DECLARATION

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

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E55/5940/03

We confirm that the work reported in this thesis was carried out by the candidate under our supervision as university supervisors.

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DEDICATION

To my dear children, Murugi and Muthomi. Thank you for your patience, and to my late sister Ruth, thanks for your encouragement and being there for my children. May you rest in peace. To all those people who work for and with persons with visual impairments, Let us all strive to give our best to all those who require our services.
ACKNOWLEDGEMENT

I hereby acknowledge Kenyatta University and particularly the Department of Special Education for granting me the opportunity to carry out this study. I sincerely thank the Teachers Service Commission for granting me study leave to pursue my studies.

Lastly, I highly acknowledge the great effort of my two knowledgeable and patient supervisors – Dr. Njoroge and Dr. Fatuma, your constant guidance and patience kept me going even when I was at the verge of giving up. Without you, I could not have made it this far. Thank you so much.

To you all, may God bless you abundantly.
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### ABBREVIATIONS AND ACRONYMS

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<th>Abbreviation</th>
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<tr>
<td>FPE</td>
<td>Free Primary Education</td>
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<tr>
<td>KISE</td>
<td>Kenya Institute of Special Education</td>
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<td>SNE</td>
<td>Special Needs Education</td>
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ABSTRACT

This research was a study of factors affecting Braille competency among lower primary and pre school pupils with total loss of vision in Kenya. The study was conducted in two out of the six primary schools for learners with visual impairments in Kenya namely, Thika School for the Visually Impaired and St Lucy School for the Visually Impaired. The two schools chosen were distinguished by their varying geographical locations as well as their history which ranked them among the oldest in the country. The two schools were also among the three largest schools for learners with visual impairments, the third being Likoni school in Coast province. The objectives of the study were; to establish the academic level and professional qualifications of teachers of Braille, identify the resources and facilities available for teaching Braille to young beginners, establish the methods used in teaching Braille and establish whether reading readiness skills were taught to beginners. A survey research design was used. Three types of instruments were used for data collection. Those were two sets of questionnaires – one set for head teachers and the other one for teachers who taught Braille. Both sets had open and closed ended items. Interview schedules and observation guides were also used to supplement the questionnaires. Data was analyzed using descriptive statistics following text-based themes. Key findings of the study showed that furniture used by learners with visual impairments was not appropriate, secondly, there was no Braille proficiency policy, Braille equipment and materials used by those learners were both inappropriate and inadequate and there was a high teacher-pupil ratio which affected performance. Pre reading skills were also not taught to beginners. It was expected that the results obtained from the study would benefit institutions training teachers of learners with visual impairments and the government of Kenya in terms of making policies on the education of learners with total loss of vision. From the findings, the study recommended that the government came up with Braille proficiency policy, teacher-learner ratio was reduced to 1:5 at most, adequate and appropriate furniture was availed to those schools and reading readiness skills were taught to beginners. Fewer materials available in Braille disadvantaged those learners using it and that could significantly affect their progress in achievement. Continuous learning opportunities were essential for personnel who gave direct services in Braille literacy. The study further recommended that a study be done on teaching of Braille to newly blinded adults and also focus on effect of Free Primary Education (FPE) on Special Needs Education (SNE).
CHAPTER ONE
INTRODUCTION

1.1 Background to the study

Throughout history, there had been stories told about remarkable and talented people who were visually impaired and managed, often with insightful assistance, to educate them and to make significant contributions to their societies. Homer was perhaps the first name that came to mind (Scholl, 1986). Another industrious person who was blind was Nicholas Saunderson (1682 - 1739), a noted professor of Cambridge University, whose sponsor was Isaac Newton. France was the cradle of new positive attitudes towards blindness. It was here where the first school for learners with visual impairments was established by Valentine Hauy in 1784 (Scholl, 1986). The most notable contribution to the advancement of education for children with total loss of vision was made by Louis Braille in the 1800s. The significance of Braille's contribution was critical because without a system of effective communication through reading and writing, the education of blind children would undoubtedly have remained as it had been through the middle ages (Scholl, 1986).

In Kenya, education for people with visual impairments was started by the Salvation Army and the Catholic Missionaries. Thika School for the Visually Impaired was the oldest institution for learners with visual impairments in Kenya. It was first started as a rehabilitation centre for the soldiers who were wounded and blinded during the Second World War. In 1946, the buildings were handed over to the Salvation Army Missionaries who made them a school for children with visual impairments. Thika continued to be the only school for the visually impaired in Kenya until 1958 when the Catholic Church started another school. That was St. Lucy's School for the visually impaired in Meru (KISE Bulletin, 1989). In 1961, the Catholic Church started another school in South Nyanza called St. Oda School for the visually-impaired. In 1966, the Salvation Army Missionaries started yet another school in Mombasa known as St Lucy School for the Visually Impaired. That was followed by Kibos School for the visually impaired in 1968 and later St. Francis
School for the Visually Impaired opened its doors to children with visual impairments in 1983. Since then, a number of integrated programmes for children with visual impairments sprung up. Like the schools for the visually impaired, those programmes offered educational services to learners with visual impairments (KISE Bulletin, 1989).

Braille was the main medium of communication for persons who were blind (KISE Bulletin, 1989). Kenya adopted Braille's code which was made up of six dots. Braille writing equipment included Perkins braillers, Marburg and slate and stylus. Perkins braillers were very ideal for writing but they were rather expensive. The slate and stylus on the other hand were rather crude. The stylus, which was usually wooden with a metal pointer, pressed on the fingers, making them sore, particularly when used for a long time. When using the slate and stylus, the child wrote from right to left thus contradicting the left-right eye orientation. He/she had to turn the paper when it came to reading, making the process rather slow. That was also cumbersome and more so to the young child who was blind (Sharon & Rosanne, 1998).

A review of the Koech Report of 1999 confirmed that majority of children in schools for visually impaired children in Kenya used crude, outdated writing equipment, thus did not perform as expected. Production of reading materials in a form usable by persons with visual impairments was usually a slow, tedious and costly business. Printed texts must be converted into tactile forms, mathematics and scientific concepts must be represented in a way that maximized communication through touch reading (Koech, 1999).

The disability Act of 2003 on its part, stipulated that learning institutions should take into account the special needs for persons with disabilities with respect to the entry requirements, pass marks, curriculum, examinations, auxiliary services, use of school facilities, class schedules, physical education requirements and other similar considerations. It also emphasized that provisions should be made in all districts for an integrated system of special and non formal education for
persons with all forms of disabilities, and the establishment where possible of Braille and recorded libraries for persons with visual impairments. If the above was put in place, the quality of Braille was expected to improve, but still there were other areas which needed to be looked into. Such were availability of writing equipment, training of teachers, and also teacher-pupil ratio.

1.2 Statement of the problem

Many students with total loss of vision in Kenya were not competent in Braille as revealed by the Koech Report of 1999. Thus, they did not do well in school considering that Braille was their primary medium of communication. Studies revealed that teaching Braille to young children with total loss of vision was more than just teaching them the meaning of the symbol (Holbrook & Koenig, 1997). It was therefore of paramount importance that teachers were aware of things to consider in their teaching if their learners were to be competent in Braille. That was because Braille remained their main medium of communication and access to new information. The study therefore, set out to identify factors that had continued to affect Braille competency among learners with total loss of vision in primary and pre-schools for learners with visual impairments in Kenya.

1.3 Purpose of the study

The purpose of the study was to identify factors that affect Braille competency among learners with total loss of vision. It was the expectations of the teachers, educationalists and parents that pupils would achieve the level of performance stated in the school syllabus. That was regardless of whether they were totally blind and thus using Braille or low vision or had any other form of disability. The study also intended to find out whether time allocated for teaching Braille on the school timetable was really adequate. It further sought to find out the extent to which teacher preparation, learners' reading readiness, availability of teaching/learning materials and methods used
in teaching Braille reading affected the acquisition of skills in reading and writing Braille. Finally, it offered suggestions on how competency in Braille could be improved.

1.4 Objectives of the study

The study had the following objectives developed from literature:-

i. To establish the academic level and professional experience of teachers who taught Braille reading and writing;

ii. To identify the resources and facilities available for teaching Braille to young beginners and find out whether the resources were both appropriate and adequate;

iii. To establish the methods used in teaching Braille reading and writing to young beginners with total loss of vision;

iv. To establish whether there were any specific procedures put in place for teaching reading readiness skills to young learners who were blind.

1.5 Research questions

The study sought answers to the following research questions.

i. What was the academic level and professional experience of teachers teaching Braille to young beginners with total loss of vision?

ii. What were the resources and facilities available for effective teaching of Braille to young beginners and how appropriate and adequate were they?

iii. What methods were used for teaching Braille reading to young beginners with total loss of vision?

iv. What were the procedures put in place for teaching reading readiness skills to young learners with total loss of vision in Kenya?
1.6 Significance of the study

It was the researcher's expectation that the results of the study would reveal some factors that had continued to affect Braille competency among learners with total loss of vision in Kenya. Although competence in Braille was significant to the education of learners who were totally blind, little had been done on the subject in Kenya. That was confirmed by the Koech Report of 1999. Thus the need of such a study which was intended to reveal factors that impacted negatively on the learners' competence in Braille in schools for learners with visual impairments. It was expected that the results of the study would be beneficial to institutions training teachers for Special Needs Education (SNE) such as Kenyatta University, Kenya Nazarene University, Maseno University, and Kenya Institute of Special Education among others.

The findings and recommendations might be useful for further investigations and in rectifying the learning atmosphere which was usually teacher centered and/or introducing appropriate approaches to learning Braille. Investigating teacher-related factors in learning Braille was intended to reveal factors that contributed both positively and negatively to the quality of Braille taught to beginners. It was also expected that the findings of the study would assist the government in formulating educational policies that were going to harmonize the teaching of Braille in Kenyan primary schools for learners with visual impairments and also improve standards of Braille. That in turn would enable learners with visual impairments to compete favourably with their sighted peers, through removal of communication barriers since Braille remained the main medium of communication and access to new information (Harley, Truan, & Sanford, 1987).

1.7 Scope and Limitations of the study

The study was carried out in two schools which were quite far apart. They were St Lucy School for the visually impaired in Eastern Province and Thika School for the visually impaired in Central Province. The limitations of the study included insufficient funds, the distance between the two
schools under study and the piloting school was quite overwhelming. Literature was scanty and time was also limiting.

1.8 Assumptions of the study

The study was based on the assumption that teachers who taught Braille were honest and accurate in giving their responses. The study also assumed that the sample was a good representative of all schools of learners with visual impairments in Kenya since the learners were drawn from all over the country and subjected to the same curriculum. Teachers working with those learners were also subjected to the same methodology during their training.

The study further assumed that the presence of the observer in the classroom did not greatly affect the normal interaction of the teacher and the learners, and also the methods used during the study period were the ones used normally by the teacher.

1.9 Theoretical Framework

Models in research were very handy. They formed a simplified familiar structure meant to help gain insight into a phenomenon that one needed to explain (Orodho, 2004). In view of that, the study embraced the use of a Theoretical Framework. A theoretical framework was a reasoned set of prepositions which were derived from and supported by data and evidence. It introduced the researcher to a new view of the research problem enabling her to understand the total realm of the problem (Kombo & Tromp, 2006). Fitt's three phase theory on skill acquisition was embraced.

1.9.1 Fitt's three-phase theory

Fitt's three-phase theory was proposed by Fitt in 1962. The theory was developed from Fitt's own experiences and the opinions of pilot trainers and sports coaches concerning the
problems and nature of skill acquisition observed in their trainees at Pittsburg University. As a result Fitt postulated that the development of skill progressed through three phases or stages. These phases were;

- The cognitive phase
- The fixation or associative phase
- The autonomous phase

Learning and skill acquisition

![Diagram](image)

Adapted from Patrick, J. (1992) pg.42

NB: It should be noted here that there was no marked point where one phase ended and the next began.

The first, cognitive phase was concerned with the initial intellectualization process involved in learning a new task. In that phase both the trainer and trainee attempted to verbalise what had to be learned. In Braille, both the teacher and the learner touched and verbalised dot positions, i.e. dot 1 up to dot 6. Whilst the trainee was given some expectation about the nature of the task, and any procedures involved, initial performance was error prone and further advice or demonstration had to be provided by the trainer (Patrick, 1992). That phase applied to acquisition of many important tasks in which the trainee had to understand what was involved in the task before performance could be attempted. That included any formal procedures which governed how a task was executed such as the rules of brailing whereby each finger was responsible for pressing only specific keys.
In the fixation or associative phase, correct patterns of behaviour were slowly established by practice with errors being gradually eliminated. Correct holding of reading/writing materials and correct positioning of the hand and fingers in reading and writing Braille was paramount. Generally, that phase lasted longer than the preceding cognitive one. Patrick (1992) gave us some idea of the envisaged duration of that phase for typing. In the case of a typist it would extend from the point at which the student had learned the position of different keys and how the fingers were used in striking them to the point where he/she had perhaps graduated from his/her first typing course and reduced his/her errors to less than one percent and had acquired a fair degree of typing speed. That was comparable to Braille since Braille just like typing involved striking of keys whose various positions had to be mastered. Brailling speed, just like typing increased with time. Errors of spelling, punctuations, spacing and others were gradually eliminated with time.

