FACTORS THAT INFLUENCE BRAILLE LEARNING IN THIKA PRIMARY SCHOOL FOR THE BLIND IN CENTRAL PROVINCE, KENYA.

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APRIL 2009.

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Factors that influence braille
2009/339420

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DECLARATION

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

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DEDICATION

This work is dedicated to my beloved parents, Karangi and Muringi. I will never forget your boundless love, sacrifice and advice.

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To all of you, my success is yours. God bless you mightily.

TABLE OF CONTENTS

PAGE

Declaration----------ii
Dedication----------iii
Acknowledgements----------iv
Table of Contents----------v
List of Tables----------vi
List of Figures----------vii
Abstract----------xii
Abbreviations and Acronyms----------xiii

CHAPTER ONE: BACKGROUND AND CONTEXT OF THE STUDY

1.0 Introduction----------1
1.1 Background to the study----------1
1.2 Statement of the problem----------5
1.3 Purpose of the Study----------5
1.4 Objectives of the Study----------5
1.5 Research Questions----------6
1.6 Significance of the Study----------6
1.7 Scope and Limitations----------7
1.8 Assumptions of the Study----------7
1.9 Theoretical Framework----------7
1.9.1 Conceptual Framework----------8
1.10 Operational Definition of terms----------10

CHAPTER TWO: REVIEW OF RELATED LITERATURE

2.0 Introduction----------12
2.1 Definitions and Classification of Visual Impairments----------12
2.2 Causes of Visual Impairments----------13
2.3 Implications of Blindness to a Child----------15
2.4 Invention of Braille and Its Importance----------16
2.5 Braille Learning----------18
2.5.1 Braille Literacy----------18
2.5.2 Teaching of Braille----------19
2.5.3 Braille Learning Materials and Equipments----------22
2.5.4 The Learner and the Perceived Difficulties with Braille----------24
2.6 Conclusion of Literature Review----------25

CHAPTER THREE: RESEARCH DESIGN AND METHODOLOGY

3.0 Introduction----------26
3.1 Research Design----------26
3.2 Research Variables----------27
3.3 Study Locale----------27
3.4 Target Population----------28
3.5 Sampling Techniques and Sample Size----------28
3.6 Research Instruments----------29
3.6.1 Interview Guides----------29
3.6.2 Focus Group Discussion Guides----------30
3.6.3 Observation Guide----------30
3.7 Pilot Study----------30

3.8 Data Collection Techniques----------31
3.8.1 Data Analysis----------32
3.9 Logistical and Ethical Considerations----------33

CHAPTER FOUR: PRESENTATION AND DISCUSSION OF FINDINGS

4.0 Introduction----------34
4.1 Learners and Braille Literacy----------34
4.2 Braille Teachers and the Teaching of Braille----------36
4.2.1 Teachers and the Braille Teaching Courses----------36
4.2.2 Braille Teaching Experience----------38
4.2.3 Teachers Workload----------39
4.3 Adequacy of Braille Materials and Equipments----------42
4.3.1 Adequacy and Working Conditions of Slates and Styluses-------42
4.3.2 Adequacy and Working Conditions of Braille Machines----------43
4.3.3 Adequacy of Braille Papers----------46
4.3.4 Adequacy of Braille Textbooks, Braille Teaching Methodology---47
4.3.5 Adequacy of Erasers----------49
4.4 Teachers' and Learners' Challenges in Teaching/ learning Braille ----------49
4.4.1 Braille Teaching Courses----------50
4.4.2 Braille Learning Materials and Equipments----------50
4.4.3 Braille Teaching Time----------50
4.4.4 Learners and Braille Learning----------51
4.5 Teachers' and Learners' Perspectives on Improvement of Braille Learning----------51
4.5.1 Resource Mobilization----------51

4.5.2 Maintenance of Braille Equipments----------52
4.5.3 Policy Formulation----------52
4.5.4 Teacher and Braille Teaching----------52
4.5.5 Creation of Braille Learning Interest----------52

CHAPTER FIVE: SUMMARY, CONCLUSIONS AND RECOMMENDATIONS

5.0 Introduction----------54
5.1 Summary----------54
5.1.1 Learners and Braille Learning----------54
5.1.2 Braille Teaching courses, Teaching Experience and Workload---55
5.1.3 Adequacy, Working Conditions of Braille Learning Resources---56
5.1.4 Braille Learning Challenges----------57
5.1.5 Teachers' and Learners' Perspectives on Braille Improvement---58
5.2 Conclusions of the findings----------58
5.3 Recommendations----------59
5.3.1 Recommendations to School Management----------59
5.3.2 Recommendations to KIE----------60
5.3.3 Recommendations to TSC----------60
5.3.4 Recommendations to KNEC----------61
5.4 Suggestions for Further Research----------61

REFERENCES----------62

APPENDICES

Appendix A: Interview Guide for the head teacher----------66
Appendix B: Interview Guide for the Head of Braille----------67
Appendix C: Interview Guide for the Braille Teachers----------68
Appendix D: Focus Group Discussion Guide for Learners----------69
Appendix E: Observation Guide----------70

LIST OF TABLES

Table 4.1: Braille Courses Undertaken by the Teachers----------36

Table 4.2: Braille Teaching Experience----------38

Table 4.3: Distribution of learners in braille Classes----------39

Table 4.4: Distribution of braille classes among braille teachers----------40

LIST OF FIGURES

Fig 1.1: The School and the Interacting Elements that Influence Braille Learning----------9

Fig 2.1: Barbier's 2x6 dots cell----------17

Fig 2.2: Louis Braille's 3x2 dots cell----------17

Fig 4.1: Available Braille Machines and their Working Conditions----------44

ABSTRACT

Despite the fact that braille learning has been going on in the primary schools for the visually impaired in Kenya, great concern has been raised relating to the falling levels of braille literacy among the learners. This outcry has been indicated in some studies as well as from the sentiments of teachers teaching in the schools for the visually impaired. The purpose of this study was to investigate the factors that influenced braille learning in Thika Primary School for the Blind. The specific objectives of the study were to establish the braille teaching courses undertaken by the teachers who taught braille, determine the teaching experience of the braille teachers, investigate the adequacy of the existing braille materials and equipments as well as to determine the challenges that the braille teachers and the learners faced in teaching/learning braille. The study embraced the descriptive study design. The population of the study constituted 30 teachers and 222 visually impaired learners in Thika Primary School for the Blind. Purposive sampling technique was used to select the institution, thirty blind learners and six braille teachers. The head teacher was also included as a study respondent. This gave a sample size of thirty-seven participants. Data from the head teacher, head of braille and the braille teachers were collected using interview guides while focus group discussion guides were used for collecting data from the blind learners. An observation guide was used by the researcher to gather additional data through attendance of braille learning classes. Qualitative data from the interviews and Focus Group Discussions were organized into common clusters and analyzed through the thematic approach. Quantitative data were analyzed using descriptive statistics, measures of central tendency, percentages and ratios. The findings of this study indicated that majority of the braille teachers had not undertaken braille-teaching courses and the school had inadequate braille learning materials and equipments. At the same time, both teachers and the learners faced some challenges in the process of teaching/learning braille. These included insufficient braille learning materials and minimal braille learning time. Consequently, the recommendations point on the stakeholders in the education system. They embrace the introduction of a braille-learning syllabus, making braille an examinable subject for all learners who are blind, introducing braille in-service courses and deploying braille-qualified teachers to teach the blind learners. Areas of further research are also suggested which include investigating the interrelationship between braille literacy and the general academic performance of learners and exploring the factors that influence the acquisition and availability of braille learning materials and equipments in the institutions for the visually impaired.

