmes as a mode of instruction of learners with HI, the sample selected had a proportionate representation of both gender groupings of the respondents. This was an important aspect of the study since according to Eshiwani (1984), girls occupy a subordinate position to boys in most Kenyan communities and various social, economic and cultural factors impact negatively on the girl child's access to education. HI, among female learners can only worsen this situation.

4.3 Attitudes of Learners with HI towards Captioning as an Instructional Tool

The study sought to understand the learners' attitudes towards the effects of captioning technology in the education of learners with HI. The study revealed that 35% of the respondents were of the opinion that Captioned technology was very good as an instructional tool, 41% thought it was good, and 21% of the learners reporting that it was fair as an instructional tool while 3% disapproved the method. In general, over 76% supported the use of captioning in the education of learners with HI (Figure 4.2).

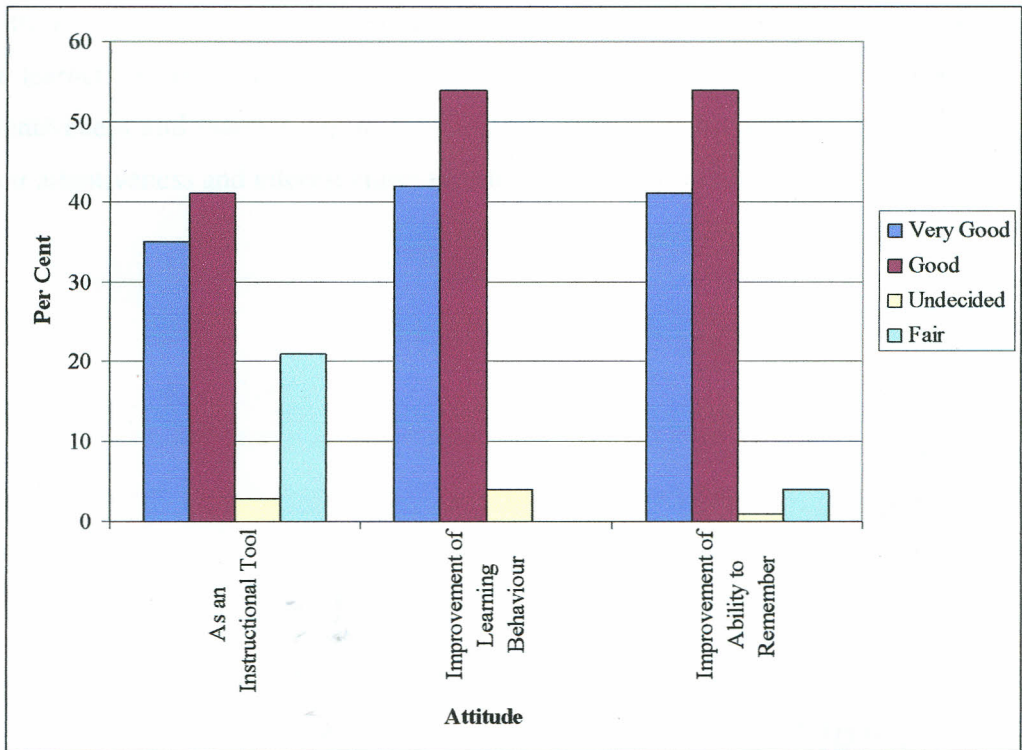


Figure 4.2: Attitudes of Learners towards Captioning as an Instructional Tool

With regards to improvement of learning behaviour up to 42% reported that Captioning was very good while 54% reported that it was good. Finally, regarding on the improvement on the ability to remember, up to 41% of the learners reported that captioning was good while 54% reported that it was very good and only 4% reporting that it was fair. The learners who were undecided on the use of captioning as an instructional tool were 3%, while on improvement of learning behaviour were 4% and those on improvement of ability to remember were 1%, as used to measure the attitudes of learners towards captioning as an instructional tool. This indicated that the majority of learners had already developed opinions towards captioning as a medium of instruction. These results indicated a motivating influence of captioned TV on learners characterized by increased rate of understanding of captioned TV programmes, improved learning behaviour and improved ability to remember. Learners therefore found it as a good instructional tool and had extremely positive attitudes toward this medium of instruction.

4.4 Effects of Captioned Technology in the Education of Learners with HI

With regards to effects of captioning technology in the education of learners with HI, the learners were asked how captioned TV programmes had improved their level of attentiveness and interest. Up to 99% indicated that the programmes had improved their attentiveness and interest either very much or much (Figure 4.3).

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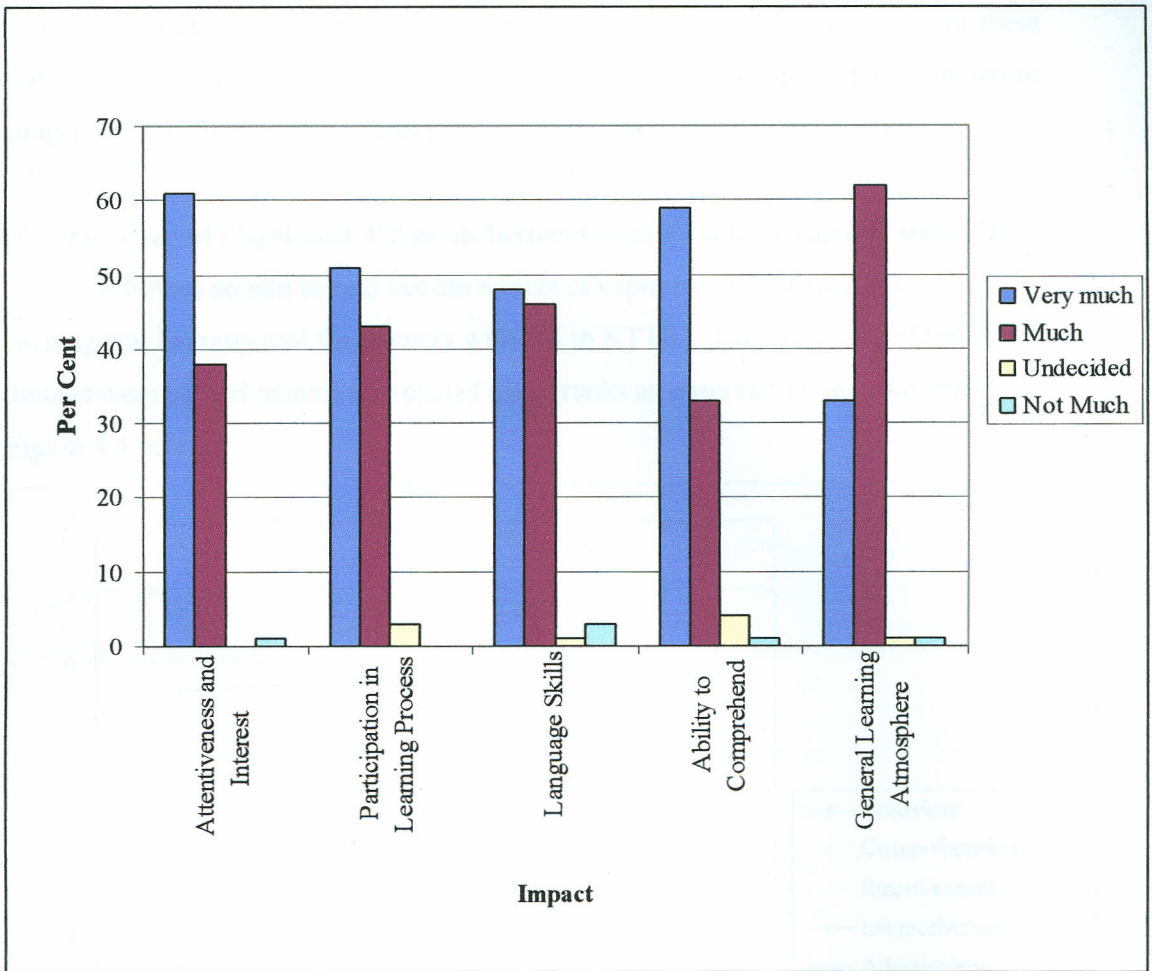