The final autonomous phase of skill acquisition had two main features (Patrick, 1992). Gradually increasing speed of performance in tasks where it was important to improve time or accuracy scores far beyond the point where errors, as ordinarily defined could be detected and gradually increasing resistance to stress and to interference from other activities that may be performed concurrently. During that autonomous phase, skill became more automatic and required fewer psychological resources such as memory and attention. The trainee relied less and less on verbal mediation of the skill and indeed might be quite unable to verbalize how or what had been performed. In some tasks, facial feedback became less important and the person had extra capacity to perform other tasks simultaneously, larger and larger chunks of behaviour could be programmed and executed without conscious awareness. The everyday intuitions of for example, typing, illustrated those points. A skilled typist could engage in a conversation simultaneously with apparent ease. Thus, frequent practice was helpful. Those ideas of automatic behaviour sometimes referred to as automaticity or automization, related to, and had been extended by contemporary ideas in cognitive psychology. A distinction had been made between automatic processing, which occurred
in the final phase of skill acquisition, and controlled processing, which occurred earlier on. Similarly, a skilled braillist had no problems engaging in conversation as he/she braille. To reach that stage though, learners of Braille had to practice frequently under the guidance of a competent teacher.

Having looked at the background to the study, statement of the problem, purpose, objectives and research questions, the chapter outlined the significance of the study. Scope and limitations of the study were also established and the theoretical and conceptual frameworks outlined. The study then progressed to chapter two where a number of studies related to the study were reviewed.
1.10 Operational definition of terms

**Blindness:** The term was used to refer to those students who had either no vision or, at most had light perception.

**Braille:** That was a tactile system that people who were blind used to read and write. The basis of Braille was a rectangular 'cell' consisting of six raised dots, two vertical rows of three dots each.

**Integration:** As applied to persons with disabilities, it meant the physical placement of individuals with disabilities into the natural settings of community, home or general education class or school with their non disabled peers.

**Placement:** In that context, the placement of exceptional children in programmes in which they related only to other exceptional children and did not have an opportunity to interact with regular class pupils.

**Reading readiness:** The term referred to a state of general maturity, which allowed a child to be able to learn to read with understanding and without difficulty.

**Residential institution:** A facility either public or state supported, designed to provide designated care and other services to those housed there.

**Visual impairments:** That was an umbrella concept and it included blindness and all degrees of visual loss, mild, severe and total loss.
CHAPTER TWO

LITERATURE REVIEW

2.0 Introduction

The purpose of the chapter was to review some literature related to Braille reading and writing. The chapter looked at the situation of education for people who were blind and the historical development of Braille, blindness and tactual reading, Braille instruction and methods of teaching Braille. It further reviewed some literature on teachers' competency in Braille and materials necessary for teaching Braille. It also revealed some important aspects in reading readiness that were vital in the preparation of children who were blind for Braille reading. In addition, the chapter reviewed a number of studies on Braille reading habits of children with visual impairments. Also reviewed was literature on emotional, social and intellectual development together with development of attitude towards Braille. Finally, the researcher looked into literature on the effectiveness of Braille writing equipment namely the brailler and the slate and stylus.

2.1 Historical Development of Braille

Literature had revealed that Braille, which was a system of reading and writing used by many people with visual impairments was invented almost 200 years ago (Dubel, 1997). While several types of written communication systems were tried during a ten-year period beginning in 1825, the one invented by a teenage who was visually impaired (Louis Braille) was adopted. (Scholl, 1986) revealed that the first step towards the development of Braille was undertaken by Charles Barbier in France. Barbier was trying to invent a communication system to be used by soldiers in the battle field at night. The system first used ten dots. Louis worked with Barbier's basic ideas to develop his own simplified system that we know today as Braille. He based the code on the normal alphabet and reduced the
number of dots by almost half. His modification was meant to suit young readers who were blind. That was because he felt that ten dots were far too many to be explored by young readers with their tiny fingers. He reduced the dots from ten to six. Louis Braille published the first Braille book in 1829. In 1837, he added symbols for math and music (Scholl, 1986). Although Louis went on to become a beloved and respected teacher, was encouraged in his research, and continued to believe in the value of his work, his system of reading and writing with raised dots was nevertheless not very widely accepted in his own time. Dubel (1997) argued that some modifications had been made to Louis' system over the years, but he confirmed that the Braille code in use today is virtually the same as it was in 1834.

**Braille in Developed Countries**

Literature showed that during Louis Braille's time, there were over twenty different systems of embossed type in existence. Most of those had been invented by those who could see, none proved as easy to touch as to sight (Scholl, 1986). Those systems were not very convenient for persons with visual impairments. The main problem was that they were invented by sighted people and people with visual impairments could not really cope with them. That being the case, education of people with visual impairments, particularly in literature and music had to be largely oral. The beauty of Braille system was its simplicity, and its major advantage over everything that had gone before was that it could be simply and easily written by people who were visually impaired. It was practical script, invented and perfected by a man who was visually impaired (Louis Braille who had lost his sight at age 3 years).

Shea and Bauer (1994) argued that the French system was not wholly accepted by all in developed countries. By some, the French arrangement was adopted, by others a modified form of the French system in which the most frequent letters were given the fewest dots, by others still a more radical
change which involved making the Braille domino horizontal instead of vertical. However, there was need to have some uniformity for easier and cheaper communication. School books, bibles and the like had to be printed in three types, at great expense, and people who with visual impairments brought up on different systems could not communicate. According to Shea and Bauer (1994) the futility of the situation lasted between thirty and forty years. It was in 1918, after much committee work that unity was achieved between the developed countries. This was through the adoption of the original French system.

**Braille in Developing Countries**

It was important to note here that literature confirmed that unlike in the developed countries where the standard Braille we have today came into being through the contribution of many investors, having gone through various stages, Braille in the developing countries was purely an adoption of the Braille invented in developed countries. As earlier noted, education for people with visual impairments in the developing countries was first started more than 100 years after it had already taken root in developed countries. A study carried out in South Africa by Sullivan (2001) among users of Braille revealed that people with visual impairments were comfortable with the code in use and would not wish to have contraction changes or new symbols added to what they already had. However, one limitation cited in the study was that it was carried out on sighted subjects who were either transcribers or teachers. Might be, if the study was carried out on subjects with visual impairments instead, the results would have been different. It was better if people with visual impairments could invent and perfect their own system. The study involved adults, thus the need to carry out studies on children.
In view of that, it was the task of the study to explore the possibility of harmonizing the teaching of Braille with the intention of improving the standards of Braille in schools for learners with visual impairments in Kenya.

2.2 Blindness and Tactual Reading

Vision was the unifying sense that gave the overall meaning to the different information provided by each of the senses separately. A pupil with visual impairments must learn to integrate the sensory impressions through the use of touch, hearing, smell and taste. The impressions became more accurate if they were as a result of concrete experiences. For such concreteness to be meaningful, frequent contact with the experiences was recommended as it made the pupil to become familiar with it. The teacher should therefore help pupils to develop accurate concepts by using concreteness in teaching. They should bring varieties of materials to class for the pupils to explore. The objects for exploration should be representation as much as possible, but models could be used to build abstract concepts, (Olson, 1984).

Various research studies by Kosman & Castellano (1997), Harley, Trun & Sanford (1987) and Holbrook & Koenig (1992) agreed that in the absence of vision, it was important to give a pupil sensory training to the remaining senses like the sense of touch and the sense of hearing so that they might be used as sources of information. Verbal descriptions combined with tactual experiences gave more realistic ideas about objects and concepts. Tactual exploration should be encouraged by parents and teachers to provide concrete information as well as teaching the child to use his/her hands which would be useful for Braille reading in future. Training the sense of touch helped the child to feel an object in a systematic way, for instance from the head downwards or sideways. That skill was needed in Braille
reading (Harley, et al 1987). The importance of pre reading skills was emphasized here; an area the study looked into in the Kenyan context.

According to Kosman & Castellano (1997) pupils who had lost their vision adventitiously and had to change their medium of learning from print to Braille normally felt insecure and sensitive to failure. It was important that the teacher provided them with success in Braille reading programmes. The pupils should be given positive reinforcement to help them develop self confidence. Successful learning experiences should also help the pupils to develop positive concept and adjust to loss of vision. Positive self concept and adjustment to loss of vision were both conductive to good mental health.

### 2.2.1 Reading Acquisition

People without vision read using the sense of touch and the part of the body used was normally the finger or fingers from one or both hands. The organs of the sense of touch were part of a complex and elaborate system linked to the brain. Before any information reached the brain, it passed through a sophisticated system of analysis and filters which refined it (Rex, Koenig, Wormsley, & Baker 1994).

While the visual sense allowed for simultaneous perceptions of various aspects of a single object or concept, the tactual sense acquired information by exploration of one aspect at a time. The learner must therefore engage in multiple explorations to gain information comparable to that of a sighted reader in a single viewing. If the quality or quantity of that exploration was not adequate, the knowledge and experience necessary for successful reading of texts might not be adequate.

Rex et. al (1994) observed that learners who were visually impaired had to be taught to use touch just like sighted learners were taught to use vision. They further observed that opportunities for incidental learning through touch were limited and therefore should be consciously provided and encouraged.
That should be done through the provision of objects to manipulate and encouragement to explore the environment so that they became active participants in their learning.

According to Hampshire (1981) pupils with congenital loss of vision who had been taught tactual sense discrimination from very early ages usually did not have many problems with Braille reading if they did not have any other complications. The perceptual factor however grew more and more difficult with the age of onset of blindness for the adventitiously blinded. Some teachers had therefore advocated for the use of an expanded Braille cell (larger dots which could be felt more easily) for training the sense of touch for them.

Harley et al (1987) also advised that if a pupil had to change from using print to Braille then the instructional approach used with the pupil in print should be adopted for Braille reading so as to make the pupil continue enjoying reading. That was because the stories the pupil was previously acquainted with would help him or her to read faster. They also suggested the use of stories composed by the pupil or made from his experience as they would be enjoyable and that familiarity with the content being read helped the reading fingers to move quickly and that made the pupil to feel successful. A pupil who was adventitiously blinded also needed time out of the regular classroom for one to one instruction on the Braille code (Harley et al, 1987).

2.3 Braille Instruction and Methods of Teaching Braille

It would be wonderful if all children and adults could learn to read in the same manner. In fact, children learnt the skill in very many different ways, depending upon their inborn abilities, their experiences, and their motivation and interests. For that reason, every teacher must have knowledge of the major methods for teaching reading (Mousty & Beterlson, 1985). Teaching Braille to young children who with visual impairments was more than just teaching them the meaning of the Braille
symbols. Young children with visual impairments learned to read using Braille just as young sighted children learned to read using print. Both those with visual impairments and those with sight were learning the meanings of symbolic representations (print and Braille characters) and how those representations formed words, sentences, paragraphs etc which when put together communicated a unique message. Many teaching methods which worked for sighted children could also work for children with visual impairments, possibly with some modifications. Choosing the method or combination of methods which best suited the learner’s needs was critical to the students in learning to read (Holbrook & Koenig, 1997). In view of that, the study explored the teaching methods used by teachers of Braille in Kenyan schools for learners with visual impairments.

2.3.1 Processes Involved in Reading

There were eleven thinking processes involved in reading (Harley et al, 1987). They were:

- To discover the main theme with supportive ideas.
- To recognize a sequence of events or developments
- To predict outcomes and anticipate reactions.
- To retain details from material of high concept density.
- To recognize stated or implied cause and effect.
- To recognize pivotal words that was cues to sequence, contrast, cause and effect.
- To distinguish between fact and opinion.
- To appreciate shades of meaning expressed by various words.
- To assess values and exercise judgment
- To evaluate the source of information.
- To adjust the pattern of listening and thinking to the material and to the listening purpose.
These processes were essential to building an understanding of what was being read. Reading activities should help the child develop skills in using those processes.

2.3.2 Principles of Reading Instruction

During recent years, methods of reading instruction had become more student centered, fostering not only knowledge and ability but also independence (Grace, 2005). It was vital for students to have a strong knowledge base when they began to learn to read. Children who did not have a strong knowledge of the environment and concepts about print would experience reading problems which might endure. Those included comprehension problems, decoding problems, and problems with vocabulary. Children with visual impairments might have deficits in concept development because of their inability to observe the same things naturally like their sighted peers. Addressing those areas during the emergent literacy period or during remediation was crucial (Grace, 2005).

Several factors influenced the teaching of reading in Braille (Holbrook & Koenig, 1997). Some things to remember when planning instructional strategies included:

- The individual cell, rather than the whole word was usually considered to be the perceptual unit.
- The shape or arrangement of dots, not the number of dots, was critical to recognition of the Braille character.
- Braille readers used a synthetic approach that was; they must recognize individual characters in a series remember them and then integrate them to read the whole word.
- Context and syntax clues were helpful for familiar material. Phonetic and structural and analysis were better for difficult material.
- Reading rates might or might not be slower than those of print.
It was also important to take into account any emotional factors or aspects of the environment which might be influencing the child’s ability or willingness to read. Children who were depressed might use reading as an escape, on the other hand they might experience difficulty because of low self-esteem. Children whose families had positive attitudes and realistically high expectations would be more likely to thrive and enjoy reading.