ABBREVIATIONS AND ACRONYMS

DEO	District Education Officer
FGD	Focus Group Discussion
GoK	Government of Kenya
KESSP	Kenya Education Sector Support Programme
KIB	Kenya Institute for the Blind
KIE	Kenya Institute of Education
KISE	Kenya Institute of Special Education
MoE	Ministry of Education
MoEST	Ministry of Education, Science and Technology
SNE	Special Needs Education
TSC	Teachers Service Commission
UNESCO	United Nations Educational, Scientific and Cultural Organization
UNCRC	United Nations Convention on the Rights of the Child
VI	Visual Impairment

CHAPTER ONE

BACKGROUND AND CONTEXT OF THE STUDY

1.0 Introduction

This chapter presents the background to the study, research objectives and research questions, significance of the study, scope and limitations, assumptions of the study, theoretical and conceptual framework, and finally the operational definition of terms.

1.1 Background to the Study

All children have a right to education regardless of their handicap, gender, race, religion, social status or any other criteria. This is as stipulated by the international, regional and national instruments of children's rights, key among them the United Nations Convention on the Rights of the Child, UNCRC (1989), African Charter for the Rights and Welfare of the Child (1990) and the Children's Act (2001). Although rights are fundamental to all children, a report by the United Nations Educational, Scientific and Cultural Organization (UNESCO, 1997) notes that, in most countries, this reality is bleak in terms of access and quality education especially for children with special needs.

Children with special needs include those that experience conditions that hinder normal learning and development. Under the American Individuals with Disabilities Education Act (IDEA), these conditions include mental retardation, hearing impairments, visual impairments, speech or language impairments, serious emotional disturbance, dyslexia, autism, traumatic brain injury, other health impairments, or specific learning disabilities. Due to these conditions, children with special needs require Special Needs Education (SNE) which provides appropriate modifications on the environment, curriculum, teaching methods, teaching/learning materials and the medium of communication (Mwaura, 2002).

Learners with visual impairments fall under the categories of the blind and the low vision learners. Learners who are blind have no usable vision in learning. The low vision learners have some vision which can be modified and be utilised in learning. According to Sight Savers International (2007), there are 37 million people who are blind globally; 6.8 million are in Africa and 224,000 in Kenya.

Before 18th Century, education was not considered important for the visually impaired persons. Persons with visual impairments were viewed with contempt and kept in ignorance and abject poverty (Rex, Koenig, Wormsley & Baker, 1995). It was not until the 18th century that people started developing positive attitudes towards persons who were blind and considered them as capable and worthy of being educated. France was the first country to champion positive attitudes towards blindness with the introduction of the first school for the blind children in 1784, followed by United Kingdom in 1791, Germany in 1806, Sweden in 1809 and United States in 1829 (Moodley, 2002).

As also stated by Doake (1995), one hundred years ago, blind persons who could not write their names were considered illiterate. This illiteracy, which often resulted from the lack of opportunity, relegated many blind persons to life as second class citizens and sometimes even as non-persons. Literacy was a symbol of intelligence, and intelligence was a symbol of personhood.

In Africa, persons with impairments were exterminated and some used as court jesters. In African societies, infanticide was a way of dealing with such impairments. Gradually there was an awakening of social conscience and people with impairments were accorded care that was more humane. In Eastern Africa, special schools and programmes were pioneered by churches, voluntary and charitable organizations (Ndurumo, 1993).

In Kenya, children with visual impairments were the first group of children with special needs to receive education. The first school for the blind was established in 1946 in Thika by the Salvation Army as a vocational school. The main objective of its foundation was to rehabilitate wounded soldiers of the Second World War. But in early 50s, the institution started admitting blind learners in order to give them formal education. The school was later named Thika Primary School for the Blind (Ndurumo, 1993).

In Kenya, by 1986, there was one secondary school for the blind (Thika Secondary School for the blind), six primary schools for the blind, two integrated programmes in secondary schools, four integrated programmes in primary schools, two technical and agricultural schools and a correspondence school. These sixteen programmes had 1568 visually impaired persons in 1986 (MoE, 1987).

At present there are six public special primary schools for learners with visual impairments in Kenya. These include Thika Primary School for the Blind in Thika, St. Lucy's School for the Blind in Meru, Kibos School for the Blind in Kisumu, St. Oda Aluor School for the Blind in Siaya, Likoni School for the Blind in Mombasa and St. Francis School for the Blind in Kapenguria. All special schools for the blind aim at placing learners with visual impairment in institutions with professionals and facilities that meet their unique needs.

Braille is the key medium of communication for the learners who are blind. It is a mode of reading and writing using raised dots which are inscribed on special braille papers and read through touch. As observed by Rex et al. (1995), thoroughness in braille increases the potential of succeeding in life, since the blind person stands a better chance of competing with their sighted counterparts in accessing information and gaining skills for life and employment. During the early years of schooling, visually impaired children need intensive and high quality

braille instruction by specially trained braille teachers in order to obtain an adequate level of braille literacy (Rex et al., 1995). Nevertheless, a World Bank report (2004) asserted that generally, appropriate education for visually impaired persons is still far from adequate.

According to the Kenya Education Sector Support Programme (KESSP), the government has continued to train special education teachers in order to improve the necessary capacity to handle learners with special needs (GoK, 2005). Despite these efforts, Okungu (2005) established that learners who are blind do not get quality education and argues that it is probably due to an acute shortage of specially trained teachers in the schools for the visually impaired learners. On a similar note, The report of the Commission of Inquiry into the Education System of Kenya (1999) notes that braille literacy among the blind learners has been deteriorating over the years which could impact negatively in future.

The Kamunge Report (1988) recommends that necessary facilities and equipment be provided for all learners with special needs in order for their education to be successful. Blind learners require braille resource materials such as braille machines, slates, styluses and special braille papers for effective braille learning. These facilities and equipments have been documented as inadequate, expensive and not locally available (Gok, 2005). Furthermore, Songe (2003), points out that lack of braille resources is a major hindrance to effective teaching and learning in the schools.

Hunt (2002) states that learning braille requires time and effort, and the blind learners should be enthusiastic and confident in order for them to become efficient life-long readers and writers of braille. Since braille is complex, bulky and uses contractions, it requires adequate time to be learnt and memorized.

1.2 Statement of the Problem

Notably, primary school education serves as a foundation for braille literacy among learners who are blind. Lower primary school level is critical in the acquisition of braille literacy skills. As noted in the report of the Commission of Inquiry into the Education System of Kenya, GoK (1999), braille literacy among the blind learners has been deteriorating. It is worth noting that braille literacy increases the blind learners' potential for independence through communication, self-confidence, personal development, educational success and employment among others.