Figure 4.3: Effects of Captioned Technology in the Education of Learners with HI

When asked how captioned TV programmes had improved their participation in the learning processes, majority of the students comprising 51% reported very much while 43% reported much with the remaining 3% being undecided. Captioned TV Programmes had very much improved language skills in 48% of the respondents as compared to 46% who reported the positive influence to be much. With regards to the respondents' ability to comprehend, most learners indicated they were able to comprehend very much comprising 59% while 33% comprehended much.

Learners with HI, particularly those deaf from birth, were profoundly hampered in the way they learned. They often did not have ample opportunities to learn normally as compared to other hard of hearing counterparts. As a result, these students often had

poor skills, usually below that of their peers who were hard of hearing. From these results, it was clear that technological advances especially in captioning did much to compensate for the student's hearing and enhanced their learning experience.

4.5 Relevance of Captioned TV as an Instructional Tool for Learners with HI

The study further sought to find out the effects of captioned TV programmes as a teaching and learning tool for learners with HI in KTTID. Time intervals of ten minutes were plotted against aggregated mean ranks as observed by the researcher (Figure 4.4 below).

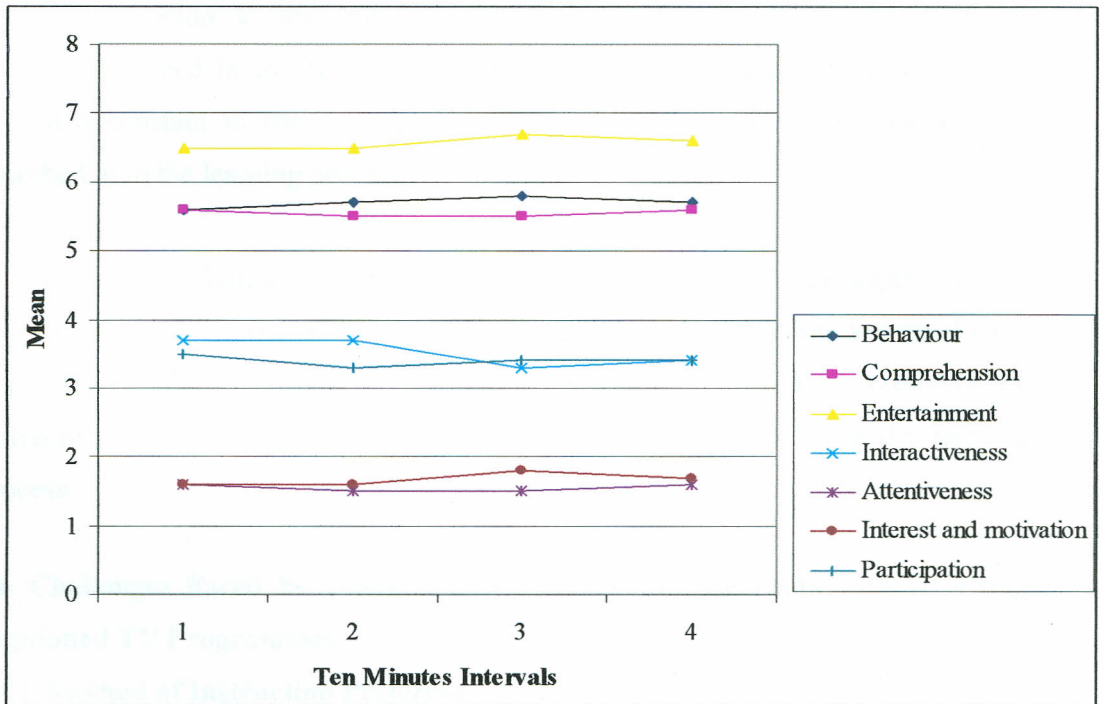


Figure 4.4: Relevance of Captioned TV on Instructing Learners with HI

Behaviour of learners such as self regulation and association with characters on the screen improved to the third interval and then declined after the learners became used to the captioned material. Comprehension of the plot or theme of captioned material was more or less constant throughout the session with only a slight variation around an aggregated mean rank of 5.5. Entertainment like jokes and laughter from the captioned material shown to the learners tended to be constant in the first two intervals only to increase in the third interval. The same trend was exhibited by interest and motivation though at a lower aggregated mean rank of about 1.5. This was possibly because the first two quarters were spent trying to understand the

captioned material before learners could comprehend and appreciate the jokes or get interested in the subject matter.

On instruction of learners, learners were absorbed in the learning process and relevancy of comments by students were constant for the first two intervals at an aggregated mean of 3.7 but declined in the third and fourth quarters as the learners became more absorbed in the lesson. On the other hand, attentiveness, interest, and motivation were more or less constant at an aggregated mean of 1.5 showing that this mode of instruction was capable of catching learners' attention over a long period of time. Participation in the learning process through asking relevant, intelligent questions reduced in the first interval intervals to an aggregated mean of 3.3 but remained constant in the third and fourth quarters as the learners became more absorbed in to the learning process.

In general, the findings of this study indicate that the use of captioned TV programmes with learners with HI increased the learners' motivation, and resulted in improvement of their learning behavior, comprehension, entertainment, instructiveness, attentiveness, interest, motivation and participation in the learning process.