2.3.3 Methods of Teaching Braille

The Basal Reader

The basal reader had traditionally been the most popular teaching method, and many learners with visual impairments had grown up using the same basal readers as their classmates. The advantage of the basal reader was its sequential presentation of skills. The disadvantages for the learner with visual impairments were its heavy reliance on pictures and its lack of consideration of difficulty of Braille contractions (Holbrook & Koenig, 1997).

Patterns

The primary Braille programme was developed by the American Printing House for the Blind to present the elements of the Braille code and reading skills in a sequential manner which was focused on the experience and needs of students who were visually impaired. It was designed to function alone as a method of teaching reading in Braille to children who were visually impaired, however, parts of it might be used in combination with other approaches. Patterns clearly had the advantage of being appropriate for children who were visually impaired. It had several disadvantages if used as the only approach to teaching reading in Braille. It required the teacher of children with visual impairments to be available on a daily basis. It might require that the student with visual impairments be separated from
his/her classmates for reading instruction. In addition, access to recreational reading material was limited during the learning process because of the gradual introduction of contractions (Holbrook & Koenig, 1997).

**Whole language**

The whole language method was becoming more popular. It involved less use of the basal and more use of real literature. It took advantage of naturally occurring learning experiences. Students were encouraged to read independently and responded to their reading in various ways; including writing and speaking. The teacher might use materials spontaneously to teach new words. When a teacher of learners with visual impairments or classroom aid who was familiar with Braille and the needs of the learner with visual impairments were available throughout the day, the child could be integrated into a regular whole language classroom. The disadvantages of the whole language approach involved the use of pictures and the inaccessibility of materials. The whole language approach required a considerable amount of time on the part of the teacher of students with visual impairments to prepare materials and spend time in the classroom with the student (Kosman & Castellano, 1997).

**Language Experience**

The language experience approach was an approach on which the students' own language and experiences were used to create meaningful reading materials. That approach allowed the students to observe how writing was produced and to read words with which he/she was familiar. The steps involved in producing a language experience story as presented by Rex, et al (1994) were:

(i) Give the child an experience that provided the content for the story.

(ii) Have the child describe the experience orally.

(iii) Transcribe the child's oral language.
Help the child read what was transcribed. The advantage of that approach was that it helped children to understand that print was “talk written down”. It was often used with younger children before they began to use patterns or one of the other approaches or in combination with another approach.

2.3.4 Activities for Responding to Reading

The most important thing to remember when planning response activities was that they should be meaningful to the student who was visually impaired. It was not helpful for a learner to be guided in coloring a picture which he/she did not understand, instead of that; he/she could be assisted in creating a tactual picture. Meaningfulness of tactual pictures depended of course on prior knowledge and understanding of what was being conveyed by the picture. If the student was writing his/her own responses, the responses should be available both in Braille for the learners who used Braille and in print for the regular classroom teacher. That could be accomplished either by having the teacher for learners who with visual impairments transcribe the learner’s work or by having the student use technology with which he/she was familiar and which could produce responses in print. It was important for young learners to write their responses using a Perkins Brailler, slate and stylus or other input devices (Rex et al. 1994).

2.3.5 Hints for Building Reading Speed

There were many ways to improve reading speed. The more reading the child did, the faster he/she would read. Some teachers used controlled exposure devices to encourage the child to build reading speed.

Silent Reading

- Encourage children not to move their lips while reading silently. Silent reading was often
accomplished much more quickly than oral reading. Moving the lips limited the child to the number of words which could be spoken.

- Explain varying speeds of reading. It was important that learners understood why they might want to read more slowly or quickly in various circumstances.

- Some learners found it helpful to use both hands. However, recent discussions among professionals, parents and adults who were visually impaired had revealed that some people perceived characters in reverse when reading with the two hands. In those cases, the person would read much more fluently with the preferred hand. Often this was the non dominant hand.

- Encourage recreational readings. Learners who read more would naturally become more skilled at it. There were a number of sources of recreational reading material for children who with visual impairments.

- Enter contests – students enjoyed competing and might be motivated to read for recording (Rex et al, 1994).

Oral Reading

- Take turns in reading
- Read aloud in chorus
- Do not always interrupt to correct errors. Pupils may correct their own errors
- Read aloud on tape.

Gaining the Support of Family Members

Encouraging family members to learn Braille was another way of reinforcing pupil’s motivation to learn. The ability to read and write Braille provided family members the opportunity to assist pupils
with their school work as well as to correspond when they were away from home. It also demonstrated to the pupil that Braille was important enough for family members to learn it and was therefore worth using (Young, 1995).

**Mentoring**

Mentoring was another way of encouraging learners during the process of learning to read in Braille. Exposure to an adult with visual impairments who used Braille regularly showed the learner that Braille was normal and a respectable and efficient method of reading.

NB: There were several methods of teaching reading in Braille. The selection of which method to use depended on factors such as amount of time the child was able to work with the teacher for learners with visual impairments, availability and accessibility of materials, and individual needs of the learner. Often the best method involved combining elements of the various methods to create a program which best fitted the learner’s needs (Young, 1995).

### 2.4 Teachers’ Competence in Braille

According to Hill (1994), the qualification focused on the specialized knowledge, understanding and skills required by teachers to enable them to meet the specific additional learning needs of pupils arising from their visual impairments. Those standards should apply to the person who was providing direct, on-going instruction in Braille reading and writing for children and youth. The Canadian Braille Authority was committed to quality literacy instruction for students who read and wrote Braille. CBA recommended the following standards for Braille teachers throughout Canada (Hill, 1994).

**University Degree** — Teachers of Braille must hold at least a Bachelor of Education degree.

**Certification:** Teachers of Braille must hold:
Basic teacher certification and qualifications for certification of students with visual impairments as outlined by the Association for the Education and Rehabilitation of the Blind. Specific related course work – As a part of or in addition to courses taken for teacher certification, teachers of Braille reading and writing must have successfully completed:

- University coursework on basic methods of teaching reading.
- University coursework focusing on the literary Braille code, and University coursework focusing on teaching Braille reading and writing. Coursework in visual impairments might be taken as part of a degree program or as a part of specialized training, in order to qualify as a teacher of Braille reading and writing, coursework must include:
  - A three credit course (or the equivalent) focusing on basic methods of teaching
  - A three credit course (or the equivalent) focusing on the literally Braille code.

The Canadian Braille Authority had worked for 2 years to establish standards for teachers of Braille. Teachers of Braille reading and writing must meet two levels of certification. They must hold initial certification in some area of education. Initial certification in elementary education or special education might provide a solid basis for teaching literacy skills. However, CBA standards held that any initial teacher certificate was acceptable. In addition, teachers of Braille reading and writing must meet the requirements for certification as a teacher of students with visual impairments as outlined by the Association for the Education and Rehabilitation of the Blind and visually impaired. According to Moor (2005), there were certain items that all teachers of Braille must know, and there were certain basic guidelines and strategies that would apply to any student. In addition to variables related to the students, the skills and experience of the teacher also affected the way that Braille was taught. The teacher of Braille reading and writing must of necessity know all the symbols and rules of the Braille
They also needed to have some knowledge of how reading and writing were taught to sighted students. In addition, it was important for the teacher of Braille reading and writing to understand some basic differences between Braille and print that determined the skills Braille readers and writers needed to learn (Moor, 2005).

2.4.1 General Guidelines: Differences Between Braille and Print Reading

Tactile Versus Visual Reading

There were three general reasons why reading was important. The first one was a tool for learning. Once a child was able to read, he/she could do much more learning on his/her own. On the other hand, a child with a reading problem would be handicapped in all other subjects and would continue to do poorly until the problem was rectified. Secondly, reading was an indispensable skill in terms of entertainment for one could experience ideas, adventures, feelings and situations that were expressed in form of print and were not available in everyday life. Reading was also an important means by which people obtained information about the environment and made use of it (Brunner, 1996).

The most basic and obvious way in which reading Braille differed from reading print was the sensory modality used. Readers of Braille touch read where as readers of print read visually (Wormsley & Andrea 1979) conducted a comprehensive investigation of both tactile and visual reading. His findings were still valid and they were important for teachers of reading to consider in understanding the two processes. The different characteristics of efficient visual and tactile reading were summarized as follows:

- Good visual reading was characterized by a small number of short regular pauses, no regressive movements and well-adjusted return sweeps combined with a deep and accurate understanding of
• Good Braille reading was characterized by few zigzag, up-and-down, or fluttering movements, uniform pressure of the finger on the page, no regressive movements and well-adjusted movements between lines with the help of both hands combined with a deep and accurate understanding of the meaning of the text.

Wormsley & Andrea (1979) findings demonstrated that perception was tied to movement in Braille reading. In fact, without movement, perception could not occur. Subsequent research also demonstrated the key importance of an individual reader's tactile perceptual ability in developing good Braille reading skills, such as how the reader moved his or her hands. That difference in perception from print reading had significant implications for the skills readers of Braille needed to learn, and teachers had to make sure that their instructional strategies were consistent with the way Braille readers processed information. In print reading, the teacher paid little attention to the mechanics of reading that were, the movements of the eyes but the Braille teacher must help students develop good hand movements if they were to become efficient readers. Teachers must also be able to recognize inefficient hand movements and learn how to eliminate them and replace them with efficient ones. Many teachers thought that they could teach tracking or the ability to follow a line of Braille across the page and down to the next line, by itself. When the task went from tracking a line of dots to actual reading, however, tracking could be separated from the perception of the Braille characters.

Therefore, no matter how much 'tracking' the child had been given, if it did not incorporate recognition of Braille characters, the child's tracking skills would not usually improve. As a general rule, therefore, teachers should pay close attention at the beginning of Braille reading instruction to teaching the child how to move his or her hands on the Braille materials and to constructing materials that allowed for
movement across lines and characters in the manner of the most efficient readers (Wormsley & Andrea, 1979). An important rule not followed in Kenya.

**Complexity of the Code**

Another difference between learning to read and write in Braille and in print that affected the development of the instructional programmes was the fact that Braille readers had more symbols to learn than did print readers, and they did not learn all the elements of the code until long after print readers had learned theirs. Generally, all of the print symbols, with the exception of certain standardized marks such as the ampersand (&) and certain punctuation signs such as the semi-colon, were introduced by the end of first grade.

However, the vocabulary in children's reading materials would not contain all of the Braille contractions until they had reached a third grade reading level. Conversely, providing materials at a first, second or third grade reading level might not ensure that the child would be able to recognize or interpret the Braille symbols that did appear. In addition to the symbols themselves, Braille readers must learn rules of usage of the Braille symbols that print readers did not have to contend with. That meant that Braille readers had an extended period of time during which they were still learning their literacy medium, while their sighted classmates had moved on beyond learning their code.

As a result of that difference, teachers needed to be aware of the actual symbol knowledge of their students and to examine all materials for unfamiliar contractions or symbols before the student read them. When a student did encounter an unfamiliar contraction or use of a Braille symbol someone familiar with Braille needed to be close by to help the student interpret the symbol, just as a teacher familiar with print needed to help a beginning reader of print interpret symbols when he or she needed help (Wormsley & Andrea, 1979).
2.4.2 Availability of Materials

Another important guideline for teachers relates to differences in the availability of Braille and print materials. Since there was less material available for readers of Braille than those for print, many students using Braille came to school less well prepared in their experiences with the written medium than those who used print. Those also had the opportunity to practice reading on a wider variety of materials. Since the amount of independent silent reading children do both in school and out of school was related to gains in reading achievement, the lack of reading materials for Braille readers could significantly affect their progress in achievement when compared with those who used print. It was important, therefore, to immerse the child in Braille material that was written at the child’s level of understanding (Olson, 1984).

Regardless of the type of reading materials used in the regular classroom, the child with visual impairments must have all books and other reading materials in Braille, in order to learn to read. That included texts for health, social studies, math, and any other content area (as well as the basal readers, literature anthologies, or novels). It was not acceptable for sighted children to be reading from print books, while the child who was blind was “listening” (Olson, 1984).

Continuous learning opportunities were essential for personnel who provided direct services in Braille literacy so they could meet their clients’ needs (Mangold, 1978). Therefore some countries made a commitment to provide ongoing training for its teaching staff (Hill, 1994). That commitment was lacking in the Kenyan schools for learners with visual impairments.

2.4.3 Braille Reading Habits of Children

In America, Mangold (1978) conducted yet another study and observed Braille reading habits in her subjects. She found out that two-handed Braille readers were superior readers. In addition, right-
handed readers were more efficient readers than were left-handed readers. She observed that the best readers read ahead with the left hand before finishing the preceding line with the right hand.

Mangold (1978) further tested readers with visual impairments and found that one quarter of them had no hand preference for reading Braille, three quarters of that group read slightly better with the left hand than with the right hand. The study further found out that the index fingers of both hands were best for reading, with the middle fingers used secondarily, and other fingers still less frequently. Touch movements of good readers proceeded in a straight line, while those of poor readers were serrated and twisted. Pressure of the fingertips was more slight and uniform among good readers than among poor readers. She observed that touch sensitivity decreased only a small amount after several hours of Braille reading. General fatigue was also found to be negligible after extended Braille reading. The subjects in the study read on the average three times slower than sighted print individuals. Reading with both hands was found to be the most efficient among the subjects. Single-handed Braille readers nearly doubled their reading times. The study concluded that arm and body positions were important to efficient Braille reading as well. Along these lines, the study suggested that book height be such that arm and body movements were unhampered. From the above study, it was obvious that furniture used by readers of Braille played a great role yet the study never looked into this area. From Mangold's study, it was clear that there was more to teaching/learning Braille - not just reading and writing. That being the case then, the study intended to throw some light on the preparation of learners and the availability of appropriate and adequate furniture for beginners.