Some studies done in the area of visual impairments have looked at attitudes of teachers towards the visually impaired (Wanjohi, 2003), curriculum barriers to successful inclusion of visually impaired learners (Songe, 2003), self-concept and educational aspirations among the visually impaired (Mwathi, 1998), braille reading habits (Okungu, 2005) and reading\writing media on the education of blind persons (Moodley, 2002). Notably, there are limitations of research in areas of braille learning. Therefore, the focus of this study was to investigate the factors that influenced braille learning using Thika Primary School for the Blind as a case for generating pertinent insights.

1.3 Purpose of the Study

The purpose of this study was to investigate the factors that influenced braille learning in Thika Primary School for the Blind.

1.4 Objectives of the Study

The specific objectives of the study were to:

1) Establish the braille teaching courses undertaken by the braille teachers.
2) Determine the braille teaching experience of the teachers

3) Investigate the adequacy of the existing braille learning resources in the school.
4) Identify the challenges that the teachers faced in teaching braille.
5) Establish the challenges that the learners encountered in learning braille.

1.5 Research Questions

The study sought to answer the following questions:

1) How many braille teachers were there in the school?
2) Had the braille teachers undertaken any braille-teaching course?
3) How many years had the braille teachers taught braille?
4) Were braille learning materials and equipments adequate?
5) Were the available braille learning materials and equipments in good working condition?
6) What challenges did the teachers face in teaching braille?
7) What challenges did the learners face in learning braille?

1.6 Significance of the Study

The study aimed at discovering and addressing the factors that were amenable to change, and which could facilitate effective braille learning. Such information would be useful to the policy-makers in the improvement of the curriculum for the learners who are blind. It would also act as a tool for awakening the institutions that are involved in the training, upgrading and deployment of braille teachers.

It is as well hoped that the recommendations of this study would be of help to the teachers and learners in the school, and act as a motivating instrument in the improvement in braille teaching/ learning.

Additionally, the results of the study are expected to add new knowledge in the field of Special Education and seal knowledge gaps in areas related to braille

learning. Moreover, the findings are expected to inspire other researchers to do more research in the areas related to the study.

1.7 Scope and Limitations

The study was conducted in Thika Primary School for the Blind, which is a special school in Thika Municipality of Central Province. The participants of the study included learners who were blind, being the sole beneficiaries of braille learning. The respondents were drawn from classes three and four, a stage at which braille literacy among the learners was determined. The study focused only on aspects of braille that influenced the teaching and learning of braille in the institution.

1.8 Assumptions of the Study

This study presupposed that braille learning was predominantly influenced by certain factors, which could be investigated empirically. In addition, it was assumed that the respondents of the study would be as honest as possible in giving valid information.

1.9 Theoretical Framework

This study was guided by the Systems Theory developed by Ludwig Von Bertalanffy as early as the post-war period in the 1950s. The theory focuses on systems or organizations composed of regularly interacting or interrelating elements working together. The systems theory recognizes the various parts of the system, and in particular, the interrelations of the elements which must synchronize. The webs of relationships between elements enable the system to accomplish set goals (Bertalanffy, 1995).

In this study, the learning environment that is the school, acts as a system comprising factors, which work in harmony during the process of braille learning. These factors include aspects related to the blind learners and the braille teachers,

braille teaching methodology and the braille learning resources. The interplay between these factors/elements determines whether the learners attain braille literacy or not. Positive interplay between the elements leads to braille literacy, whereas a negative interplay leads to braille illiteracy.

1.9.1 Conceptual Framework

To understand braille learning in Thika Primary School for the Blind, it was crucial to look at the school as a system that was pivotal in facilitating the process of braille learning. In order to steer braille learning, some factors like braille teaching methodology, aspects related to the braille teachers and the blind learners and the braille learning resources worked together. The interrelationships of these factors influenced braille literacy among the learners.

Positive relationships between the aspects of the various factors lead to braille literacy among the learners. For instance, braille-learning resources should be adequate and in good working conditions, the learners should attend braille lessons, do braille assignments, braille drills and braille practice and be active in class. On the other hand, the braille teachers ought to have undertaken braille-teaching courses or have an experience in braille teaching as well as give, mark and correct braille assignments. Likewise, individualized braille teaching methodology will be used to meet the diverse needs of the learners. When all the aforementioned aspects work together, braille literacy will be enhanced.

On the contrary, negative interrelationships between the aspects of the different elements of the school system may act as barriers to effective braille teaching/learning, translating to braille illiteracy among the learners. Figure 1.1 illustrates the conceptual framework based on these relationships.

Figure 1.1: The school and the interacting elements that influence braille learning.