4.6 Challenges Faced by Teachers When Instructing Learners with HI Using Captioned TV Programmes

4.6.1 Method of Instruction Preferred

Table 4.1: Method of instruction preferred

Method of Instruction	Mean (Σ Rank/N)	Rank
Simultaneous communication	1.4	1
Sign language	1.8	2
Finger spelling (dactology)	2.7	3
Lip reading and speech	4.2	4
Articulation	4.7	5
Oralism	6	6
Others	7	7

The study further sought to establish the most preferred methods of instruction by the teachers. Using aggregated mean ranks, findings from the study indicate that Simultaneous Communication was the most preferred method with a mean rank of 1.4 while Sign Language was second with a mean rank of 1.8 (refer to table 4.1 above).

This combination of many approaches provided an interactive instruction that could be tailored to meet the specific learning needs of individual learners with HI.

Other methods preferred included finger spelling with a mean rank of 2.7, lip reading and speech with a mean rank of 4.2 and articulation with a mean score of 4.7. Oralism was the least used approach with a mean rank of 6. Learners with HI often had difficulty learning to speak because they do not hear their own words to correct mispronunciations. Sign related approaches such as lip-reading, finger spelling, and lip reading that compared an individual's sign pattern to a model pattern were used to enhance learning. By trying to match their signs with the model pattern, the students could, through successive approximations, adjust their sign patterns and acquire more skills in learning.

4.6.2 The Use of Captioning as an Instructional tool for learners with HI

Table 4.2: Uses of captioning as an Instructional tool for learners with HI

Various Uses of Captioning	Mean (Σ Rank/N)	Rank
Classroom instruction	1.6	1
Development of effective communication skills	2.1	2
Language development	4.1	3
Cognitive development	4.2	4
Modelling; using role models	5.2	5
Development of reading skills	6.7	6
Enhancing socialization skills	7.1	7
Entertainment purposes e.g. movies	7.8	8
Self-captioning	9	9

Results from the study indicated that as regards to the various uses of captioning, the most preferred use was determined using aggregated mean ranks. Classroom

instruction in the various technical areas was the highest ranked use of captioning by the teachers with a mean rank of 1.6 (Table 4.2 below).

In addition, development of effective communication skills was ranked second at a mean rank of 2.1. Use of captioning for language development by the respondent teachers was ranked third with a mean rank of 4.1. Cognitive development was also identified as an area in which captioning was used and ranked 4. This included learning, influencing behaviour, and shaping the individuals perception of the surroundings environment.

Captioning was also used in modelling; using role models in given captioned contexts to enforce learning through association. This use was ranked at fifth position with an aggregated mean rank of 5.2. Another use of captioning by the teachers was development of reading skills where students read the captions in relation to the pictures projected. Captioning was also used though at a lower level of rank 7 in enhancing socialization skills such as interacting with other people. The lowest ranked use of captioning was entertainment purposes such as movies and self-captioning that involves preparing captions of given programs until they master the content.

4.6.3 Extent to which Captioned TV Programmes have a Positive Influence on Learners

Table 4.3 Extent to which Captioned TV Programmes have a Positive Influence on Learners

Variables	Mean (\sum Rank/N)	Rank
Factual recall (what is remembered; relevancy)	1.8	1
Comprehension of the plot or theme	2.4	2
Informational gain from the picture	4.1	3
Participation in the learning process	4.8	4
Degree of language skill development	5.4	5
Long-term observational learning	5.7	6
Academic performance	6	7
Development of socialization skills	7.2	8
Self esteem born out of increased comprehension	7.7	9
Self efficacy	9.5	10
Positive emotional development	10.2	11

The study also sought to find out the extent to which captioned TV programmes had a positive influence on learners. Findings from the study showed that the highest ranked positive impact was factual recall where learners remembered more and relevant materials taught through captioning (Table 4.3 above). This had an aggregated mean rank of 1.8. Secondly ranked was comprehension of the plot or theme of captioned material which according to the respondents positively impacted on them with a mean rank of 2.4.

Thirdly ranked was informational gain from the picture projected in captioning which when enhanced with words was said to increase the information gained in learning with a mean score of 4.1. The respondents further ranked participation in the learning process and asking relevant intelligent questions by the learners as an area where captioning had a positive impact as fourth with a mean score of 4.8. Further to these, ranked in fifth position was the degree of language skill development which had also experienced positive impact as learners were able to acquire more language skills through captioning with a mean score of 5.4. Positive impact on long-term observational learning resulting in behavioural reinforcement was ranked sixth with an aggregated mean of 5.7.

Further results indicated that, improved academic performance was ranked seventh by the respondents as an area that impacted positively by captioning. Another area where captioning had positive impact included development of socialization skills such as interpersonal skills. Among the areas in which captioning had least impact included self esteem born out of increased comprehension which ranked ninth, positive emotional development which ranked tenth as reflected by increased self-belief and development of self efficacy which ranked eleventh e.g. manifestation of confidence as a consequence of learning. It was cited that captioned subtitled materials did not provide enough background information for students to adequately process and comprehend the information available. Captioned audio-visual material with full background information was essential for complete understanding by Learners with HI.

4.6.4 The Strengths and Weaknesses of Captioned TV Programmes as an Instructional Tool

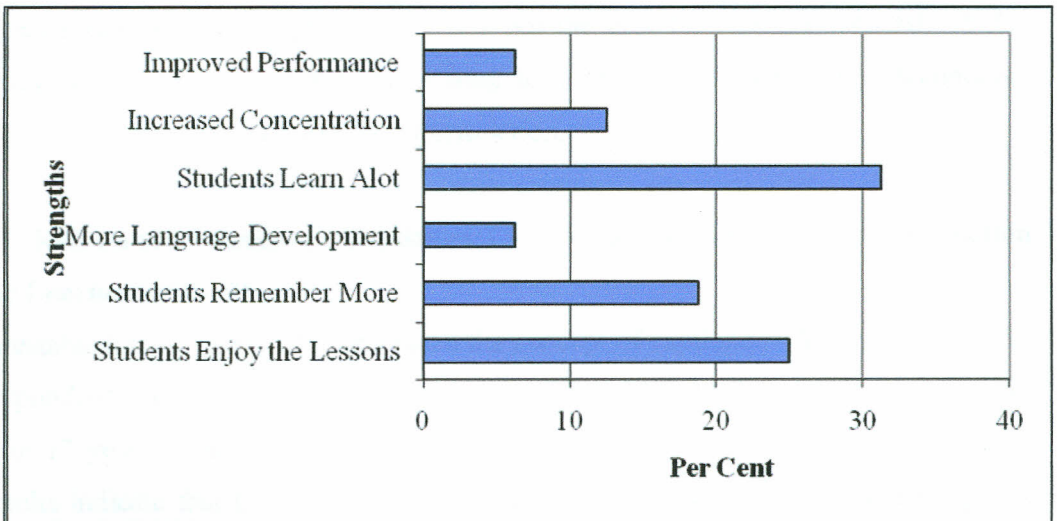


Figure 4.5: Advantages of Captioned TV Programmes as an Instructional Tool

Results from the study showed the strengths and weaknesses of captioned TV programmes as an instructional tool. Up to 25% of the respondents were of the opinion that students enjoyed the lessons which was because they were able to combine what they read on the screen with what was being projected in the pictures as opposed to when only one approach was used (Figure 4.5).