2.4.4 Increasing the Efficiency of Reading Braille

Olson, in her study carried out in America in 1984, established that training in rapid recognition of the Braille cell significantly increased Braille reading rates. Her study further found out that a group
receiving rapid reading training alone exceeded the rate gain made by a group receiving such training
coupled with recognition training. The conclusion was that recognition training might have interfered
with the rapid reading training in that two distinct and opposing perceptual units were involved in the
two treatments. Recognition training stressed code accuracy, while the key factor in rapid reading was
speed. The perceptual unit in recognition training was presumably spatial and was initially the Braille
cell. On the other hand, the perceptual unit during rapid reading was predominantly temporal in nature.

A survey on the status of Braille reading instruction was reported by Lowenfeld (1983) that was
as a result of questionnaires sent to 289 teachers of children who were in local schools and 73 teachers
in residential schools in America. They found out those both local and residential schools for learners
who with visual impairments began Braille reading instruction in the first grade, after some pre-
reading instruction in kindergarten. Approximately one third of the schools started reading
instruction by teaching Braille alphabet, while two thirds began with whole words and/or meaningful
sentences. Lowenfeld (1983) found out that in America, nearly all schools used grade 2 Braille from
the beginning. Approximately 85% of the teachers encouraged the use of the right hand. Two thirds
of the teachers encouraged use of index fingers, varying finger combinations were emphasized by the
rest of the teachers. The braillewriter was used almost universally to teach writing to beginners. Half
of the teachers in both types of schools introduced it at the same time as reading and about one third
reported that they did so after some reading skill had developed. Local schools reported that the initial
Braille instruction was given by resource teachers (51%), itinerant teachers (29%) and classroom
teachers (9%). In residential schools, classroom teachers (90%) and special Braille teachers (10%)
provided that instruction.
A smaller sample of teachers (20 residential and 41 local) from the above mentioned study provided further specific information about beginning Braille instruction. Local schools introduced books (including pre-primers) at the beginning of Braille reading instruction, or after words or sentences were read. Most residential schools, on the other hand, introduced reading books only after words or sentences were read. Both oral and silent reading instructions were reported and double spaced materials was universally used in beginning instruction (Lowenfeld, 1983).

It was clear that all those studies reviewed were done in developed countries. The situation in developing countries and in particular Kenya was different. That was in relation to the personnel teaching Braille, availability of materials and the efficiency of the same among others. Therefore, the study looked at how those factors had continued affecting Braille competency among learners with total loss of vision.

2.5 Materials for Teaching Braille

Teachers were recognizing force of educational value as the economical wisdom of creating their own teaching resources. Some of the teaching/learning resources could be made or bought at a low cost. Whichever self-instructional text a person chose, access to a Braille writing machine was necessary. Most public libraries and/or college libraries had those machines available for use. The cost of buying a Braille writer might be prohibitive. Slates and styluses were much less expensive, but to use them, the braillist must punch out single Braille dots one by one in a mirror image fashion. Slates came in all sizes (pocket to desk size) and were made of a variety of materials. One of the best slates had a drop-out window that permitted “proof reading” of one’s Braille with the frame still clamped to the paper. In the past, many individuals who were blind were taught to write Braille with
a slate and stylus from the beginning; current trends in teaching postpone its introduction as a writing tool until the Braille code had been mastered (Olson, 1984). The following were some of the commonly used materials for teaching Braille in Western countries:

- Patterns; the Braille reading programme. The series was a basal reading series teaching general reading skills, comprehension, and phonics and Braille grade one. It began at readiness (which included letters and words) and went through the third reader.

- The Mangold developmental programme of tactile perception and Braille letter recognition. That covered pre-reading skills and the alphabet. To go from one lesson to the next, the student must meet specific standards of speed and accuracy.

- Braille for beginners - it taught the alphabet, whole-word signs, contractions and vocabulary development. It could be used as a supplement to a standard text. It was very repetitive which could be good for beginners.

- Touch and tell - that was best used for pre-reading. It consisted of shapes and Braille characters, but not designed for teaching letters of the alphabet.

- A Tactful Road to Reading – Thermoformed booklets to work on specific pre-reading skills. Helped in differentiating Braille shapes and letters.

- ABC’s of Braille – it taught the alphabet, punctuation and whole word contractions simultaneously.

The rules for Braille usage were taught in a story at the end of the book and a list of all the contractions appeared at the end for reference. It was of paramount importance that teachers who were providing instruction in Braille reading and writing to children with visual impairments had at their finger tips sources of curriculum materials, products and
teaching materials (Wormsley & Andrea, 1979).

2.6 Reading Readiness

A study carried out by Mathews & Klaassens (1999) in some Kindergarten classes in Britain found out that reading readiness activities were included in all instructional programmes in Britain. In some instructional programmes, reading was taught separately whereas in others it was part of the basic reading and writing instructions. The reading programme a teacher chose and modified, determined when and how he/she would handle reading readiness (Mathews & Klaassens, 1999). Language reading and writing skills began to develop in the first three years of life. The study further found out that parents, who began reading to their children early, taught the importance of that skill. Children learnt to love the sound of language even before they were able to recognize printed words on a page. It was noted by the same study that reading books aloud to children stimulated and expanded their imagination, and was the single most important activity for developing their literacy skills.

Reading provided a quiet time to spend with the child, and could be a bonding experience. Early exposure to reading could lead to a successful start to Kindergarten, and it laid the ground work for future success in life. The same study contended that some instructional programmes approached reading readiness as a part of teaching beginning reading. Here, reading readiness concepts were taught in context as the teacher modeled reading and writing. In that case, great emphasis was placed on learning through observation. The teacher played a major role and it was expected that learners gained quite a great deal on observing him/her. The philosophy was based on the view that when learners were learning to read and write, they were not just learning a set of skills, but they were acquiring, a ‘network’ of strategies for operating on or with the text (Mathew & Klaassens, 1999). In that context, teacher and learners were involved in lots of talking as they worked on tasks, the
importance of which was demonstrated by the first phase of Fitt's Three-Phase Theory (Patrick, 1992). Here, the teacher provided strong interactional support to the learner and created a learning environment. Learners were encouraged to take considerable responsibility for their learning and their pace was not forced but was geared to what they were comfortable with. Teaching/learning materials were critical in learning situations particularly for learners with sensory deficits.

• Reading Readiness for Learners with Visual Impairments

The beginning Braille reader, like all beginning readers, must acquire the readiness skills associated with the actual reading process. An important prerequisite that all readers must have to be efficient and read with comprehension was a rich background of concrete experiences involving many objects, people, places, activities and cause and effect relationships. In addition, the child must have receptive and expressive vocabulary that corresponded to his/her experiences. Each individual child must develop auditory skills of identification, closure, sequence, memory for stories, and discrimination. The young reader must be able to concentrate, exert self control, and follow directions. Another important readiness factor was motivation.

During the pre-school years of 3 - 5, special attention should be given to 'readiness' especially in the area of language arts. If a child was visually impaired or seemed to be a tactual/auditory learner, attention should be given to the development of tactual perception and listening skills. It was important that the teacher evaluated the child's best sensory channels through a Learning Media Assessment (LMA). Some children might remain multi sensory learners and the decision for a primary reading medium might be difficult. Moreover, a few children with visual impairments could end up using one medium for some tasks and another for other tasks; such children might use both print and Braille,
depending on the task. If all sensory channels were afforded opportunity for development in the early years, the choice for learning/literacy media later was made much easier. The pre school years were critical times for a child who was visually impaired and could make the difference between success and struggle during educational experiences (Marshall & Hunt, 2002).

Evans (1991) carried out a study in America with 20 children who had visual impairments and characterized by being overweight with weak upper limbs and low aerobic capacity. The study found out that proper muscular maturation was paramount for proper reading instruction in Braille; a good readiness programme for Braille reading would require fine motor hand coordination. Buel (1996), in his study carried out in Britain, found out that overprotected and under stimulated children with visual impairments performed far below the norms of other children with visual impairments in gross and fine motor skills.

Another study carried out in America with children less than 10 years, by Mangold (1978) found out that there were a number of mechanical skills that were unique to Braille reading. Those skills must be well developed before placing emphasis in decoding of Braille words, phrases or sentences. In that context, Mangold (1978) suggested that children with visual impairments should be involved in sorting and stacking activities, stringing beads and punching and sewing Braille paper. Teachers of those children should also combine teaching of math concepts and counting with fine motor activities. The study further noted the importance of demonstrating correct finger position to the child, making some simulated reading materials to help teach hand movement and also demonstrating smooth, independent movements of the hands to the students. Mangold (1978) however, noted that hand-use training seemed to be a neglected aspect which teachers often left children to discover for themselves. She felt that the training needed to be carried out with a proper understanding of what was involved or harm
could be done. All students learning to use Braille must acquire the following: tactual discrimination, finger dexterity, hand and finger movement, light finger touch and page turning skills.

2.7 Emotional, Social and Intellectual Development

Development was the organism's striving to implement hierarchical or organizational goals. Lack of vision interfered with all other systems, which were biologically geared to realize themselves in feedback with vision. The statement presented in a nutshell the problems encountered with a child who was visually impaired. Early development was the child's attempts to organize himself/herself and the world around him/her. Vision was the primary feedback sense that enabled the child to get body systems operational and refined, and helped in the accumulation of information to make sense of the environment. When vision was reduced or absent, nearly all aspects of early development could be affected (Bishop, 1996).

A study by Mead (2001) on young children came up with the following observations on emotional and social needs:

- All children needed to be comforted when they were upset. Parents and teachers should speak soothingly and calmly to the children. Teachers should avoid discouraging situations in the classroom. They should be patient with those children who had not yet adjusted to blindness.

- Children should be helped to explore their world and get to know the people in it. They needed consistent routines. Have a few routines and stick to them. That helped them to make sense of the world and became confident that events happened in an orderly fashion.

- Parents and teachers should be attuned to the child. Let the child see the teacher/parent happy or sad when he/she was. That would make him/her learn that the teacher/parent could
share the same emotions he/she had. That would help him/her to have empathy for others.

Children passed through many stages in social and emotional development. Some of their process depended on nature (genetics) and some nurture (the many loving and supportive things people did to help children develop). Often, a child would temporarily slide back into a previous stage. For instance, in Fitt's Three-Phase Theory, a child who had already reached the 2nd phase (fixation or associative phase) and had mastered the position of keys and could even Braille some words might fall back to the first phase (cognitive) and start repeating numerous errors that had been done away with earlier. Here, Mead emphasized on patience and love on the part of the teacher. That would help put the child back on track.

According to Mead (2001) there was some notable difference in the social and emotional development of the sighted and those children who were visually impaired. Children who were visually impaired had so many limitations in life. For instance, while sighted children explored their environment with their eyes plus other senses, those children were left to use touch and other senses. It should be noted that the sense of sight accounted for 85% of all the learning that took place in the environment. People got a lot of information through non verbal communication (e.g. facial expressions), for those with visual impairments, that became a limitation. It was difficult for them to tell somebody's mood from the facial outlook, something that was possible for those who were sighted.

For children with visual impairments, emotional and social development was very crucial. That was because some of them might be very emotionally disturbed as they went through the process of adjusting to blindness. To some, parents and the community at large might have rejected them or over-protected them as a result of their disability. In Kenya, children with visual impairments usually
joined residential schools away from their homes. That forced them to leave their parents at a very tender age, a stage of growth and development when they needed them most Lowenfeld (1983). That early detachment might affect them emotionally and even interfere with their learning, the more reason why teachers of children with visual impairments should not concentrate on academics only but also should pay attention to the social growth and emotional stability of the learners. For children with visual impairments, teacher’s knowledge of their family background was really important.

**Intellectual Development**

A study by Lowenfeld (1983) in America found a very high correlation between Intelligence and reading ability in learners who were visually impaired. These educators felt that too much emphasis was sometimes placed on Braille reading for children with low intelligence. They argued that for children with intelligence quotient below 85, Braille was an extremely inefficient medium of communication. On the other hand, some basic Braille skills might be taught very successfully to some low functioning children. Even low level of Grade 1 Braille reading ability might be very helpful in daily living skills such as reading labels on canned goods, clothing, colours and numbers on watch or telephone numbers.

**Development of Attitudes towards Braille**

In her study Olson (1984) found out that a child’s first impression of Braille was extremely important. She pointed out the importance of having a good model for the same. According to Olson, it was the duty of teachers to encourage a positive attitude towards beginning Braille instruction. She advised the teachers for Braille to:

- Label the child's school surroundings with grade 2 Braille. That might include his/her desk, books, bookshelves, locker, brailer, teacher’s desk, pencil sharpener and bulletin board.
• Physically guide the child to the location of each label and read it to him/her in addition to providing good models of Braille reading. Teachers should also demonstrate how Braille was read by placing the child's hand over theirs as they moved both hands down on a page.