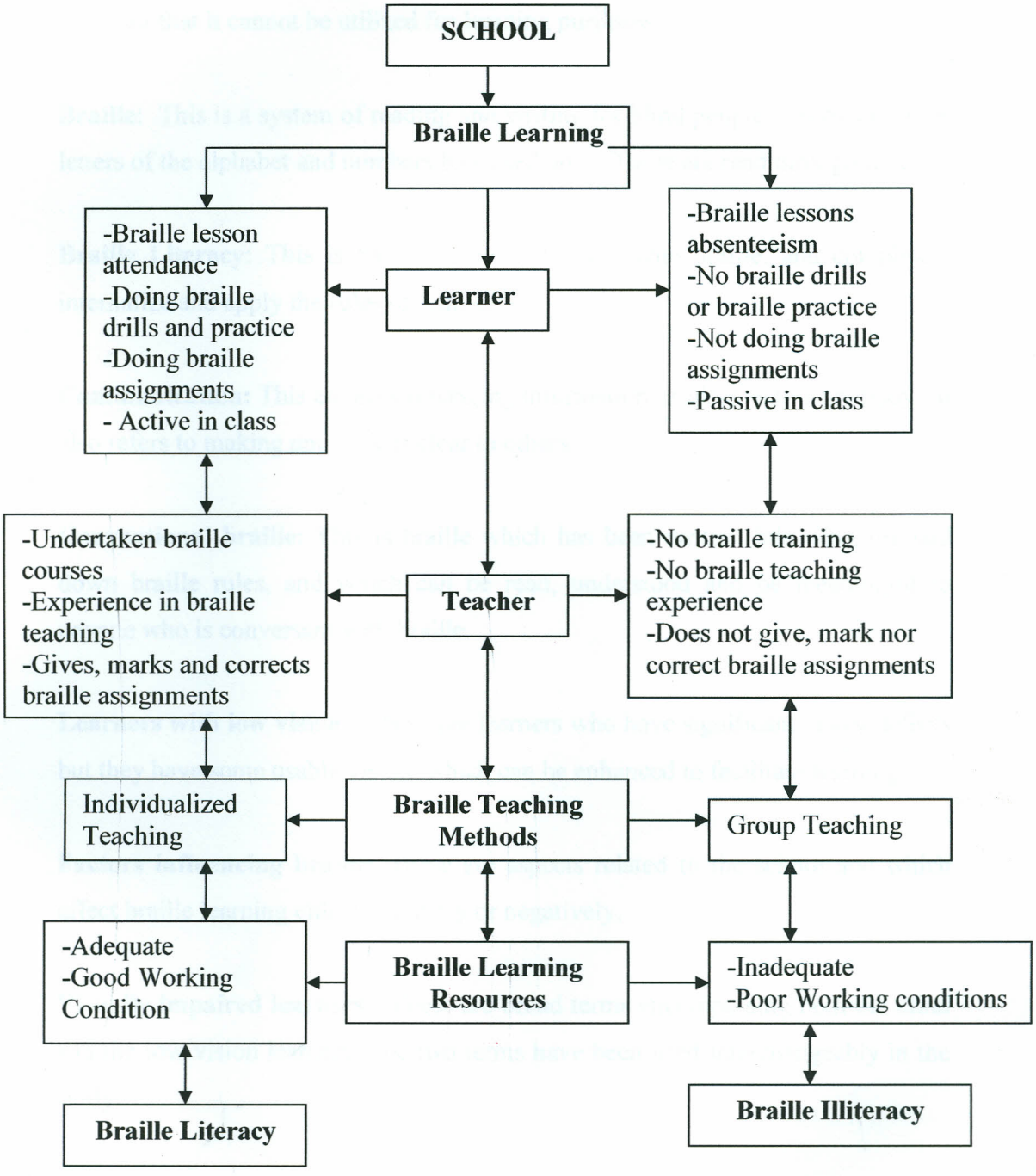


Figure 1.1 shows the relationship that exists amongst four variables, viz: the learner, teacher, braille teaching methodology and braille learning resources.

1.10 Operational Definition of Terms

Blind learner: These are learners who do not have vision or their vision is so deficient that it cannot be utilized for learning purposes.

Braille: This is a system of reading and writing for blind people, representing the letters of the alphabet and numbers by raised dots. These are read through touch.

Braille Literacy: This is the ability to read and write braille, and completely internalize and apply the rules of braille.

Communication: This entails exchanging information or ideas with somebody. It also refers to making one's ideas clear to others.

Conventional braille: This is braille which has been written following the laid down braille rules, and which can be read, understood and be meaningful to anyone who is conversant with braille.

Learners with low vision: These are learners who have significant visual defects but they have some usable vision, which can be enhanced to facilitate learning.

Factors influencing braille: These are aspects related to the school and which affect braille learning either positively or negatively.

Visually impaired learners: These are broad terms encompassing both the blind and the low vision learners. The two terms have been used interchangeably in the study.

Special needs: These are conditions which could be physical, psychological, social or cognitive that make an individuals' performance and abilities significantly differ from that of an average person.

Special needs education: This is the education offered to children with special needs. It caters for the individual needs through appropriate modifications on the curriculum, teaching methods, teaching\learning materials, medium of communication and the environment.

CHAPTER TWO
REVIEW OF RELATED LITERATURE

2.0 Introduction

The literature that is related to this study was reviewed under definitions and classification of visual impairments, causes of visual impairments, implications of blindness to a child, invention of braille and its importance, braille literacy, teaching of braille, braille learning materials and equipments and the perceived difficulties in braille.

2.1 Definitions and Classification of Visual Impairments

According to Kirk (2000), Visual Impairment is an umbrella term that includes all levels of vision loss, from total blindness to uncorrectable visual limitations. The smallest numbers of children are found at the blindness end of the continuum. Visual Impairment (VI) can be classified in several ways. Blind and low vision children are distinguished on the basis of tests of visual acuity or sharpness of vision. A child who is legally blind has a visual acuity of 20/200 or worse in the better eye with correction. This means that the child can see only at 20 feet what someone with normal sight can see at 200 feet. Legal blindness does not necessarily mean that a child has no visual stimulation at all; the child may be able to sense light and darkness and may have some visual imagery.

Visual impairment defined in educational terms focuses on the effectiveness or functional sight (Hunt, 2002). Educational classifications of visual impairments include moderate, severe and profound visual impairments, which are based on the special educational adaptations that are necessary to help these children to learn.

A moderate visual impairment can almost be entirely corrected with the help of visual aids either in the regular classroom or in resource room. A severe visual

impairment may be helped with visual aids; still, the child can use vision as a channel for learning. This classification is equivalent to the definition of a child with low vision. A child with a profound visual impairment cannot use vision as a channel of learning. For this child, touch and hearing are the predominant learning channels.

In terms of the level of visual loss and to benefit fully from the special education services, all the visually impaired learners should be placed in schools for the visually impaired. Nevertheless, as stated by Bishop (1996), special education suffers from low progress in assessing and placing children with disabilities in the right schools.

2.2 Causes of Visual Impairments

A wide variety of conditions can cause serious visual impairments in children from birth to five years. Common disorders for example hyperopia (far sightedness) and myopia (near sightedness) are usually correctable with glasses.

One of the most common infectious disease is rubella (German measles), contracted by the mother during pregnancy. Rubella can cause serious birth defects, mental retardation, hearing loss in addition to visual problems.

Another major cause of visual impairments is retinopathy of prematurity (formerly called retrolental fibroplasia). This disease was widely believed to be caused by over administration of oxygen to premature infants in an attempt to save the life of the child threatened by other conditions.Another cause of visual impairments is retinoblastoma, a tumor of the eye that causes blindness. The condition is found in the first years of life and is progressive.

Other causes of visual impairments in school-age children are congenital in origin. Congenital conditions may be caused by hereditary, maternal or fetal infection or damage during fetal development. Hereditary conditions include albinism and some forms of glaucoma.

Other conditions such as cataracts and under-development or absence of the eye structure may be caused by damage during fetal development. Cortical visual impairment results from damage to the visual cortex of the brain due to trauma or hydrocephaly. Retinopathy or pre-maturity occurs most commonly in premature babies who require high levels of oxygen over an extended period of time for survival. In optic nerve atrophy, the optic nerve does not develop normally and therefore degenerates, causing vision loss. Albinism is the congenital absence of pigmentation (including that of the eye), which can result in visual loss. Glaucoma is a leading cause of blindness across all age groups (Moodley, 2002). Glaucoma occurs when fluid within the eye cannot drain properly resulting in a gradual increase of pressure within the eye and damage the optic nerve. Diabetes can result in a condition known as diabetes retinopathy, another major cause of blindness. A cataract is a clouding of the lens of the eye and is a major cause of visual impairment.

There are other less frequently occurring causes of visual impairment in children like accidents. Teachers should understand the eye conditions of their students, since the specific condition may affect what they expect for the child's visual functioning in the classroom.

As Mwaura (2002) underscores, there are various indicators of visual impairment in children. These may include problems in reading and copying from the chalkboard, reading books too close or very far from the eyes, quick eye movements from side to side, double vision, omissions while reading and writing,

clumsy movements and poor balance while walking, moving the head instead of the eyes while reading and watery and painful eyes. There is therefore need for the teachers of the blind to have clear understanding on blindness and blindness issues. (Mwathi, 1998).