Up to 19% of the respondents indicated that the learners could remember more in captioning than in other learning methodologies. In addition up to 33% of the respondents reported that through captioned TV programmes, students could learn a lot. Increased concentration was cited by 13% of the respondents. Interestingly, more language development and improved performance were reported by the least number of respondents as strength of captioning in learning for learners with HI. In addition, the use of captioned TV programmes provided learners with an interactive, high quality, visual and a comprehensive instructional medium. Further, the learners demonstrated a strong sense of improvement when they were able to comprehend the information presented through the captioned TV programmes.

Further results from the study indicated that, captioning allowed learners to see the words, read the words, and hear them in context with the action on the television screen. These worked together to produce a very rich learning environment. However, its greatest disadvantage was the lack of video materials suitable for learning and the

fact that all (100%) teachers were not technically equipped to prepare captioned lessons. This made them frustrated, compromised and dissatisfied with their teaching because they used an approach that was not the best for learners with HI. 100% teachers were reported not to be willing to adopt the new captioning technology preferring the traditional methods of instruction.

4.7 KIE on the Concept of Captioned TV Programmes as a Mode of Instruction for Learners with HI

In establishing whether KIE embraced the concept of captioned TV programmes, the respondent was a 47 years old curriculum developer Mr Mwongella Jackton at KIE, with 17 years of teaching experience. Following the interview with Mr Mwongella, results indicate that the respondent was not satisfied with the use of captioning as a tool of instruction for learners with HI. This is because there was no curriculum developed on it and as a result KIE was not preparing programmes targeting learners with HI.

Further he stated that, to evaluate SNE curriculum and to ensure that it was in line with the emerging trends of technology and development, SNE teachers should be sent to KIE for retraining and also KIE should visit the teachers to find out how they were instructing learners with HI.

More results indicated that, the KIE curriculum developer, administrators and teachers presented various challenges that hindered the development of captioning for learners with HI. Challenges included the inability of teachers to incorporate technology in their daily routine, their training that does not prepare them to work with the new generation of special adoptive instructional materials and lack of technical training infrastructure. In addition, there were low levels of interest/awareness among the school administrators of the concept of captioning and its use in education of persons. Learners lacked mastery of English or other words based on language that captions were done in thus unable to comprehend the subject matter. The editing and summarized captions made them less explicit and altered their implied meaning. There was low level of conceptual knowledge of the learners with HI and poor memory recall ability. In addition there were low levels of literacy of the learners with HI and poor reading skills all of which compromised their learning ability.

4.8 Discussions of the Findings

4.8.1 Attitude of Learners towards Captioning as an Instructional Tool

The study findings indicated that most respondents were of the opinion that captioning was a very good as an instructional tool with a motivating influence on learners characterized by increased rate of understanding of captioned material, improving learning behaviour and improving ability to remember. This made it a preferred instructional tool. These results indicated a motivating influence of captioned TV on learners and they had extremely positive attitudes towards this medium of instruction, supporting Gallimore, (1993) that, there have been changes in search for better teaching methodology for learners with HI.

Further results from the study reveal that, captioning of audio-visual material is essential for learners with HI to gain equal access to the curriculum and other elements of learning which supports the wellbeing of all students and the life skills necessary for healthy human development, which is supported by De Villiers and Pomerantz, (1992) that captioning is particularly effective in accelerating language competency for deaf children because it enables them to learn language better and faster. However, there is need to ensure equal access to education for all children including those with disability. Without captioning of all audiovisual material, learners with HI join the educational arena with less world knowledge and less language than their hearing peers. Thus they are denied their right to equal access to lifelong education and excluded from significant areas of both social and cultural life, (Jensema, 2003) concurs.

4.8.2 Effects of Captioned Technology in the Education of Learners with HI

Captions are the text equivalent of the spoken portion of a video presentation designed to aide people with a HI. It allows people to see the words, read the words, hear them being said, and see them in context with the action on the TV screen and work together to produce a very rich learning environment. It transforms the seductive medium of TV into a literacy and language learning tool and helps introduce learners to an important conveyor of culture and information. However, care must be taken in identifying suitable programming as shown in Sessional paper No 1, 2005 that learners with HI should be made self reliant, be equipped with both skills and technical knowledge. This can only be possible through relevant curriculum that

supports and incorporates modern technology methods. Students approach programs with varying degrees of linguistic proficiency and familiarity with the cultural contexts involved as supported in (Dunn, 2006)'s studies.

Findings from the study indicate that, captioned TV programmes had improved learners level of attentiveness and interest in learning very much. Captioned TV programmes had improved their participation in the learning processes particularly those deaf from birth, who often did not have ample opportunities to learn normally like other students. Frazier & Ryan (2005) confirm that, technological advances especially in captioning do much to compensate for the student's hearing and enhance their learning experience.

4.8.3 Adaptation to Captioned TV Programmes by Learners with HI in their Environment

Results from the study indicated that, time intervals of ten minutes plotted against aggregated mean ranks as observed by the researcher indicated that behaviour of learners such as self regulation and association with characters on the screen improved to the third interval and then declined after the learners became used to the captioned material. In general, the use of captioned TV programmes with learners with HI increased the students' motivation, and resulted in an improvement in their learning behavior, comprehension of the subject matter and entertainment.

On subsequent viewing of a program, learners with HI paid greater attention to the captions, anticipating the captioned text and thus understanding the message as soon as it appeared on the screen. In addition, students used vocabulary from the program in follow-up discussions and written exercises. Seeing the words used repeatedly in the context of a coherent story with video cues made them appear more real words students could actually use in everyday signed conversations. Captioning has a great potential for teaching students with HI as supported by (NCII,2006).