• Discuss with the children examples of times Braille might be used in everyday living. In addition, teachers should make the child's first Braille books interesting for him/her to explore by Brailleing printed items that sighted children in a regular classroom would enjoy examining. Examples of such things would be calendars, lunch menus, special programme agenda and notes to parents.

2.8 Writing in Braille

In their study done in France (Kosman & Castellano, 1997) found that Braille writing was taught, for the most part, hand in hand with reading. Most children with visual impairments initially learned to write on a braillewriter. They found that once a child was able to follow simple directions, identify the right and left hands and press down on the keys of the braillewriter, he/she could begin writing. They also noted that it might take some time for a young child to learn to press the keys of the braillewriter, with adequate pressure, so he/she should be given ample opportunity to practice.

Alongside the braillewriter (Kosman & Castellano, 1997) also noted that children with visual impairments also learned how to write using a slate and stylus. The slate and stylus were the most portable of all Braille writing devices. The study found that many teachers introduced the slate and stylus in third grade, when sighted children began to learn cursive writing. However, it was noted that the use of slate and stylus was quite cumbersome. That was because writing on the slate began at the right edge of the paper to the left, and then the paper was turned over to read the Braille. For dots to
be formed on the paper, the child must press hard on the stylus which was usually wooden and hard on the child's tender fingers.

2.9 Conclusion

From literature reviewed, a number of gaps were identified. While studies had been carried out on Braille in developed countries, little had been done on the same in Kenya. It was quite clear that even if the same studies were to be carried out in Kenya, many variables had to be put into consideration. While it was evident that reading readiness played a vital role in the teaching/learning of Braille, it was quite difficult to state with any certainty the extent to which those activities were carried out in Kenyan schools for learners with visual impairments. That was an area that the study addressed. Teachers' competence which was usually achieved through professional training contributed to the general performance of learners. That issue had been addressed by a number of studies reviewed. However, none of those studies was done in Kenya, thus the need of the study to look into the issue within the Kenyan setting.

Teaching/learning materials was another area that had not really been explored by the studies reviewed. The researcher intended to explore that area with an intention of finding out whether appropriate and adequate materials were available for Braille reading/writing; All in all, studies reviewed formed a good basis for the methodology of the study which dealt with the study design, population, sampling technique and sample, data analysis and pilot study, all aiming at identifying those factors that had continued affecting Braille competence in Kenya.
CHAPTER THREE
METHODOLOGY

3.0 Introduction

The chapter described the kind of the research design employed in the study and the locale of the same. It further described both the target population and the sample population. It also described the nature of the research instruments employed as well as the methods employed in analyzing data. Finally, it described the logistical and ethical considerations employed in the study.

3.1 Research design

A research design could be regarded as an arrangement of conditions for collection and analysis of data in a manner that aimed to combine relevance with the research purpose (Kombo & Tromp, 2006). That being the case, the study adopted a descriptive survey design that involved asking questions to a sample of subjects who were presumably representative of the group (or population) being studied (Peil, 1995). Survey design was appropriate because it allowed the researcher to collect data through interviews and also administer questionnaires that further made it possible to secure evidence concerning the existing situations in Kenyan schools for learners with visual impairments. That was in regard to the teaching and learning of Braille.

3.2 Location of the study

The study was conducted in two out of the six special schools for learners with visual impairments in Kenya. Those were Thika in Central Province and St Lucy School for Children with Visual Impairments in Eastern Province. The two schools were distinguished by geographical locations (one being in Central Province whereas the other one was in Eastern Province). In addition to government
sponsorship, both schools had some church sponsorship as well. Secondly, both schools targeted the same catchment areas in those learners in both schools were derived from all corners of the country.

3.3 Target population

The study targeted young readers of Braille of pre-school and class one to three, their teachers and head teachers of the two schools. The target population composed of one hundred and five (105) pupils. Among them, thirty three (33) were pre scholars, twenty five (25) were class one learners, twenty four (24) were class two learners while a further twenty three (23) were derived from class three, teachers who taught Braille in those schools (5 females and 3 males) and the two head teachers (both females). That made a population of one hundred and fifteen (115).

3.4 Sampling Techniques and Sample Size

Three different sampling techniques were used to get respondents from different categories and the expected sample derived from each category.

3.4.1 Sampling technique

Purposive sampling was used to select the two schools. That was because they were among the largest of the six schools for learners with visual impairments in Kenya. They also derived learners from all over the country. Therefore, they could give a reflection of what was happening in Kenyan schools for learners with visual impairments. Pre-school and lower primary classes were also purposively selected because that was where reading and writing Braille was introduced. Stratified sampling was used to select male and female respondents and simple random sampling by lottery to select the number of required teacher and learner respondents from the stratified groups.
### Table 3.1 Sample Selection of Learners using Braille

<table>
<thead>
<tr>
<th>SCHOOL</th>
<th>CLASS</th>
<th>TOTAL NO. OF PUPILS</th>
<th>SAMPLE</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td>BOYS</td>
<td>GIRLS</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Thika</td>
<td>Pre-school</td>
<td>07</td>
<td>06</td>
</tr>
<tr>
<td></td>
<td>1</td>
<td>08</td>
<td>08</td>
</tr>
<tr>
<td></td>
<td>2</td>
<td>07</td>
<td>06</td>
</tr>
<tr>
<td></td>
<td>3</td>
<td>06</td>
<td>07</td>
</tr>
<tr>
<td>St Lucy</td>
<td>Pre-school</td>
<td>12</td>
<td>08</td>
</tr>
<tr>
<td></td>
<td>1</td>
<td>04</td>
<td>05</td>
</tr>
<tr>
<td></td>
<td>2</td>
<td>05</td>
<td>06</td>
</tr>
<tr>
<td></td>
<td>3</td>
<td>06</td>
<td>04</td>
</tr>
<tr>
<td>Total</td>
<td></td>
<td>53</td>
<td>52</td>
</tr>
</tbody>
</table>

### 3.4.2 Sample Size

A random sample of 30 girls was selected from a group of 52 girls (16 from the first school which had a total of 27 girls and a further 14 from the second school which had 25 girls). Another random sample of 30 boys was selected from a group of 53 boys (16 from the first school which had 28 and 14 from the second school which had 25). Of the 8 teachers teaching reading/writing of Braille, 3 female teachers were randomly selected from a total of 5 and 2 male teachers were randomly selected from the 3 male teachers. Both head teachers participated in the study. That made a total of 67 respondents.
3.5 Research Instruments

A combination of data collection methods were used to avoid response and information bias, ensure validity, reliability and accuracy of information derived (Oppenheim, 1992).

In data collection, the researcher used two sets of questionnaires. One set for the head teachers and a second set for the teachers who taught Braille in the two schools. To supplement the questionnaires were two sets of interview schedules designed to gather more in-depth information from the two head teachers and the teachers teaching Braille. Observation schedules were also used.

3.5.1 Questionnaire for head teachers

A questionnaire for head teachers was designed with two parts. Part one was meant to collect data on personal details whereas part two aimed at collecting data on procurement of Braille materials, staff establishment, and training of the teaching staff and performance of learners with visual impairments. That questionnaire comprised of twenty one items, both closed and open ended.

3.5.2 Questionnaire for teachers

The questionnaire for teachers was designed with two parts also. Part one aimed at collecting data on personal details and items on part two focused on appropriateness and adequacy of Braille materials and equipment, and methods used in teaching Braille. That questionnaire had a total of sixteen items, some of which were closed and others open ended.
3.5.3 Interview guides

Two semi-structured interview guides were designed to solicit in-depth information from head teachers and teachers. Those comprised twelve and eleven questions meant to solicit information on staff establishment, attitude, staff competence in Braille, obstacles towards efficient Braille performance among others.

3.5.4 Observation Schedule

Whereas interviews provide information about people's beliefs, attitudes, values and reported behaviour, observations provide information about actual behaviour (Orodho, 2004). The study therefore used informal observation. Condition of physical facilities in the Institution such as furniture in the classrooms, conditions of the classrooms, sitting arrangements, number of learners per class/desk, distribution of materials such as books, learners' participation were observed among others.

3.6 Pilot Study

The research instruments were pre-tested at St. Francis School for learners with visual impairments Kapenguria in the Rift Valley Province. St. Francis was chosen for piloting because learners like in other schools were admitted from all parts of the country and thus was representative of other learners found in other schools for learners with visual impairments. The environmental setting was quite different compared to Central and Eastern Provinces where the study was carried out, but learners in the three schools were subjected to the same curriculum and they were also taught by teachers with the same professional qualifications. The procedures used in the piloting stage were the same as those used during the actual data collection.
3.6.1 Validity

Activities in education and education research may be described as valid if they appear to work successfully or were factually correct. A test or other measuring instrument was valid to the extent it measured what it was intended to measure (Kothari, 2005). In order to identify and correct questionnaire problems, piloting was done in St. Francis Kapenguria School for learners with visual impairments. Two teachers who taught Braille were requested to respond to all items on the questionnaires, perhaps noting any items where the meaning was unclear or where information was not easily available. The respondents were also asked to suggest additional information that should be requested. The same was done with the interview guide questions. The head teacher and teachers in the piloting school were guided to respond to the questions orally. Observation schedules were also piloted on learners in the pilot school.

3.6.2 Reliability

The reliability of the instruments for the study was measured by use of Pearson’s Product Moment Formula. That involved giving the questionnaires to a group of selected teachers and one head teacher. Once the questionnaires were filled, the researcher scored them manually. After two weeks the same procedure was repeated. That was to ascertain the reliability of the questionnaire items since reliability was the consistency of a set of measurements or measuring instrument, (Gall D; Gall P; & Borg 2003). The correlation coefficient was established at 0.9 which was almost perfect correlation.

3.7 Data Collection Procedure

The researcher visited the two schools to familiarize with the schools community and the environment, and then gave out the questionnaires to the head teachers and the teachers who taught Braille. She then waited for them to fill and then collected them back. That took just a day. For the interview, the
researcher first arranged with the teachers on the appropriate time to carry out the interviews. To avoid the looseness and inconsistency which accompany informally gathered interview data, the interview session adopted a standardized procedure where the interviewer gave pre-set questions in a predetermined order to the interviewee. That was to ensure consistency in the data gathered. On observation, the researcher arranged with the teachers of the classes under study on the appropriate time to carry out the observation. Once the appropriate time was established, she then carried out the observation under the guidance of an observation guide.

3.8 Data analysis

Once data was collected, it was first edited. Editing of data was a process of examining the collected raw data to detect errors and omissions and to correct them when possible. It involved a careful scrutiny of the completed Questionnaires and schedules to ensure that data was accurate, consistent with other facts gathered, uniformly entered, as completed as possible and had been well arranged to facilitate coding and tabulation (Kothari, 2005). In qualitative, the research was concerned with understanding the processes which underlaid various behavioural patterns. It was also involved in detailed verbal descriptions of characteristics, cases and settings as well as deriving data from interviews, that was, verbal interactions with the participants.

In analyzing data, descriptive statistics were used. That involved tabulating, graphing and describing the data collected. That was done manually since the Questionnaires were not many. Descriptive statistics were very handy in describing data collected and particularly through observation schedules on a sample (Orodho, 2004). Interviews were also analyzed using descriptive statistics along text-based themes.
3.9 Ethical consideration

Before data collection exercise began, the researcher first obtained permission from the Permanent Secretary, Ministry of Higher Education. After the permit was obtained, the researcher then informed the Provincial Directors of Education and the District Education Officers of the two provinces and schools of the intention to carry out the study. According to the APA Code of Ethics, subjects must be informed of the nature of research in clearly understandable language. Informed consent must also be documented and the researcher needed to guarantee anonymity and confidentiality. In the study, the researcher put all the above into consideration in addition to respecting the teachers' and learners' wish to participate. The researcher then proceeded on to the head teachers of the two schools to discuss the appropriate time to meet with the teachers and pupils for data collection.
4.0 Introduction

In this chapter, presentation of the findings was done based on the research questions. The descriptions of the findings were based on the main areas focused on by the study. Those were: teachers' qualifications and teaching experience, availability and adequacy of resources and facilities, procedures for teaching reading readiness skills to beginners and methods used in teaching Braille.

Findings were presented using tables and charts generated from quantitative data from Questionnaires. That was enhanced by use of data from observation and interviews.

4.1 Background Information of the Respondents

Demographic data which included the gender, age and teaching experience of the respondents was represented in the graph below.
From the graph, 35 out of 67 (52.3%) of the teachers and learners who participated in the study were females whereas 32 (47.7%) were males. The findings show that female teachers and learners slightly outnumbered their male counterparts. Half of the teachers (50%) were between 26 – 35 years of age, 30% were between 36-45 years of age it was expected that people in the two age brackets were usually active and thus quite productive. Only 20% were between age 46 and 54 years.
Most teachers (60%) had a rich experience in teaching learners who were visually impaired as indicated on the graph. If the saying ‘experience was the best teacher’ was anything to go by, then those teachers were expected to be doing a good job since they had an experience of over 10 years. Another 20% had taught for a period of between six and ten years. A further 20% had an experience of five years and below. Experience was important particularly for teachers of learners with visual impairments due to the uniqueness of individual learners. Without a clear guideline on how to teach Braille, most teachers were left to try and find out by themselves what was best, thus with time, it was expected that they improved on their methodology and also in other areas.