2.3 Implications of Blindness to a Child

With regard to Mwaura (2002), blindness imposes three main kinds of implications and limitations on a child. One, the range and variety of visual experiences that blindness brings to an individual vary with the age of onset when the individual got vision loss. If the onset of blindness comes early in life, the child will not have visual concepts and will, therefore, have a limited range of visual experiences. Second, loss of vision restricts one's ability to move about as the individual does not have visual stimulation and feedback that will stimulate them to change or modify their movements. This makes some children to remain sitting for long hours in one place. Blindness in a child will make it difficult for her/him to familiarize with what is going on in the environment. This means that the blind children cannot control the environment and cannot choose freely what they want to do.

It has been observed that blind children tend to have more difficulty establishing their personal identity because of their poorly defined role within a sighted world (Mwaura, 2002). In addition, blind children have a tendency to be isolated socially which makes it difficult for them to choose companions with whom to hold conversations, always requiring to be spoken to first (Kirk, 2000). Since social behavior and attitudes are learned by observation and imitation, blind persons find it difficult to emulate the role model in daily contact. This implies that they turn to self-stimulation and may portray habits like poking of the eyes, rocking their bodies back and forth and making repetitive meaningless sounds.

Blindness affects cognitive development leading to restriction of the range and variety of a child's experiences. The visual sense motivates the child to interact with people and objects, guides interaction, and verifies the success of the interaction. Vision thus stimulates motor activity and exploration, forming the basis for cognitive and social growth (Hunt, 2002).The growth and development of a child who is blind is much like that of the sighted, though the rate might be slower due to environmental deprivation like lack of parental love and care.

Sudden loss of vision (for instance due to accidents), as opposed to gradual loss of vision is traumatic to the person concerned. Children who were initially sighted end up in unfamiliar special schools where they are expected to learn and master braille. This coupled with lack of understanding of blindness and blindness issues, could impact heavily on their social and academic life.

2.4 Invention of Braille and Its Importance

Braille is a system in which characters are portrayed graphically by embossed dots that are presented in units called cells. It is a medium of reading and writing by touch used by persons who are blind. Learning braille is essential for persons who are so severely visually impaired and cannot read print. Braille is also recommended for students who are legally blind and those with visual impairments that are progressive.

Louis Braille, born in France in 1809, is today venerated throughout the world by many persons who are blind. When Louis was 3 years old, he accidentally blinded himself in one eye while playing with his father's harness-making tools. Shortly after that, the sight of the other eye was lost as well (Lowenfield, 1981).

As stated by Scholl (1986), Louis Braille's inspiration for the development of embossed dots came from Charles Barbier, who developed a method of sending

coded military messages. He referred to his system as "Night Writing" or Ecriture Nocturne, as it was to be employed at night for the exchange of secret intelligence messages in war zones.

Barbier's system used a 2x6 dots cell. Louis Braille recognized the immense value of Barbier's techniques, but felt that the elongated cell was too long to fit under the fingertips during touch reading (Harley et al., 1997). Louis devised a 3x2 dots cell which could be felt easily using the finger tips. Barbier's system and Louis Braille system are presented in figures 2.1 and 2.2.

Figure 2.1: Barbier's 2x6 dots cell

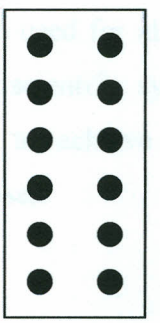
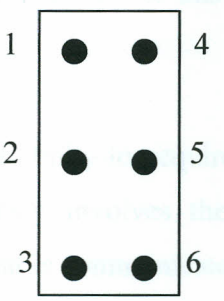


Figure 2.2 Louis Braille's numbered 3x2 dots cell.



In 1854, two years after the death of Louis Braille, the Paris Institute in France adopted his system. By the end of the century, braille had become the universally accepted means of written communication for persons who were blind. Even today, braille remains a vital tool in enhancing literacy for the blind persons.

As mentioned by Moodley (2002), the six dots can be used variably to construct alphabet letters, numbers, punctuations, equations and so on. Braille writing and reading allows blind learners to communicate anything just like the sighted persons can communicate through print writing and reading.

Braille is not a language, it is a portrayal of print, with special rules and multiple uses of each sign (configuration), and thus, it is a code (Rex, 1994). Braille is extra ordinarily flexible in that it can be used for all languages. In addition, it can be used for music, mathematical and scientific symbols. In the current world, new technological advances are used to achieve maximum output of braille for recreational and instructional purposes.

2.5 Braille Learning

2.5.1 Braille literacy

Braille literacy has become an issue of great concern to the blind and the teachers. Authors state that an increasing number of blind people are growing up illiterate and that braille literacy is the answer to this problem (Johnson, 1996; Schroeder, 1989; Stephens, 1989).

Braille literacy involves the ability to acquire information and communicate with others using braille. Literacy involves the ability to gain access to written information. Information that is communicated needs to be stored so that it can be used later. This means that for the blind person, braille literacy involves all

methods of acquiring, storing and accessing information and all methods of communicating one's own ideas, opinions and needs (Schroeder, 1989).

Today, more than ever before, learners who are blind and possess the ability to communicate through reading and writing have the key that opens doors of education (Holbrook, Koenig & Smith, 1996).

Individuals who are blind should have high levels of braille literacy so that they can take full advantage of social and economic opportunities (Jones, 1996). The task of educators is to provide ample opportunities for persons who are blind in order for them to master braille. However, the learners need consistent and intense interactions with the teachers, who provide quality and specialized instruction in braille.

According to Rex et al., (1995), effective braille learning is characterized by firstly, the learner demonstrates skills in performing literacy tasks like jotting assignments, taking notes in class and completing assignments. Secondly, the learner has the task of communicating effectively with another person who is literate in braille.

According to the report of the Commission of Inquiry into the Education System in Kenya, braille literacy among learners who are blind has been deteriorating over the years (GoK, 1999). This situation creates a need for redress.

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2.5.2 Teaching of braille

Children with special needs including the blind have some unique needs which prevent the attainment of life expectations through the ordinary provision of general education. Special Education provides the modifications required to meet

the unique needs, thus enabling them to acquire the skills essential to becoming fully functioning and fully participating members of society.

According to Kirk (2000), every teacher for the blind should know that the needs of one child are very different from the needs of another even though both of them are blind. Braille teaching methodology should recognize this uniqueness and hence be individualized and learner centered. This will assist the teacher in identifying the learners level of braille achievement, his/her potential hence be able to offer the best instruction.

Teachers should remember that pupils and their needs change over time and the more braille skills they learn, the more prepared they will be for independence and adulthood. How a teacher teaches depends on many factors, including the age of the child at the onset of the visual impairment, motivation of the pupil for learning braille, pupils' tactile and perceptual abilities, pupils' intellectual capabilities, any additional disabilities that the pupil has and the setting in which the braille literacy instruction is to take place. The nearly infinite combinations of these factors make the teaching of braille reading and writing both so demanding and so rewarding (Wormsley et. al, 1997).

In addition to the variables related to the pupils, the skills and experience of the teacher in teaching braille affect the way braille is taught. Teachers of braille must of necessity know all the symbols and rules of the braille code.