Further results from the study, indicated that, both suitability and familiarity of subject matter need to be considered, and the level of difficulty of both the captions and the audio must be taken into account in developing learning activities, assignments and lesson plans. The teacher should prepare manageable tasks that

match the students' ability levels. Teachers should also promote active and full participation of students. The teachers should also control the length of the lessons to ensure maximum concentration and interest. Teachers should also provide for student control of the presentation by giving students opportunities to operate the TV and give students ample opportunities to review. This is again supported by Dunn (2006) who observes that there are various instructional methods for learners with HI and the view that no single type of material should constitute the entire instructional programme should be upheld. He further argues that the difficult task is in finding a way of balancing the use of the various types of materials, how to prepare them as well as finding time to address all the various needs of learners with HI.

4.8.4 Challenges Faced by Teachers when Instructing Learners with HI using Captioned TV Programmes

Results from the study further confirmed that, learners with HI present a significant challenge for special education teachers and language is as much an important component of instruction. Children, who have problems of processing language due to hearing loss, make it difficult for teachers to use standard instructional methods effectively. Teachers have to rely on the specialized materials and techniques in order to assist the learners to meet their special needs, thus supporting captioned TV programmes. Further, the lack of language leaves the learners to miss out on experiences, vital information, isolation, retarded growth in maturity and prevents social confidence as supported by Bishop et al., (2000). Therefore, there is need for compensatory tools during their education and especially in language development.

The major weakness of captioning was the lack of video materials suitable for learning and the fact that most teachers were not technically equipped to prepare captioned lessons. Various challenges that hindered the development of captioning for learners with special needs included inadequacy of captioning equipment and the teaching staff that was unfamiliar with the new generation of special adaptive instructional materials that captioning entailed. In addition there were low levels of interest/awareness among the school administrators on the concept of captioning and its use as a tool of instruction.

As observed earlier from the findings, students lacked mastery of English or other words based on language that captions were done in thus unable to comprehend the subject matter. The editing and summarizing captions made them less explicit and altered their implied meaning. There was low level of conceptual knowledge of the learners with HI, poor memory recall ability and poor reading skills. Teachers sometimes felt that the most appropriate teaching strategy is to use a captioned video, but were unable to disseminate the lesson well in the case where audio visual programmes were uncaptioned. Teachers also felt compromised and dissatisfied with their teaching because the method they used was not “their best approach.” These results are supported by the fact that audio visual materials should be produced at KIE which is the sole curriculum producer and supplier to schools. These results however reveal that captioning is expensive in terms of technology, equipment, resources and personnel. To be able to offer the component effectively, KIE must be supported financially.

4.8.5 KIE on the Concept of Captioned TV Programmes as a Mode of Instruction of Learners with HI.

Results from the study indicate that, KIE had not embraced the concept of captioned TV programmes as a mode of instruction for learners with HI, since there was no curriculum developed on it. However, the present results of learners with HI using the captioning component were well received. The use of captioning for learners with HI was found to have a lot of positive influence in improved learners’ level of attentiveness and interest and improved their participation in the learning processes. The approach did much to compensate for the student's hearing and enhanced their learning experience as supported by Claymer & McKee (1997). Thus, there is need for KIE to develop a curriculum guide for this mode of instruction.

The study also revealed that KIE does not constantly evaluate SE curriculum to ensure that it is in line with the emerging trends of technology and development. Further, it also revealed that SNE teachers are not trained in areas of captioning technology, thus affecting the use of the approach in instructing learners with HI. This study is supported by a survey carried out in Kenya by Adoyo (1995) that revealed that many teachers in the schools for the HI have great difficulties in communicating ideas to learners.

Educational practice is influenced by a myriad of factors including the way in which teachers and administrators are trained to teach, the teachers' responses to their own educational experience, what they believe to be the goal and purpose of education and their experience with the product of their teaching efforts. For teachers of deaf children, this means that their educational methods are influenced and guided by their professional training in deaf education, personal experience with learners with HI and perhaps most important, what they believe to be the best educational outcome for the learners with HI, which is supported by results from the research, that all teachers embraced captioning as an alternative medium of instruction. Therefore, training and awareness should be extended to all stakeholders in curriculum development so that they can embrace the concept of captioned TV programmes since most stakeholders were reported not to be aware of the instructional method.

CHAPTER FIVE

SUMMARY CONCLUSIONS AND RECOMMENDATIONS

5.1 Introduction

This chapter gives a summary of the study, conclusions and recommendations which can be made to help in finding out the effect of captioned TV programmes on learners with HI to help improve their instruction and thus help more of them enter higher levels of education.

5.2 Summary of the Findings

The purpose of this study was to find out the effects of captioned TV programmes in teaching learners with HI at KTTID, Nairobi, Kenya. The study investigated the effect of captioned TV programmes that would improve the instruction of learners with HI hence more of them enter higher levels of education. The study was conducted using Descriptive survey research design. Data was collected using questionnaires, observation checklists and key informant interview.

The results from the study indicated that 35% of the respondents were of the opinion that captioning was very good as an instructional tool while 41% thought it was good. These results indicated a motivating influence of captioned TV on learners characterized by increased rate of understanding of captioned TV programmes, improved learning behaviour and improved ability to remember. Learners therefore accepted captioned TV programmes as a good and alternative instructional tool that had extremely positive attitudes toward this medium of instruction. With regard to the effects of captioned TV programmes in the education of learners with HI, up to 99% of the respondents indicated that the programme had improved their attentiveness.

Further results on introduction of captioning, show that the behaviour of learners such as self-regulation and association with characters on the screen improved to the third ten minute interval and then declined after the learners became used to the captioned material. Comprehension of the plot or theme of captioned material was more or less constant. In general, the use of captioned TV programmes with learners with HI increased the students' motivation, and resulted in improvement of their learning behavior, comprehension of the subject matter, entertainment, instructiveness and attentiveness in learning, interest and motivation and participation in the learning process.

Findings on the various uses of captioning revealed that, the most preferred use was determined using aggregated mean ranks. Classroom instruction in the various technical areas was the highest ranked use of captioning by the teachers. In addition, development of effective communication skills was ranked second, and use of captioning for language development by the respondent teachers was ranked third. Cognitive development was also identified as an area in which captioning was used. The highest ranked positive impact was on factual recall where learners remembered more and relevant materials taught through captioning.

Strengths and weaknesses of captioning

On the strengths and weaknesses of captioned TV programmes as an instructional tool, results from the study indicate that, up to 25% of the respondents were of the opinion that students enjoyed the lessons as they were able to combine what they read on the screen with what was being projected in the pictures as opposed to when only one approach was used. Up to 19% of the respondents indicated that students could remember more in captioning than in other learning methodologies. In addition up to 33% of the respondents reported that through captioned television programmes, students could learn a lot. Increased concentration was cited by 13% of the respondents. Interestingly, more language development and improved performance were reported by the least number of respondents as strength of captioning in learning for students with hearing impairments.