4.2 Respondents’ Academic and professional qualifications

Table 4.1 Teachers’ academic qualifications

<table>
<thead>
<tr>
<th>Professional Qualification</th>
<th>Frequency</th>
<th>Percentage of the respondents (%)</th>
</tr>
</thead>
<tbody>
<tr>
<td>PI</td>
<td>3</td>
<td>42.85</td>
</tr>
<tr>
<td>Diploma</td>
<td>3</td>
<td>42.85</td>
</tr>
<tr>
<td>B.ED</td>
<td>1</td>
<td>14.28</td>
</tr>
<tr>
<td>M – Ed</td>
<td>0</td>
<td>0</td>
</tr>
<tr>
<td>Total</td>
<td>7</td>
<td>100</td>
</tr>
</tbody>
</table>
Among the teachers under study, 42.85% were trained PI teachers. A similar percentage had diploma Education while a further 14.28% had a first degree. None had reached masters level. That showed that quite a number of the teachers were quite above the expected teaching training level of a PI teacher Education. Although Primary Teacher Education did not have much of Special Needs Education component, the experience most of those teachers had made them better placed to work with learners who had visual impairments.

4.3 Training of Teachers in SNE

On training in SNE, 57.14% of the teachers held a diploma in Special Needs Education; Another 28.57% had some training whose duration was three months and below where as a smaller percentage of 14.28% had done a bachelors degree in the area. As observed, the level
of training differed significantly from a training duration of less than three months to Bachelors level as indicated below.

Figure. 4.3 Training in SNE

From the findings, it was clear that a number of teachers (28.57%) working with learners with visual impairments had only attended in service courses whose duration was three months and below. Another 57.14% had done a diploma course while a further 14.28% had done Bachelors Degree in SNE. Special Needs Education was quite extensive. Thus, three months training was not really likely to equip the teachers with the necessary skills considering that only a very small component of the same was covered by the Primary Teacher Education Curriculum. Training undertaken did not focus on Braille reading.
4.4 Availability and suitability of classroom furniture.

4.4.1 Availability of furniture

The findings proved that there was a problem with availability of furniture. That was because 80% of the respondents admitted that furniture was not really enough.

That was confirmed by the researcher’s own observation in one of the classes under study. Furniture in that class was inadequate. Pupils had to share desks. Space was not enough for the large Braille books as the desks were rather small. Thus, that kind of furniture did not allow the practice of proper book behaviours such as opening Braille books flat on the desk, resting hands comfortably on the table when touch reading among others.

4.5 Suitability of classroom furniture

Table 4.2 suitability of furniture

<table>
<thead>
<tr>
<th></th>
<th>Frequency</th>
<th>Percentage of respondents (%)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Not suitable</td>
<td>6</td>
<td>85.71</td>
</tr>
<tr>
<td>Suitable</td>
<td>1</td>
<td>14.28</td>
</tr>
<tr>
<td>Total</td>
<td>7</td>
<td>100</td>
</tr>
</tbody>
</table>

Majority of the respondents, (85.71%) agreed that furniture used by the young learners was not suitable. Harley et al (1987) said that furniture should help maintain good posture while reading or writing. Only 14.28 % felt that furniture was okay.
Findings of the observation done by the researcher in one of the classes showed that furniture in that classroom was likely to hinder the development of good posture during reading. Such a situation would in turn cause fatigue and interfere with concentration while reading or writing. Chairs used by learners in that particular class (class 3) were pre-school size. They did not match with the desks. That was because they were too low. That made it really difficult when it came to reading since their hands could not rest comfortably on the reading material. A study by Mangold (1978) established that book height be such that arm and body movements were unhampered.

4.6 Availability of books and other materials

4.6.1 Availability of Braille books

Availability of learning materials was a very key area for any learning process to take place. Unfortunately, the study revealed that the area needed a lot of attention since all the respondents (100%) agreed that the materials for learners who used Braille were not enough. Findings from both the interview and observation carried out also supported the above findings. One of the head teachers interviewed had this to say,

the process of putting print books bought through the Free Primary Education (FPE) programme was usually slow and quite costly. Thus, more often than not, children who used Braille had to do without most Braille materials.

The same head teacher further observed that,

learners who used Braille materials were disadvantaged since materials available for them usually reached them long after the sighted learners had received theirs that was because of the process that was involved in putting Braille materials into print.
During the English lesson observed, learners using print had each a copy of the text book used in the lesson. Only one pair of those using Braille had a Braille copy (sharing). The other three learners using Braille did not have copies. Pictures in the print text book were constantly referred to by the teacher as they acted as the teaching/learning resource for the lesson. There was no equivalent of the same in Braille. That further disadvantaged the learners using Braille. Charts displayed on the classroom walls were for visual readers while there was practically nothing for tactual readers, yet it was expected that for every teaching/learning aid for those who used print, there must be an equivalent one for those who used Braille.

4.7 Sources of brailleers and slates and stylus

Table 4.3 Sources of Braille equipment

<table>
<thead>
<tr>
<th>Source</th>
<th>Frequency</th>
<th>Percentage of respondents (%)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Donors</td>
<td>2</td>
<td>100</td>
</tr>
<tr>
<td>Government</td>
<td>0</td>
<td>0</td>
</tr>
<tr>
<td>Parents contribution</td>
<td>0</td>
<td>0</td>
</tr>
<tr>
<td>Total</td>
<td>2</td>
<td>100</td>
</tr>
</tbody>
</table>

The study established that the two main writing equipment i.e. brailleers and slates and stylus were solely got from donors. That did not argue very well since it meant that the schools had to wait for donors to come by and save the situation. The equipment was very vital since it was comparable to pens and pencils which were inevitable in any learning process. So it was very important that they were available and adequate for the young learners at any given time.
4.8 Appropriateness of the writing equipment

Among the respondents, 90% agreed that the writing equipment was rather cumbersome particularly for young learners with weak fingers. That was because some force was needed to press on the stylus. Writing was done in reverse. That was from right to left thus contradicting the left-right orientation.

Most teachers (90%) agreed that a brailler would be much better than a slate and stylus.

However, one of the head teachers interviewed had this to say,

the school had very few braillers, so learners had to depend on slates and stylus, inappropriate as they were. The few braillers available were issued to only a few pupils in the upper classes. Those were also donations from charitable organizations.

Only one respondent agreed that slate and stylus were appropriate since they were cheap and affordable.

4.9 Approaches used in teaching Braille

Table 4.4 Teaching approaches

<table>
<thead>
<tr>
<th>Approach</th>
<th>Frequency</th>
<th>Percentage of respondents (%)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Whole class</td>
<td>2</td>
<td>40</td>
</tr>
<tr>
<td>Group</td>
<td>2</td>
<td>40</td>
</tr>
<tr>
<td>One to One</td>
<td>1</td>
<td>20</td>
</tr>
<tr>
<td>Total</td>
<td>7</td>
<td>100</td>
</tr>
</tbody>
</table>
Among the respondents, (40%) used whole class approach in teaching Braille. A similar percentage used group approach while only 20% used one to one approach. According to Mousty & Betelrson (1985) every teacher must have knowledge of the major methods for teaching reading. That was because children learned the skill in very different ways and it was important that the needs of each individual child were put into consideration to enable him/her benefit maximally.

One to one approach was the most recommended because it put into consideration individual learner’s differences. However, that was not possible because of the large number of learners in some classes. Two of the classes observed had thirteen and eleven learners respectively. The teacher was using the whole class approach. She only managed to work directly with just
a few learners before the end of the lesson. The direct contact for each learner lasted for less than a minute in both cases. Two of the teachers interviewed agreed that an ideal class for children with visual impairments should not be more than five learners. One however maintained that the number should not be more than three learners in a class. She observed that, learners with total loss of vision needed assistance and support always. For instance, one had to help them get the materials from the desks, sometimes they misplaced things like stylus and if one did not assist them to locate them, and they took a lot of time. Some newly placed learners took a long time before they got oriented to the classroom. If those learners had to be more than three in a class, then there should be a teacher aide to assist the teacher.

4.10 Braille grade introduced to beginners

Table 4.5 Braille grade introduced to beginners

<table>
<thead>
<tr>
<th>Grade</th>
<th>Frequency</th>
<th>Percentage of respondents (%)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Grade I</td>
<td>3</td>
<td>60</td>
</tr>
<tr>
<td>Grade II</td>
<td>2</td>
<td>40</td>
</tr>
<tr>
<td>Total</td>
<td>5</td>
<td>100</td>
</tr>
</tbody>
</table>
Of the teacher respondents, 60% admitted that they introduced beginners to grade 1 Braille (use of full spellings) while 40% introduced them to Grade 2 (with contractions and signs). That showed that there was no clear guideline on the grade to be introduced to learners. The two teachers interviewed agreed that Braille grade 1 was the best to introduce to beginners since that exposed them to full spellings. They further agreed that when learners were introduced to Braille grade 2, they experienced problems with spelling since that grade used signs and contractions and even abbreviations to stand for words.

4.11 Scheduling of Braille reading/writing on the time table

One school had Braille reading lessons scheduled on the school time-table while the other one had not. In that school, Braille reading was taught during remedial time. Such time could not be adequate for learners to grasp the skill and be competent in it.
In the other school where Braille reading/writing was scheduled on the time-table, the teachers agreed that the time allocated was not adequate. The class timetable was extended to the afternoon and that was when Braille was taught. In one of the schools, remedial time was described as instances when a teacher decided to call his or her class outside class time to remediate on weak areas or help children to revise for end of term exams. They too had to teach it during remedial time.

4.12 Difference in academic performance between learners who used braille and those who used print.

Table 4.6 Differences in academic performance

<table>
<thead>
<tr>
<th>Difference</th>
<th>Frequency</th>
<th>Percentage of respondents (%)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Slight difference</td>
<td>2</td>
<td>100</td>
</tr>
<tr>
<td>Marked difference</td>
<td>0</td>
<td>0</td>
</tr>
<tr>
<td>No difference</td>
<td>0</td>
<td>0</td>
</tr>
</tbody>
</table>

Both head teachers of the two schools under study concurred that performance of learners who used Braille differed slightly from that of learners who used print. The difference in performance was more pronounced in the lower classes than in the upper classes. They both noted that learners who used Braille had problems in specific areas like spelling and very low speed when brailing using the slates and stylus. Scarcity of Braille materials and limited cases of incidental learning for the congenitally blind were cited as some of the possible causes of the discrepancy.
4.13 Teaching Braille to Teachers Posted to Schools for Learners with Visual Impairments

The above item sought to find out how teachers posted to schools for learners with visual impairments learnt Braille. From the data, it was found that such teachers learnt Braille on their own. In both schools, teachers made their own arrangement to be taught Braille by their colleagues on the job.

The above was confirmed by the two head teachers during the interview where they agreed that there were no formal arrangements put in place where such teachers could be taught Braille. There were no seminars or short courses purposely organized for teachers who taught Braille. However, in one of the schools, such teachers were given a certain period of time within which they were expected to learn the skill, but unfortunately there was no follow up done to ensure that they were thorough in Braille.

In one school, only teachers with mastery of Braille were designated to teach classes of learners who used Braille. In the other school, any teacher could teach Braille, including those who were learning it on the job.

4.14 Teaching Braille to Newly Blinded Learners

In both schools, there were cases of learners transferred to the schools after adventitiously loosing their vision. In one of the schools, there was a Braille class where such learners were taught Braille before placement to their appropriate classes. In the second school, no such
arrangements were put in place. Such learners were left to learn Braille slowly by slowly as they progressed in their other academic work. That affected their performance not only in Braille but also in other subjects hence leading to over repetition in some classes.

4.15 Teaching of Reading Readiness and Pre Braille Skills

In both schools, the study found out that there were no arrangements put in place to train children in reading readiness skills before introducing them to reading Braille. Yet, it was important that for a child with visual impairments attention should be given to the development of tactual perception and listening skills (Marshall & Hunt, 2002). During interview, one of the head teachers confirmed that by saying,

reading readiness was an area we had not taken seriously, we had not thought of teaching it because in the first place time was very limited. So we were left to concentrate on only the content in the curriculum, otherwise we would really drag behind if we had to teach such things.

4.16 Problems with Finger Dexterity and Arm Movement

The question sought to find out whether there were children who experienced problems with finger dexterity and arm movement. From the findings it was evident that some children experienced problems in that area. That was also confirmed by an observation schedule carried out on class two children in one of the schools.

In that class, six children were observed while reading simple three to four letter words. Three of the children observed seemed slower than the rest. One of them used only the right index finger to read. He read with the wrist on the material and would rub on dots which made them faint. That would slow down the reading speed. Another child observed also used
one finger (index) with the others hanging above the text. That would make him get fatigued from the wrist which he kept resting on the material before he could even finish reading a series of three words. The third child kept on interchanging the hands as he read. He could use his left hand and then switch off to the right before he was through with reading the words. The other children had no reading materials. Two rested their heads on the desks almost throughout the lesson. The other one looked quite attentive but just like the other two; she could not fully participate in the lesson since she did not have the reading material. It was learnt that there was nothing that teachers did to alleviate problems of finger dexterity and hand movement.