In a study on attitudes of teachers towards visually impaired learners by Wanjohi (2003), the teacher is regarded as the primary intervening professional in the student's life and is responsible for all acts of his growth and development. Teachers of braille play a major role towards determining the quality of braille writing and reading portrayed by the learners.

Both internationally and in Kenya, there is a call for greater emphasis on literacy in braille. Most teachers employed to teach the blind have limited knowledge and skills in braille and they have negative attitudes towards braille as emphasized by Spungin (1996). This also applies to Kenya where the Special Schools for the visually impaired are in dire need of specially trained teachers.

The programme for training teachers of visually impaired children was started at the then Highridge Teachers College in 1980 by Dorothy Fitchner through the efforts of the Christoffel Blinden Mission (CBM) of West Germany in conjunction with the government of Kenya. Later the training of teachers was moved to Kenya Institute of Special Education (KISE) in May 1987 (Ndurumo, 1993). Today, KISE, Kenyatta University and Maseno University are responsible for training teachers handling learners with Special Needs.

Teachers of braille need braille in-service courses to enrich their skills in teaching effective braille. Most of the time, braille teachers are often ill-equipped to teach braille and the blind learners often receive inadequate training in reading and writing braille (Jones, 1996). In a study with the totally blind pupils in Kenya, Okungu (2005) stressed the need for Special Education teachers in helping blind learners to develop accurate braille.

The Koech Report indicates that only 3,003 children out of the 220,000 visually impaired children are enrolled in special education programmes (GoK, 1999). With the current free primary education, this number is expected to inflate. The same report indicates that the quality of braille among blind learners has steadily decreased over the years, possibly because non-experts are in charge of teaching it. Acute shortage of specialized teachers to handle these learners may mean that general literacy for the blind persons will progressively decline.

For the children with VI, Special Education requires at least one and a half to two hours each day for instruction in both writing and reading of braille (Rex, 1994). During examinations, an addition of 33 per cent of the normal time allocation should be given to the VI learners because braille requires more time to read and write. In Kenya, schools for VI learners give extra time at a flat rate of 30 minutes regardless of how long a paper is.

Braille uses contractions to reduce bulk. These should be learnt, memorized and be practiced for mastery achievement. Rex (1994) emphasizes the point that braille requires time and effort and the blind learners should be eager and positive in order for them to become efficient life-long readers and writers of braille. On the same line, Okungu (2005) in her study on braille reading habits recommends that learners who are blind should be given sufficient time to learn and practice braille.

2.5.3 Braille Learning Materials and Equipments

Braille learning tools (braille resources) are vital in enabling a blind person to obtain, store, retrieve and communicate information. It is axiomatic that learners who are blind would derive greater benefit if they became active participants in the braille learning process. This would, to a largely be achieved if they were provided with braille learning resources that meet their individual needs. This was underscored by Moodley (2002), in a study on reading/writing media on the education of blind persons.

An important point to note is related to the differences in the availability of braille and print materials. Because there is less material available for braille writers than for print writers, many braille learners may come to school less well-prepared in their experiences with the written medium than the print writers. If the blind learners have access to braille writing and reading materials, they will have similar opportunities to learn as do the children with normal vision. Wormsley (1997)

stipulates that lack of braille materials can significantly affect the braille writers in academic achievement as compared with the print writers. In developing countries like Kenya, most of the braille equipment and resource materials are imported and their prices are exorbitant. Equally important, the cost of braille production is relatively high. These are major obstacles in enhancing the education for the blind.

Studies done in Kenya reveal that braille learning resource materials are scarce. Songe (2003) in a study on curriculum barriers for the visually impaired established that lack of braille resource materials is a major hindrance to effective teaching and learning of the visually impaired learners. Okungu (2005) also notes that there is a pressing need for providing relevant and adequate braille materials for learners who are blind. She argues that this is a major hindrance to the proper learning of braille. According to Wanjohi (2003), blind learners cannot learn braille effectively unless they are provided with resource materials that fit their needs.

Braille is coded on special braille paper. It is produced on a braille writer/brailler or on a hand-held slate and stylus. Though not popular in Kenyan schools, braille can also be produced by a computer with a braille printer.

The slate and stylus is advocated by many persons who are blind because of its portability and lower cost compared to the braille writer. It is also much quieter in operation (Harley et al., 1997). Writing braille with a slate and stylus can be compared to writing print with a pen or pencil. The stylus embosses dots down through the braille paper, while the slate serves as a guide. To use the slate and stylus (and the pocket frame which is similar but smaller), a braille paper is placed between the front and back sections of the hinged metal frame. The frame is then closed. Writing with the slate and stylus begin at the right hand side of the slate and progresses towards the left since the dots are produced on the underside of the

paper. The page is then turned over to read (Harley et. al, 1997). The accuracy of writing using the slate and stylus depends on the experience of the user and the frequency of use (Dobree & Boultler, 2002). Blind learners should practice using the slate and stylus for them to acquire effective braille.

The Perkins brailler is a mechanical writer, which has nine keys, six of which are used for embossing, each key corresponding to a dot in the braille cell. When the six keys are pressed down, raised letters are embossed on a sheet of braille paper, which is fed manually to the machine (Dobree & Boultler, 1982). The machine embosses dots upwards unlike the slate and stylus. This allows the user to read what he/she has written without having to remove the braille paper from the machine. The learners need to practice writing using the Perkins brailler.

2.5.4 The Learner and the Perceived Difficulties with Braille

The view that braille is a difficult reading and writing medium is fairly common, with the most popular argument being that the braille code is far too complex (Harley, 1997).All letters, digits and symbols of print can be portrayed in braille using various dots combinations. However, to do so, one must follow special rules. Dot combinations may represent more than one meaning and to make it more complex, same configurations may have different meanings in the braille code for Mathematics, Science, English, Music and Kiswahili. This complexity leaves the braille learners confused and with so much to learn and memorize.

Contractions are used in braille to minimize braille volume. Though complicated, Moodley (2002) maintains that so long as contracted braille helps to reduce the amount of written braille, it is important. However, majority of the blind learners lament on the complexity of the braille contractions.

Ndurumo (1993) points out that braille causes confusion and ambiguity, since one symbol may stand for letters, words, punctuation, numbers, musical symbols and so on. He also asserts that braille requires a great amount of remembering and synthesizing which could be unbearable to the learners.

Some braille teachers perceive that braille is a difficult and a tedious learning medium. Such attitudes are alarmingly widespread (Jernigan, 1994). However, teachers of braille must not let the intricacies of the code prevent them from providing literacy learning to those who are capable of learning. However, a critical analysis on the difficulties encountered in learning the various braille codes ought to be undertaken.

2.6 Conclusion of Literature Review

Reviewed literature indicates that braille learning is fundamental for blind persons. Even though this is the case, braille literacy among learners who are blind in Kenya has been on the downward trend. Some studies done in the area of visual impairments have looked at braille learning strategies, braille reading habits as well as the impact of reading/writing media on the education of blind persons. Areas of research that seem to be neglected include assessment and placement of blind children, financing, availability and acquisition of braille resources and the impact of modern technological advances in braille in Kenya. This study focused on the factors that influenced braille learning among blind learners, an area that has not been investigated fully.