Challenges to the use of captioning

Further findings revealed that, various challenges that hindered the development of captioning for learners with HI included inadequacy of captioning equipment and the teaching staff that was unfamiliar with the new generation of special adaptive instructional materials that captioning entailed. In addition there were low levels of interest/awareness among the school administrators of the concept of captioning and its use in education of persons. Students lacked mastery of English or other words based on language that captions were done, thus making the students unable to comprehend the subject matter. The edited and summarized captions made the programmes less explicit and altered their implied meaning. There was also low level of conceptual knowledge of the learners with HI and poor memory recall ability. In addition there were low levels of literacy of the learners with HI and poor reading skills affecting the use of captioned TV programmes as an instructional tool.

5.3 Conclusions from the Findings

The study concludes that captioned TV programmes is one of the special adaptive instructional tools that can be used to teach learners with HI. This new approach can provide more access to classroom teaching and discussion. According to the study, captioned TV programmes improved the attitude of 99% of the learners. This is confirmed by Jensema (2003) that captions avail to learners with HI, to experience what their hearing counterparts have enjoyed all along and it is hoped to be the signal to end their exclusion from significant areas in life and hopefully make them able to compete favourably and obtain gainful educational skills that may provide attractive employment opportunities or may lay a firm foundation for further education and career development. The effects of the programme were also supported to be positive and 75% of the learners confirmed the same. In general, the findings indicate that the use of the programme improved the learners' instructional environment. Results also show that KIE supports the programmes, prepares them and can support both teachers and schools that will adopt the new instructional tool. This will also alleviate most of the challenges faced by HI teachers.

5.4 Recommendations

The following recommendations are made from the study:

- i) There is need to review the current curricula and begin the task of appropriate curriculum development available for learners with HI, in order to attain the required SNE purposes and experiences.
- ii) Since captioning was found to have massive positive impact on learners with HI, all audio visual material should have captions for the HI for immediate and equal access to information. Producers and distributors of audio visual information for educational institutions should caption the material they produce for schools to purchase.
- iii) There is need to constantly evaluate SE curriculum to ensure that it is in line with the emerging trends of technology and development in SNE so that students with special needs have equal opportunity for lifelong learning and are able to realise set goals and objectives.

- iv) KIE should ensure that teachers are trained in areas of handling learners with HI especially in the face of emerging technology such as captioning. This will make them use the approach comfortably in instructing learners with HI. This training and awareness should be extended to other stakeholders in curriculum development so that they can embrace the concept of captioned TV programmes as results show that, they were not conversant with the method as an alternative instructional tool. The KIE should also frequently supervise the teachers to identify strengths and weaknesses in educating learners with HI.
- v) The government should enhance easy access to material required for captioned TV programmes for learners with HI so that these materials are readily available for use. In addition supportive infrastructure like electricity and more schools for learners with HI should be put in place to enhance and access learning opportunities.

5.5 Areas for Further Research

Further research is recommended in the following areas:

- a) There is need to find out the relevance of the existing curricular on learners with HI, as it affects the use of captioned TV programmes.
- b) The involvement of teachers for learners with HI in the teaching, monitoring and assessment practices should be studied, as the findings would be relevant to the use of captioned TV programmes.
- c) There is also need to find out the effects of social economic factors on learners with HI as the results could have significant impact on learning using caption TV as an instructional tool.

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		Very good	Good	Un-decided	Not good	Poor
1.	How would you rate your understanding of captioned TV programs as a non-disabled boy?					
2.	How would you rate your understanding of captioned TV programs as a non-disabled girl?					
3.	How would you rate your understanding of captioned TV programs as a disabled boy?					
4.	How would you rate your understanding of captioned TV programs as a disabled girl?					
5.	How would you rate your understanding of captioned TV programs as a non-disabled boy?					
6.	How would you rate your understanding of captioned TV programs as a non-disabled girl?					
7.	How would you rate your understanding of captioned TV programs as a disabled boy?					
8.	How would you rate your understanding of captioned TV programs as a disabled girl?					
9.	How would you rate your understanding of captioned TV programs as a non-disabled boy?					
10.	How would you rate your understanding of captioned TV programs as a non-disabled girl?					
11.	How would you rate your understanding of captioned TV programs as a disabled boy?					
12.	How would you rate your understanding of captioned TV programs as a disabled girl?					

APPENDIX I

QUESTIONNAIRE FOR LEARNERS WITH HI

Instructions:

This questionnaire is intended to seek information relevant on captioned TV in the education of learners with Hearing Impairment in KTTID, Nairobi Province, Kenya.

Please answer all the questions as accurate as possible. Note that the response you give here will **NOT** be in any way used against you. Do **NOT** include your name.

Respond by either ticking [√] or crossing [X] on the relevant answer.

		Very good	Good	Un-decided	Fair	Poor
1.	How would you rate your understanding of captioned TV programmes as an instructional tool?					
2.	How has captioned TV Programmes improved your learning behaviour					
3.	How has captioned TV programmes improved your ability to remember?					

		Very much	Much	Un-decided	Not much	Not at all
4.	How has captioned TV programmes improved your level of attentiveness and interest?					
5.	How has captioned TV programmes improved your participation in the learning processes?					
6.	How has captioned TV Programmes improved your language skills?					
7.	How has captioned TV Programmes improved your ability to comprehend?					
8.	How has captioned TV Programmes improved your general learning atmosphere?					

Thank you very much for your cooperation!

APPENDIX II

QUESTIONNAIRE FOR THE TEACHERS AT KTTID

This questionnaire is intended to seek information relevant on captioned TV in teaching learners with Hearing Impairment in KTTID, Nairobi Province, Kenya.

Please answer all the questions as accurate as possible. Note that the response you give here will **NOT** be in any way used against you. For questions with options tick either [√] or [X] where appropriate.

1. What course(s) do you teach? _____

(a) Which methods of instruction do you prefer when instructing learners with HI?

METHOD OF INSTRUCTION	RANK
Sign language	
Oralism	
Articulation	
Finger spelling (dactology)	
Lip reading and speech	
Simultaneous communication	
Others	

(b) In your opinion; Why do you prefer the method of instruction you have ranked as number 1 in 1 (a) above?

.....

(c) Why do you least prefer the mode of instruction you have ranked as number 1 (b) above?

.....

2. Have you received any training from KIE on how to use captioned TV programmes as an instructional tool? Yes [] No []

3. As a teacher, have you received any training by way of visits from or to KIE, educational resources and assessment centres on how to use TV captioning as an instructional tool? [] Yes [] No

4. How would you rate captioned TV programmes as an instructional tool?

Very relevant	Relevant	Not relevant	Irrelevant

5. After your experience with captioned TV programmes, on a scale of 1-9 where 1 is the most applicable and 9 is the least applicable to learners with HI in KTTID.