It was also found out that some teachers were quite positive towards learning Braille. One of those interviewed had this to say,

I would like to learn more about Braille if such chances were availed. It is an interesting area and I would wish to associate with those learners fully, but I am not very conversant with Braille, I prefer teaching children with low vision who used large print as opposed to those who used Braille.

Conversely, teachers with total loss of vision preferred teaching learners who used Braille. Marking of learners work was cited as one reason for the preference since such teachers would not require services of a sighted reader to read out the print work to them.
4.17 Age of Children Joining Pre-School.

The above item sought to find out the average age at which children joined Pre-school. In an interview with one of the head teachers, he reported that,

age of children joining pre-school varied significantly. Socio-economic background of learners at times affected the age at which those learners joined school. Parents from low economic background usually gave priority to their sighted children, only after they had settled the sighted children in school did they think of their children who had disabilities. Some of those children therefore joined school when they were over ten years. However, there were those parents who were keen on taking their children who were blind to school at the expected time, such children were enrolled to schools by the time they were around six or seven years.

In summary, the findings established that there was lack of proficiency training in Braille, furniture was not enough other Braille materials were not enough. Learners who used print were better equipped than those who used Braille and there was no reading readiness skills strategy put in place. Having presented the findings, they were then discussed, conclusions drawn and recommendations made in the following chapter.
CHAPTER FIVE
DISCUSSIONS, CONCLUSIONS AND RECOMMENDATIONS

5.0 Introduction
The main purpose of the chapter was to discuss the study findings as well as draw conclusions and make recommendations. The discussions were therefore organized around findings on teachers’ qualifications and experience, availability and adequacy of resources and facilities, methods used in teaching Braille and procedures for teaching reading readiness skills to young beginners. Those were followed by a section on conclusions and recommendations.

5.1 Discussions of the study
The study intended to find out factors affecting Braille competency among pre scholars and lower primary learners with visual impairments in Kenya. In the section, the discussion of the results centred on the research questions and objectives as stipulated in chapter one and four.

5.1.1 The Academic Level and Professional Experience of Teachers Teaching Braille to beginners.
Qualification of teachers was paramount for the success of learners. That focused on the specialized knowledge, understanding and skills required by teachers to enable them to meet the specific additional learning needs of pupils arising from their visual impairments (Hill, 1994).

In the study, the results indicated that some of the teachers under study had PI teacher training. However, that level of training did not include much of Special Needs Education
component. The teachers were generally trained to work with regular learners, that was, those learners without disabilities or special needs. Others had attained Diploma level of Education while others had attained a first degree.

Some more teachers had some training in Special Needs Education, but then it was important to note here that the level of training differed significantly. That was from a training duration of three months and below to Bachelors degree level.

Teacher qualification was paramount if learners were to achieve their potential. According to Hill (1994) the qualification focused on the specialized knowledge, understanding and skills required by teachers to enable them to meet the specific additional learning needs of pupils arising from their visual impairments. Unlike in Kenya, most countries laid a lot of emphasis in teachers’ competence in Braille. In Canada for instance, teachers of Braille must hold at least a Bachelor of Education degree. The University coursework in that case was on basic methods of teaching Braille reading.

The teacher for Braille should be the best model for the learners to emulate. A study by Moor (2005) suggested that teachers of Braille reading and writing must of necessity know all the symbols and rules of the Braille code. They also needed to have some knowledge of how reading and writing were taught to sighted children. They should also understand some basic differences between Braille and print that determined the skills Braille readers and writers needed to learn.

On professional experience, the study established that some teachers who participated in the study had a teaching experience of ten years and above. That was quite rich experience if the
old adage ‘experience was the best teacher’ was anything to go by, but then it was important that those teachers attended seminars and workshops regularly to update themselves on the emerging issues in relation to Braille since that was an area that was constantly revolving. Such seminars should also focus on the best methods to be used in teaching Braille.

5.1.2 Availability and Appropriateness of Resources and Facilities Used in Teaching Braille

Teaching/learning resources not only reinforced what had been taught but also made teaching easier. Children with visual impairments must have all books and other reading materials in Braille in order to learn to read. Furniture should also be comfortable and of the right size to promote proper posture and gait and avoid fatigue when reading or writing.

The study findings indicated that resources and facilities in the two schools were not adequate. It was evident from the observation carried out that furniture was not really enough. Learners were found to be sharing small tables which were quite uncomfortable. Braille books were usually large and bulky in comparison to print ones. Thus, there was need for enough space since when opened; one book could occupy an area bigger than three hundred and sixty square centimeters. The books also needed to rest flat on the table for easy opening of pages and access to various sections of the page.

It was also found out that some learners were seated on non proportional furniture. The tables were not matching with the chairs in that they were so high whereas the chairs were low. That made it very uncomfortable for the young learners who had to raise their hands almost above shoulder level to navigate the materials. The interviews reviewed that the two head
teachers were in agreement that furniture was a felt problem. Though they got some little funding from Free Primary Education (FPE), the amount was far from enough. Persons with visual impairments usually had poor posture and gait particularly if skills in orientation and mobility were not well imparted on them early enough. If furniture was not comfortable enough that was likely to affect the child’s posture and particularly at that tender age. A study by Harley et al (1987) suggested that furniture should help maintain good posture while reading or writing. Thus, it was important that good furniture was availed to those learners with visual impairments.

On writing equipment, the study found out that those were neither appropriate nor adequate. Most of the teachers agreed that the writing equipment (slate and stylus) were rather cumbersome. That was particularly so for young learners with weak fingers. Reading what had been written was also another problem since the learner had to remove the paper from the slate and turn it after writing from the right to the left of the paper to make it legible.

The same percentage of teachers agreed that a brailler would be much convenient for writing with but then the problem lay with the acquisition. One Braille writer went for about KShs.50,000/- That made it almost impossible for schools to purchase them for their learners. Schools mostly waited for donors to donate the braillers and other Braille materials. So when such donations were not forthcoming, learners with visual impairments were bound to be disadvantaged.

With regard to the teaching/learning materials, the situation was not any better. It was evident that there was a big discrepancy between the learners who used print and those who used print as far as availability of materials was concerned. All the respondents confirmed that Braille
materials were inadequate. The two head teachers also concurred with the teachers. They noted that learners who used Braille materials were usually disadvantaged in comparison with their sighted counterparts. That was because very few materials were available in Braille. The process of transforming print material into Braille was also both expensive and tedious. The equipment and materials used were also expensive. Those were, the thermoform machine and braillon paper. Repair of the thermoform machine incase of a breakdown was also cited as another challenge.

The inadequacy of materials was further confirmed by the observation carried out during an English lesson in class two. In that lesson, learners using print had each a copy of the text book used in the lesson. The situation was different for those using Braille. Only two learners had a copy of the text book. They were sharing the copy which was not helping any situation since unlike print, Braille material could not be read by two persons simultaneously. The remaining three Braille users did not have copies and so they had to listen to what was being read by their colleagues. A similar study carried out by Harley et al (1987) found out that verbal descriptions combined with tactual experiences gave more realistic ideas. Thus, the need to equip learners who used Braille with adequate Braille materials in order to give them equal attention with their sighted counterparts.

Another study by Olson (1984) threw some light on the issue of materials. Olson noted that there was usually less materials available for those who used Braille than for those who used print, thus many learners with visual impairments usually came to school less well prepared in their experiences with the written medium than print readers. Print readers might also have
had the opportunity to practice reading on a wider variety of materials. Olson (1984) further recommended that regardless of the type of reading materials used in the regular classroom, the child with visual impairments must have all books and other reading materials in Braille, in order to learn to read. It was not acceptable for sighted children to be reading from print books while the child with visual impairments was listening (Olson, 1984). Unfortunately, that seemed to be the case in some schools. That was further confirmed by the observation carried out in one of the classes whereby charts displayed on the classroom walls were for visual readers while there was practically nothing for tactual readers.

Inadequacy of Braille materials was cited as a possible factor contributing to the difference in performance between learners who used print and those who used Braille. From the data, both head teachers agreed that there was a slight difference in performance between the two categories of learners, those who used Braille performing slightly lower than those using print. The above was also supported by Sifuna (1989) who observed that facilities in schools should meet some basic standards for effective teaching and learning to take place. That was further supported by Maundu (1988) who said that teaching/learning facilities and resources correlated highly with scholastic success.

5.1.3 Methods/Approaches used for teaching braille reading to young beginners with visual impairments

Every teacher must have knowledge of the major methods for teaching reading. teaching Braille to young children with visual impairments was more than just teaching them the meaning of the Braille symbols. Individual differences of the learners should be put into
consideration and the teachers should therefore choose methods that maximally benefited individual learners.

It was evident that some teachers used one to one approach in teaching Braille. Others used group approach and others whole class approach. A related study by Mousty and Bertelson (1985) stressed that every teacher must have knowledge of the major methods for teaching reading. That was because children learnt the skill in very different ways.

Many teaching methods which worked for sighted children could also work for children with visual impairments, possibly with some modifications. Choosing the method or combination of methods which best suited the learner's needs was critical to the students in learning to read (Holbrook & Koenig 1997). Another study by Grace (2005) found out that during recent years, methods of reading instruction had become more student centered, fostering not only knowledge and ability but also independence. It was vital for students to have a strong knowledge base when they began to learn to read (Young, 1995).

Individual attention was paramount when teaching Braille to beginners just like any other practical subject. From the study some teachers used one to one approach. That was where each individual learner was attended to on a one to one basis. Considering the individual differences among learners with visual impairments was important. It was therefore very important for teachers of beginners to attend to individual learners as opposed to attending to them as a class. That was because some of them might be going through emotional problems in adjusting to blindness. So a good teacher should not only concentrate on academics, but also on the emotional stability of individual learners. A number of the respondents used one to
one approach. However, the teacher pupil ratio was quite high. That limited the amount of
time spent on individual learners by the teacher. From the observation carried out, one of the
teachers was using one to one approach. She only managed to work with just a few learners
before the lesson was over.

Two of the teachers interviewed agreed that an ideal class size for children with visual
impairments should not be more than five learners, with such a number, it would then be
possible for the teacher to work comfortably with individual learners or small groups of two
or three learners in each group. Another teacher observed was partly using whole language
method in teaching reading. That was where she guided learners to read aloud short sentences
on their own. While that worked for learners with low vision that were using print, it did not
work very well for those using Braille. In the first place, Braille books were inadequate.
Secondly pictures in the print books which helped in enriching the learners’ experiences had
no equivalent in Braille for those using it. In their study, Kosman & Castellano (1997) noted
that the whole language approach required a considerable amount of time on the part of the
teacher of learners with visual impairments to prepare materials and spend time in the
classroom with the learners guiding them and orienting them to the materials. In the study, it
was revealed that it was not possible considering that Braille reading/writing was not even
scheduled on the timetable in one school, and also the large number of learners per class.
Kosman & Castellano (1997) further suggested that the teacher might use materials
spontaneously to teach new words and whenever a teacher of learners with visual impairments
or a classroom aid that was familiar with Braille and the needs of the learner with visual
impairments was available throughout the day, the learners could be integrated into a regular
whole language classroom. That would be a good idea to promote inclusion of such learners to the mainstream of the society.

5.1.4 Procedures put in place for teaching reading readiness skills to young learners with visual impairments

In the absence of vision, sensory training of the remaining senses like the sense of touch and the sense of hearing was important since they were the ones to be used as sources of information. That should be included in the reading readiness programmes.

The study findings revealed that there was no reading readiness activities taught in either of the schools under study. That was an important area which was unfortunately ignored. A study by Marshall & Hunt (2002) revealed that it was of paramount importance that special attention be given to the development of tactual perception and listening skills. Those were important pre reading activities usually incorporated in reading readiness programmes for beginners.

Various research studies (Rex et al, 1994; Mathew & Klaassens, 1999) had also agreed that in the absence of vision, it was important to give a pupil sensory training to the remaining senses like the sense of touch and the sense of hearing so that they might be used as sources of information. That training should be imparted to learners before the introduction of reading/writing Braille to prepare them for what they were to encounter later in life.
In their study, Rex et al (1994) observed that learners with visual impairments had to be taught to use touch, just like sighted learners were taught to use vision. A similar study by Hampshire (1981) noted that pupils with congenital loss of vision who had been taught tactual sense discrimination from very early ages usually did not have many problems with Braille reading if they did not have any other complications. When children were not involved in reading readiness and pre-Braille activities, they were bound to experience problems with finger dexterity and hand movement. Such was observed on class two children in one of the schools. One of the learners observed used only the index finger to read. He read with the wrist on the material and would rub on dots making them faint. The second learner observed also used one finger with the others hanging above the text. That would make him get fatigued from the wrist which he kept resting on the material after a short while. Generally there was no uniformity in the way children in that class read Braille.

From the interview, the teachers agreed that they did not usually prepare learners for reading Braille. Learners explored the best ways of reading Braille on their own. In print reading, the teacher paid little attention to the mechanics of reading, which was, the movements of the eyes but the Braille teacher must help learners develop good hand movements if they were to become efficient readers. Mangold (1978) felt that teachers must also be able to recognize inefficient hand movements and learn how to eliminate them and replace them with efficient ones. A similar study by Lowenfeld (1983) in America revealed that pre-reading instructions were given during pre-school years. During such instructions learners were guided on the best hand/fingers to use in reading Braille.
Another study by Mathew & Klaassens (1999) in some kindergarten classes in Britain found out that reading readiness activities were included in all instructional programmes in Britain. Language reading and writing skills began to develop in the first three years of life. Children who were sighted were exposed and they were always seeing their siblings or parents reading or writing. Thus, by age three years a sighted child was already scribbling and learning to hold reading materials. However, that was not the case with the child with visual impairments. That being the case, Mathews & Klaassens (1999) further suggested that parents of children with visual impairments should be guided on how to instill reading readiness skills to them long before they attained school going age.