CHAPTER THREE
RESEARCH DESIGN AND METHODOLOGY

3.0 Introduction

This chapter discusses the various aspects of research methodology that were used in the study. It encompassed research design and methodology, study locale, target population, sample size and sampling techniques, data collection methods and instruments, pilot study, data collection techniques, data analysis, ethical and logistical considerations.

3.1 Research Design

The study used a descriptive design. Gay (1992) describes descriptive research as a process of collecting data in order to answer questions concerning the status of the circumstances being investigated. According to Mugenda and Mugenda (1999), descriptive research determines and describes a current situation. The design used suited the study in that it sought to describe the existing situation of braille learning in Thika Primary school for the Blind.

The data collected from the actual environment where braille learning occurred were mainly qualitative. The advantage of a qualitative study is that it gives a more holistic picture and a detailed description of societal dynamics including systems, values and perspectives within a given context (Abagi, 1996).

The study focused on the school as a learning environment where interacting elements that influenced braille learning were to be studied. Based on the objectives, it was important to investigate the qualitative details and some quantitative aspects that influenced braille learning among learners who are blind. Interaction among various variables like the teachers' braille teaching background, braille teaching experience, braille teaching methods, adequacy of braille learning

resources as well as the challenges that faced the teachers and the learners were investigated. Interpretations and constructions revolved around the existing realities.

3.2 Research Variables

Mugenda and Mugenda (1999) describe a variable as a measurable characteristic among the subjects.

Independent variables

In this study, braille learners, braille teachers, braille-teaching methodologies and the braille learning resources were the independent variables, factors that influenced braille learning.

Dependent variables

Braille skills displayed by the learners (as an indication of the level of braille literacy) were the dependent variables in this study.

3.3 Study Locale

The study was conducted in Thika Primary School for the Blind in Thika District of Central Province. This is a residential public institution which admits visually impaired girls and boys from all over Kenya. It is a government school, which is sponsored by the Salvation Army Church of Kenya. The learners who are admitted to the school are first assessed and recommended by the Educational Assessment Officer's in the Educational Assessment and Resource Centers.

At the time of study, the school had 222 visually impaired learners who included 148 blind learners and 74 low vision learners. There were 30 teachers and 25 non-teaching staff. The institution had a nursery class; a special class and the primary section which was two-streamed, running from classes one to eight.

Founded back in 1946, the school is the oldest and the largest of its type in Eastern Africa; therefore, it provided a rich source of information that was required for the study. The school admits pupils from all over the country; hence, it formed a suitable representation of learners who are visually impaired in Kenya. Additionally, more than half of the learner population used braille as their main medium of learning. This was favourable because braille learning was the core of the study.

3.4 Target Population

Orodho (2004) defines target population as a set of elements that the researcher focuses upon and to which the results obtained by testing the sample should be generalized. The target population for the study comprised 222 visually impaired learners (148 blind learners and 74 low vision learners) and 30 teachers.

3.5 Sampling Techniques and Sample Size

This study used purposive sampling technique. This technique allows the researcher to use cases that have the required information with respect to the objectives of the study. In sampling, the respondents are chosen according to a certain criteria.

Purposive sampling technique was employed while selecting Thika Primary School for the Blind. The school admits children with visual impairments, that is, learners who are blind and those with low vision. Blind learners use Braille as a mode of learning. The school was, therefore, a favourable target for potential information related to braille learning.

All blind learners in classes three (14) and four (16) were selected as study respondents. This was based on the reality that in those classes, it was considered mandatory for the learners to have gained and mastered braille reading and writing

skills which were assumed to enable them to progress through the upper classes. This level was, therefore, unique in identifying the factors that influenced braille learning among the learners.

The head teacher was included as a respondent based on the principle that she was the executive of the school and answerable to the Ministry of Education (MoE) on all matters related to the teaching and learning of braille in the institution. The braille teachers were purposively sampled because they participated directly in the teaching of braille. They consequently provided first hand information regarding both the teaching and learning of braille in the institution.

The sample size for the study consisted of 30 blind learners, the head teacher and 6 braille teachers. The total study sample thus comprised 37 respondents.

3.6 Research Instruments

The researcher used interview guides, Focus Group Discussion (FGD) guides and an observation guide.

3.6.1 Interview guides

In this study, different interview guides were administered to the head teacher, head of braille and the braille teachers (Appendix A, B and C respectively). Semi-structured interviews were used to collect relevant data. Gall, Bong and Gall (1996) assert that semi- structured interviews involve asking a series of structured questions and then probing more deeply to obtain additional information. Interviews were, therefore, preferred because they had the potential to cover all the dimensions of the study through probing of the respondents. The Interviews also allowed in-depth discussion while still maintaining focus on the key issues.

3.6.2 Focus Group Discussion Guides

Focus group discussion (FGD) guides (Appendix D) were administered to the blind learners in classes three and four. The FGD guide consisted of semi-structured items that captured the views of the learners regarding braille learning, the adequacy and working conditions of braille learning resources and the challenges the learners faced while learning braille.

Each focus group was made up of 7-8 learners who used braille as a learning medium. Since the learners were young, a one-on-one interviewing technique was considered inappropriate, as this would discourage the learners from actively participating in the discussions. In the FGD, the learners expressed their views freely. Any contribution given by a learner triggered thought in another, which assisted in building synergy while discussing issues that were related to braille learning.

3.6.3 Observation Guide

The researcher used an observation guide (Appendix E) to augment data collected from the other instruments. The data gathered were related to adequacy of braille learning resources, working conditions of the braille learning equipments and the general participation of learners during the braille lessons.

3.7 Pilot Study

To assess the clarity and suitability of the research instruments, a pilot study was conducted at St. Lucy's Primary School for the Blind in Meru District, Eastern Province of Kenya. The school was selected because it consisted of a population (learners who were blind) similar to that in Thika Primary School for the Blind. The research instruments were administered to three braille teachers and eight blind learners. The responses to the questions given were analyzed to see if they supplied the appropriate information. The major limitation that was addressed had

to do with language editing in the items of the FGD. Some difficult words were replaced with simple terms to obtain the relevant responses from the respondents.

3.7.1 Reliability

According to Coolican (1996), reliability refers to a measure of consistency in providing similar results on different but comparable occasions. Reliability was determined by administering the instruments to a few respondents similar to those in the actual study. The responses were checked to ensure that they answered the research questions appropriately. Triangulation of methods was applied where views on the same issue were sought from different informants (head teacher, braille teachers and blind learners). Different instruments were also used to gather data from different respondents (Interview guides, focus group discussion guide and the observation guide).

3.7.2 Validity

Validity determines whether an instrument measures what it is intended to measure. To establish the validity of the instruments, opinions from the experts at the Special Education Department and School of Education was sought. This provided useful feedback on the usefulness of the instruments and the suggestions offered were incorporated in the final research instruments.

3.8 Data Collection Techniques

Fieldwork was done in a period of one month. Data from the different cadres of respondents were collected using the appropriate instruments. Data were recorded through writing. Minimal voice recording was done because most respondents seemed uncomfortable with the method.