VARIOUS USES OF CAPTIONING	RANK
Classroom instruction in the various technical areas	
Cognitive development e.g. learning influencing behaviour and shaping the individuals perception of the surroundings	
Development of effective communication skills	
Entertainment purposes e.g. movies	
Language development	
Modelling; using role models in given captioned contexts to enforce leaning though association	
Development of reading skills	
Self-captioning whereby the children prepare captions of given programs until they master the content	
Enhancing socialization skills e.g. interacting with other people	

Using a scale of 1-10, where 1 is the most observable positive characteristic and 11 the least observable characteristic.

6. Indicate the answer that best represents your opinion of the extent to which captioned TV programmes has a positive influence on learners with HI.

Variables	Ranks
Academic performance	
Comprehension of the plot or theme of captioned material	
Degree of language skill development	
Development of socialization skills e.g. interpersonal skills	
Factual recall (what is remembered; relevancy)	
Informational gain from the picture	
Long-term observational learning resulting in behavioural reinforcement	
Participation in the learning process: asking relevant intelligent questions	
Positive emotional development as reflected by increased self-belief	
Self efficacy e.g. manifestation of confidence as a consequence of learning	
Self esteem born out of increased comprehension	

7. Are there adequate facilities in KTTID to enhance the training of learners with HI in captioned TV programmes?

Yes () No ()

8. What are the strengths and weaknesses of captioned TV programmes as an instructional tool?

Strengths	Weaknesses

15. Provide suggestions on how captions can be improved or used effectively?

Thank you very much for your cooperation

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APPENDIX III

INTERVIEW SCHEDULE FOR THE PRINCIPAL

This interview schedule is intended to seek information relevant on captioned TV and instructing learners with Hearing Impairment in KTTID, Nairobi Province, Kenya.

Please answer all the questions as accurate as possible. Note that the response you give here will **NOT** be in any way used against you.

1. What are the present shortcomings of the instructional tools being used by teachers to instruct learners with HI in your institution?

2. How in your opinion do the various key stakeholders in education for learners with HI e.g. KIE embrace the concept of captioning?

3. How can the concept of captioning be nurtured and popularized in the Kenyan schools for learners with HI?

4. What are some of the challenges your institution is facing in implementing this concept?

5. Give suggestions on how captioning TV programmes for learners with HI as an instructional tool can be improved.

Thank you very much for your cooperation

APPENDIX IV

QUESTIONNAIRE FOR KIE CURRICULUM DEVELOPER

This questionnaire is intended to seek information relevant on captioned TV in instructing learners with Hearing Impairment in KTTID, Nairobi Province, Kenya.

Please answer all the questions as accurate as possible. Note that the response you give here will be treated in confidence and for academic purposes.

1. Designation: _____
2. Area of specialization: _____
3. (i) As a curriculum developer, are you satisfied with the use of captioning as a tool of instruction for learners with HI? Yes () No ()

(ii) Give reasons for your answer in (i) above

4. (a) The success of any learning programme largely depends on positive results on the part of the learners. Are you satisfied with the present results of learners with HI using the captioning component? Yes () No ()
- (b) What recommendations can you make to ensure that captioned TV programmes are enhanced as a learning tool?

5. Is it possible for recommendations referred to in question (4b) be made to all schools catering for learners with HI on equal basis?

6. How is Special Education curriculum evaluated to ensure that it is in line with the emerging trends of technology and development?

7. How do the various key stakeholders in curriculum development embrace the concept of captioned TV programmes?

8. Indicate the answer that best represents your opinion of the extent to which the challenges below can affect the use of captioned TV programmes for learners with HI. Using a scale of 1-9, where 1 best represents your opinion and 9 the least.

Challenges	Rank
i) Low level of conceptual knowledge of the learners with HI	
ii) Low levels of literacy of the learners with HI	
iii) Poor memory recall ability of the learners	
iv) Lack of mastery of English or other words based on language that captions are done in	
v) Poor reading skills of the learners with HIV	
vi) Teaching staff unfamiliar with the new generation of special adaptive instructional materials that captioning entails	
vii) Inadequacy of captioning equipment	
viii) Low levels of interest/awareness among the school administrators of the concept of captioning and its use in education of persons who are HI.	
ix) Issue of edited/summarized captions which makes them less explicit and alters their implied meaning	

9. On a scale of 1 to 4, where: 1 is the most serious challenge and 4 the least indicate challenges you know of that are likely to hinder the development of captioned TV programmes for learners with HI?

Challenges	Rank

10. What suggestions can you give on how to improve Captioning TV programmes as an instructional tool for learners with HI in Kenyan learning institutions?

Thank you very much for your cooperation

APPENDIX V

OBSERVATION CHECKLIST FOR LEARNERS WITH HI

This observation checklist is intended to seek information relevant on captioned TV instructing learners with Hearing Impairment in KTTID, Nairobi Province, Kenya.

1. Indicate the answer that best represents your opinion of the extent to which captioned TV programmes has an influence on the characteristics of learners with HI. Rate on a scale of 1 to 4.

Observable factors	Rank at 10 minutes interval			
	1 st	2 nd	3 rd	4 th
Behaviour as a result of associating with characters on the screen				
Comprehension on the theme of the captioned material				
Entertainment e.g. jokes, laughter etc				
Interactiveness of the learners : assess relevancy of comments				
Attentiveness				
Interest and motivation				
Participation in the learning process through asking relevant, intelligent questions				

APPENDIX VI

PROPOSED BUDGET

ITEM	ESTIMATED COST (KSHS)
Proposal typing, corrections, photocopying and binding	40,000.00
Research instruments, typing, photocopying	25,000.00
Piloting	20,000.00
Fieldwork	25,000.00
Typing of thesis	30,000.00
Binding thesis 12 copies	10,000.00
Transport	22,000.00
Telephone	8,000.00
Internet	15,000.00
Stationery	20,000.00
Miscellaneous	28,000.00
TOTAL	243,000.00