In his study, Buel (1996) found out that over protected and under stimulated children with visual impairments performed far below the norms of other children with visual impairments in gross and fine motor skills. There were a number of mechanical skills that were unique to Braille reading. Those skills must be well developed before placing emphasis in decoding of Braille words, phrases or sentences. In that context, a study by Mangold (1978) suggested that children with visual impairments should be involved in sorting and stacking activities, stringing beads and punching and sewing Braille paper as part of pre reading activities among other such activities.

5.2 Conclusions of the study

In view of the purpose of the study and research questions, the general findings were that teaching of Braille in Kenyan schools for learners with visual impairments was wanting. There was no criterion used or any guidelines on which category of teachers to be posted to
those schools in regard to their special training to teach Braille. Although some of the teachers under study had some training in special needs education, the duration of the training differed significantly ranging from three months certificate course to Bachelors degree level. There were no Braille courses specifically organized for those teachers as it was the case in the western countries. In fact, it could be concluded that the government had not been keen enough on who taught Braille.

Regarding the appropriateness of the writing equipment, the interview revealed that slates and stylus were not the best; nevertheless, they were the most widely used. Braillers which would have been better for writing were rather expensive and thus unaffordable.

The classroom observation indicated that furniture in one of the schools was neither appropriate nor adequate. Learners with visual impairments were also disadvantaged when it came to Braille materials. Most of the print materials displayed on the classroom walls did not have their equivalent in Braille as it was supposed to be. That was an area that needed to be looked into considering that teaching/learning facilities and resources correlated highly with scholastic success as confirmed by Maundu (1988). Due to the large number of learners per class, some teachers ended up using whole class or group approach in teaching language. From the findings also, it was evident that there were no guidelines on how to teach Braille to teachers posted to schools for learners with visual impairments without knowledge of Braille. It was revealed that some of these teachers learned Braille on the job. From the interviews, some teachers felt that the greatest obstacle to teaching of Braille was lack of materials and other Braille equipment, lack of training and high teacher pupil ratio.
All in all, it was clear from the findings that there were no clear guidelines on who/how to teach Braille to beginners. The government had not come out clearly on how to go about teaching Braille to newly blinded learners either. Those learners formed the most sensitive group of learners with visual impairments in that most of them had problems in adjusting to blindness. Needless to say that this usually affected their performance and greatly disadvantaged them in comparison to their counterparts who used print.

5.3 Recommendations of the study

From the research findings the following recommendations were made:-

- That the government came up with a clear policy on how Braille should be taught and who should teach it.
- That seminars and workshops were organized for those teachers teaching Braille to review Braille since Braille keeps on changing.
- That Braille was included on the school timetable in schools for learners with visual impairments.
- That teacher pupil ratio for learners with visual impairments be reduced to 1:5 at most.
- That during the pre-school years of 3 – 5, special attention be given to reading readiness activities.
- That taxation be waived on equipment and materials for persons with visual impairments to make them affordable.
• That all head teachers of schools for learners with SNE were taken through basic training in Special Needs Education with a bias to the category of learners in their various schools.

• That officers in charge of Quality Assurance and Standards be given some basic training in Special Needs Education to enable them know exactly what was happening in these schools and ways of improving the standards.

5.3.1 Suggestions for further research

Having looked at factors affecting Braille competence among young beginners, the researcher felt that it was important that studies were done in the following areas where Braille remained an important area:

• Teaching/ Learning of Braille by newly blinded adults.

• Focus on effects of Free Primary Education (FPE) on Special Needs Education (SNE).
REFERENCES


Kosman, D; & Castellano, C; (1997). *The bridge to Braille; Reading and school success for young children.* Baltimore: National organization of parents of the blind.


Sharon, Z; & Rosanne, K; (1998). *Educating students who have visual impairments with other disabilities*. Toronto: Paul H. Brookers publishing Co.


APPENDIX I

LETTER OF AUTHORITY

MINISTRY OF SCIENCE AND TECHNOLOGY

Telegram: SCIENCE-TECH, Nairobi
Telephone: Nairobi 314581
Email: permsec@education.go.ke
When copying please quote

Ref. MOST 13/001/37C 457/2

Njue Sarah Wanja
Kenyatta University
P.O. Box 43844
NAIROBI

Dear Madam

RE: RESEARCH AUTHORIZATION

Following your application for authority to carry out research on, 'Factors Affecting Effective Teaching and Learning of Braille in Primary Schools for Learners with Visual Impairments in Kenya'

I am pleased to inform you that you have been authorized to carry out research in Thika and Thika and Meru Central Central District for a period ending 28th February 2008.

You are advised to report to the District Commissioner and the District Education Officer Thika and Meru Central District before embarking on your research project.

On completion of your research, you are expected to submit two copies of your research report to this office.

Yours faithfully

M. O. ONDIEKI
FOR: PERMANENT SECRETARY

Copy to:
The District Commissioner
Thika District
Meru Central District

The District Education Officer
Thika District
Meru Central District
Questionnaire for the head teachers

This questionnaire is designed to gather information on factors affecting Braille competence in Kenyan Schools for learners with visual impairments. So please be as honest as you can. The information you give will be confidential and will only be used for research purposes.

PLEASE READ EACH QUESTION CAREFULLY BEFORE YOU RESPOND

1. Name of school: 

2. Class: 

3. Sex (please tick) Male □ Female □

4. Status/position (in addition to leadership). E.g. Games teacher, curriculum co-coordinator, guidance & counseling, class Teacher.

5. Your age bracket (please tick)
   - Below 25 □
   - Between 26 - 34 □
   - Between 35 - 44 □
   - Between 45 - 54 □

6. Do you have enough classroom furniture (desks, chairs, tables and benches) for your learners?
   - Yes □ No □
(b) How appropriate are they? Please tick accordingly.

Appropriate □
Not appropriate □

Explain your answer above ......................................................................................................................
............................................................................................................................................................
............................................................................................................................................................
............................................................................................................................................................

7. Where does your school get braille and slate and stylus from?

Government □
Donors □
Parents' contribution □

(b) How about Braille course books?
............................................................................................................................................................
............................................................................................................................................................
............................................................................................................................................................

8. Are the Braille books adequate for the learners?

Yes □ No □

(b) If the answer to the above is No, how do you alleviate the problem?
............................................................................................................................................................
............................................................................................................................................................

9. Do you get any complaint from your teachers as far as teaching Braille is concerned?

Yes □ No □

(b) If yes, what is the main area of complaints?
10. How many teachers do you have in your school?

(b) How many of them are specifically trained to teach Braille?

(c) Do you consider the number adequate or do you require more? Give reasons.

11. Do your teachers attend seminars and refresher courses on teaching of Braille?
   Yes [ ] No [ ]

   If yes, how often?

12. What arrangements are put in place for teaching Braille to teachers posted to your school without prior knowledge of it?

13. Do you have specific teachers designated to teach Braille to lower primary classes?
   Yes [ ] No [ ]
b If yes, what are the considerations?

........................................................................................................................................

........................................................................................................................................

14. Are there children who are transferred from regular school to your school due to loss of vision? Y[N]

(b) If the answer to the above is yes, what arrangements are made for them to learn Braille?

........................................................................................................................................

........................................................................................................................................

15. What arrangement does your school have to assist learners who are slow in learning and particularly those who get to class three without having mastered Braille?

........................................................................................................................................

........................................................................................................................................

16. What is the average age of children who are admitted in class one? ...........................................

........................................................................................................................................

........................................................................................................................................

Is there any noticeable difference in the academic performance between learners with low vision and the ones who are totally blind?

No Difference

Slight Difference

Marked Difference

If the answer to the above is yes, what might be the cause of the difference?

........................................................................................................................................

........................................................................................................................................

17. How do you ensure that Braille is effectively taught in your school?
19. Give suggestions on how reading and writing of Braille can be improved in schools for learners with visual impairments in Kenya.

20. Is there any arrangement put in place to take learners through reading readiness activities before introducing them to Braille?
   Yes ☐  No ☐

21. Since Braille reading and writing entails a lot of use of finger dexterity and hand movement, are there children who experience problems due to weak arms or fingers?
   Yes ☐  No ☐

THANK YOU
APPENDIX III

Questionnaire for the Teachers

This questionnaire is designed to gather information on factors affecting Braille competence in Kenyan schools for learners with visual impairments. So please be as honest as you can. The information you give will be confidential and will only be used for research purposes.

PLEASE READ EACH QUESTION CAREFULLY BEFORE YOU RESPOND

1. Name of school: .................................................................

2. Class: ....................................................................................

3. Sex (please tick)   Male □    Female □

4. Status/positions ........................................................................
   Games teacher, Curriculum Co-ordinator, Guidance & Counseling, Class Teacher (etc).

5. Age bracket (please tick)
   Between 26 – 35 □
   Between 36 – 45 □
   Between 46 – 54 □

6. How many years have you taught in schools for learners with visual impairments?
   (Please tick) 1-5 □ 6-10 □ 10 and above □

7. Have you attended any course on Special Education Needs?
   Yes □ No □

If yes, explain the specific category of handicap that you trained in and the duration of the course
   ........................................................................................................

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8. Is classroom furniture enough for your learners?
   (b) How would you rate the furniture?
      
      Suitable [ ]  Not suitable [ ]

9. Would you consider Braille books and other materials used by learners who are blind adequate or not adequate?
   
   Adequate [ ]  Not adequate [ ]

10. What writing materials/equipment do learners in your class use?
    
    ..............................................................
    
    (b) Do you consider the writing equipment used by your learners appropriate?
    Please explain your response.
    ..............................................................

11. Do you introduce beginners to Braille grade one or two?
    
    ..............................................................
    
    (b) Which of the two grades do you think is more convenient for beginners and why?
    ..............................................................

12. Do your learners experience problems in using the writing equipment provided?
    Yes [ ]  No [ ]

13. Has Braille reading/writing been scheduled for teaching on the school time-table?
    Yes [ ]  No [ ]
    
    If No, when do you teach it? ....................................................
    
    If yes, is the time allocated adequate? Please give your opinion
    ..............................................................

    90
14. Which approach do you use in teaching Braille in your class? (Tick where appropriate)

- One to one approach
- Group approach
- Whole class approach
- Others (please specify) .................................................................

15. Are there learners transferred to your school after adventitiously losing their sight?

Yes □ No □

(b) If the answer to the above is yes, what arrangements are put in place to teach such Learners Braille?.........................................................................................
APPENDIX IV

Interview guide for Head Teacher

The researcher used the following questions as a guide for the interview process.

1. How would you describe the staff establishment in your school? (Teacher-pupil ratio).
2. How would you describe your teachers' attitude towards blind children?
3. Is there any preference amongst your teachers when it comes to teaching children with low vision and those who are totally blind?
4. How would you describe your teachers' competence in braille?
5. How do you ensure that teachers are well conversant with braille?
6. In your view, do you think that your teachers are well prepared to teach braille?
7. What do teachers in your school feel about proficiency training in braille?
8. About how long do totally blind children take in adjusting to the school environment when they first come to school?
9. What is the average age of children being admitted in class one?
10. What do you consider the greatest obstacle to braille teaching and learning in your school?
11. How is the performance of braille users in languages in comparison with print users?
12. In your view, what should the government do to improve the standard of braille in Kenya?
APPENDIX V

Interview Guide for Teachers

The researcher will use the following questions as a guide for the interview process.

1. About how long does an average learner take to master Braille?
2. How would you describe the pupils' attitude towards braille?
3. How is the academic performance of braille users as compared to print users?
4. What is the ideal class size for children who are totally blind?
5. Are there some learners who exhibit problems (emotional) in adjusting to the school environment?
6. If the answer to No. 5 is yes, what do you do to such children?
7. Among the Grade 1 and 2, which one do you consider more convenient for beginners and why?
8. Between a braille-writer and a slate and stylus, which one do you consider more reliable for use by beginners?
9. Reading with both hands has been proved to be most efficient in some studies. Do you train your learners on the best hand to use in reading Braille or you leave it to them to choose whether to use single hand or both hands in reading Braille?
10. Are there courses organized to train teachers on how to specifically teach reading in Braille?
11. Is there any notable difference in performance particularly in languages between Braille and print users?
APPENDIX VI

Observation Guide for Teaching Strategies and Instructional Procedures

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<th>Students Participation</th>
<th>Pace of delivery</th>
<th>use of reinforcement</th>
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<td>Methods used</td>
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<td>Average</td>
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Adapted from Moi University Teaching Practice form.
APPENDIX VII

Observation Guide for Braille Reading Habits

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<tr>
<th>Pupil</th>
<th>Gender</th>
<th>Posture</th>
<th>Hand Position</th>
<th>Preferred hand</th>
<th>Fingers used</th>
<th>Pressure on dots</th>
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