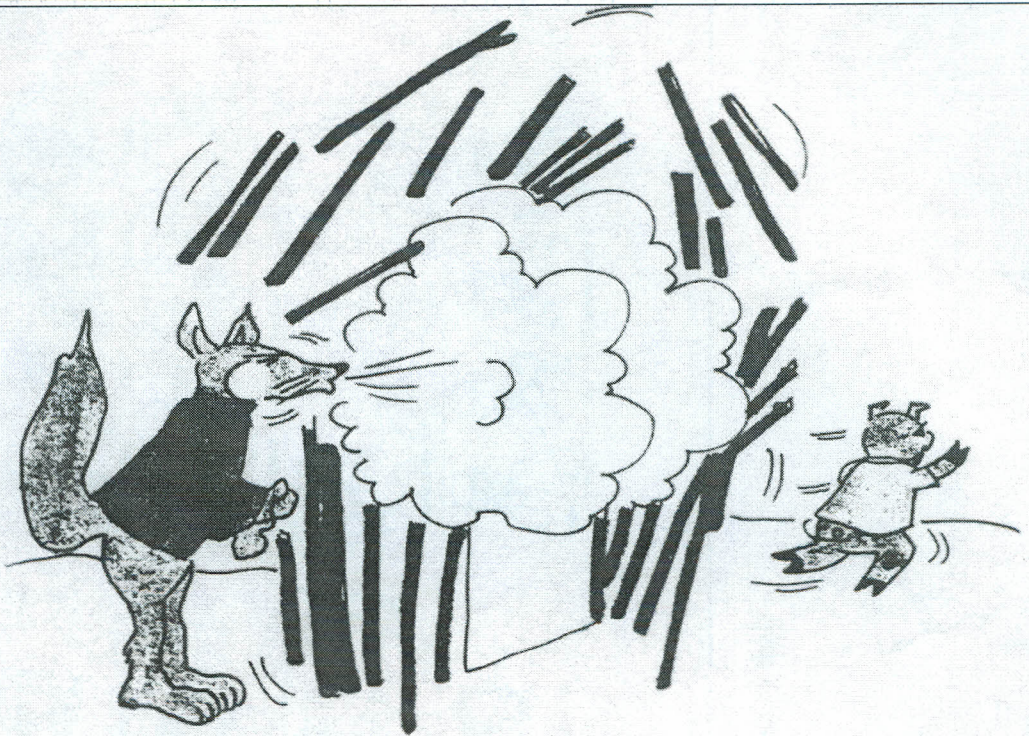
APPENDIX VII

PROPOSED RESEARCH TIME PLAN

Activity	2007		2008			2009		2010
	Oct	Nov- March	April -July	Aug- Oct	Nov- Dec	Jan Sept	Oct- Dec	Jan
Formulating problem								
Literature search and review								
Proposal writing								
Development of Instruments								
Presenting at departments and corrections								
Data collection and analysis								
First draft of thesis								
Second draft of thesis								
Writing of the final report								
Dissemination of thesis								

APPENDIX VIII

REAL TIME CAPTIONING

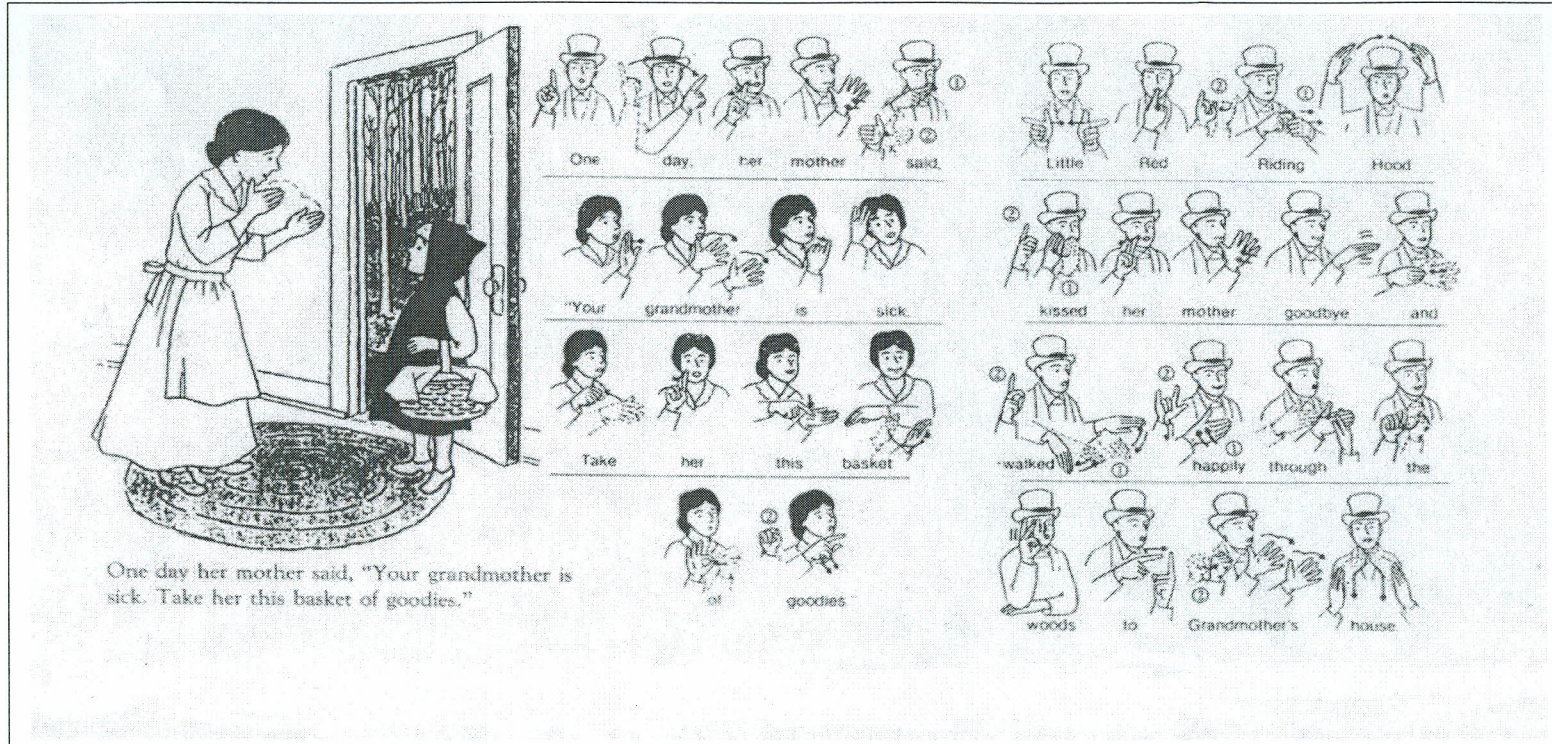


The wolf blows hard!
The house of sticks falls down
The little pig runs fast!

An illustration of real time captioning illustrating:

- (i) Characters in the story, wolf and pig
- (ii) Action, blowing, sticks falling and pig running and
- (iii) Sequence of the story.

APPENDIX IX
EDITED AND VERBATIM CAPTIONING



An illustration of edited and verbatim captions depicting a children's story that: -

- (i) Provides information about who is speaking and signing
- (ii) About sound effects that may be important
- (iii) Understand a children's story
- (iv) Sequence of the story.