The interview with the head teacher was conducted in the office whereas those with the braille teachers were administered in the resource room/library. The

interviews with the different braille teachers were administered at different times and days, which depended on the availability of the teachers. In average, the interviews with the teachers took two weeks.

With the assistance from the class teachers, the blind learners from each class (class 3 and 4) were divided into two groups. In class three, each group comprised seven learners, while in class four; each of the two groups comprised eight learners. Mixed groups were constituted and aspects like gender and academic performance of the learners were considered. This ensured balance in the quality of data collected. Guided by the teacher in charge of braille, the specific time to meet the various groups was organized. The group discussions took place in the resource room and each lasted between forty-five minutes and one hour. The discussions were held on different days for every group. Care was taken not to interfere with normal class activities or school schedules.

The researcher organized with the head of braille to attend one braille lesson in class three and another in class four. The observation guide guided the observations that were made.

3.8.1 Data Analysis

The data gathered from the study were mainly qualitative whereas the field notes from the interviews and focus group discussions constituted the bulk of the qualitative data. These were edited for clarifications regarding specific meanings and sentences used by the respondents. This corresponds to Kane (1995), who states that data collected pass through an ordering process that human brains put on them. The ordered data were then inductively analyzed. This entailed putting data into various categories in accordance with the major themes of the study.

Quantitative data were obtained on numbers of blind learners in the different classes, braille teachers and the braille courses attended and the numbers of braille materials and equipments. These data were analyzed using descriptive statistics, measures of central tendency, percentages and ratios.

In this study, the data were discussed within various themes and they incorporated some quotations to capture the perspectives of some respondents. On the basis of the discussions, conclusions were drawn which provided a comprehensive account of the problem under study.

3.8.2 Logistical and Ethical Considerations

The researcher obtained a research permit from the Permanent Secretary in the MoE through the Dean, Graduate School of Kenyatta University before administering the research instruments in the field. Preliminary visits were made to the selected school to establish rapport with the respondents. The researcher explained the purpose of the study and the importance of giving honest responses and suggestions. Since the study included respondents, who were young, informed consent was obtained from the head teacher. Besides, the researcher ensured that the information gathered was kept confidential and only used for the intended purpose of the study.

CHAPTER FOUR
PRESENTATION AND DISCUSSION OF FINDINGS

4.0 Introduction

This chapter presents the findings of the study, analysis and interpretation of data that were collected during fieldwork. The presentation was based on the major themes derived from the research questions that guided the study. These included learners and braille literacy, braille teachers and the teaching of braille, adequacy of braille materials and equipments, teachers' and learners' challenges in teaching/ learning of braille and the teachers' and learners' perspectives on improvement of braille learning.

4.1 Learners and Braille Literacy

In one of the questions, the braille teachers were asked to comment about the braille literacy of the learners. All of them lamented that braille literacy among the learners was wanting. Nevertheless, a few of the learners were said to be good in braille. One teacher said that *it is sometimes quite frustrating to us teachers when we find that nearly no learner can write a sentence without making serious braille mistakes.* Another teacher explained that it was difficult to mark the learners' assignments or exams because of the many braille mistakes that were made. From the discussions with the teachers, it was apparent that it was difficult to understand most of the learners' brailed work. This was because the learners were not following the correct braille rules that could be understood by other braille users. In such instances, the teachers presumed what the learners brailed. As stated by Rex et al. (1995), blind persons should acquire the necessary braille skills to enable them to communicate effectively with other individuals who are braille literate.

According to the teachers, majority of the learners had the misconception that braille rules were complex to master. Hence, they had adopted unorthodox ways of writing braille, which could not be understood well by the other people. This was cited as a major setback to effective braille communication between the teachers and the learners.

When the learners were asked to comment about their braille literacy, they seemed not to be sure whether they were good in braille although they stated that occasionally, the braille teachers complained about their poor braille. They also had a common view that braille was difficult and that they experienced problems of reading other learners' braille.

Asked whether the learners did their braille assignments or did enough braille drilling and practice, the teachers were quick to mention that the learners rarely completed braille assignments and that they had minimal braille drilling and practice. This was attributed to the learners' low enthusiasm to learning braille and lack of enough braille paper. Similar statements were recorded from the learners.

On the issue of attendance of braille lessons by the learners, both the teachers and the learners said that occasional absenteeism occurred. The reason given was that sometimes other extracurricular activities like games, clubs and societies occurred concomitantly with the braille learning time.

During the class observations, the researcher observed that the learners dragged and lost valuable time before settling for the braille classes. When in class, most of the learners made mistakes when answering braille questions though the teachers corrected the mistakes promptly. Besides, majority of the learners were not actively involved in either asking or answering questions during the lesson. The time for teaching braille was short and individualized braille teaching was

minimal. The teachers used the Braille Primer, dictated the braille work to the whole class and gave dot combinations for the difficult words. Some few learners were noted to be slow in taking the dictations while others seemed to be lost. However, the teachers gave short braille assignments during and after every braille lesson.

From the preceding revelations, it can be deduced that braille literacy among the learners was generally low. This concurs with the observation made by GoK (1999) which underlined the low standards of braille literacy among learners who are blind.

4.2 Braille Teachers and the Teaching of Braille

The study investigated the braille related courses that the braille teachers had undertaken, braille teaching experience and the teaching workload. These variables were expected to play a major role in influencing braille learning, either positively or negatively.

4.2.1 Teachers and the Braille Teaching Courses

The braille teaching courses undertaken by the teachers is presented in Table 4.1.

Table 4.1: Braille Courses undertaken by the Teachers

Braille teacher	Braille teaching course undertaken
Teacher 1	Mathematics braille, Kiswahili braille and Music braille
Teacher 2	No braille teaching course
Teacher 3	No braille teaching course
Teacher 4	No braille teaching course
Teacher 5	No braille teaching course
Teacher 6	No braille teaching course

Table 4.1 shows that only one braille teacher had undertaken some short braille teaching courses, whereas the other five braille teachers had not embarked on any

kind of braille training. Two of those teachers relied mainly on the braille they had acquired in their early school days while the rest had learnt braille on their own.

While commenting about the braille teaching courses taken, one teacher mentioned that the appointment of braille teachers was not by virtue of the braille courses undertaken, but was based on other undisclosed reasons. However, the respondent reiterated that there were other teachers not appointed to teach braille, yet they were well versed with braille. Nevertheless, the opinion of the braille teachers was that braille learning would benefit more if the braille-qualified teachers were appointed to teach.

When asked whether they considered braille-teaching courses important in the teaching/learning of braille, all the braille teachers were positive. These findings corresponded with Doake (1995), who observes that braille qualifications among braille teachers promote braille learning. In spite of this, the respondents agreed that they had not given braille training the seriousness it deserved. The lethargy in upgrading their skills was mainly attributed to the high cost of training in colleges and universities, which most of them said they could not afford.

The teachers also complained that at the school level, no in-service braille courses or capacity building workshops were organized. This was partly blamed to the school administrations' reluctance in reaching out for such opportunities. The teachers were of the opinion that such courses would greatly promote braille teaching/learning at the school.

4.2.2 Braille Teaching Experience

The braille teachers had varying braille teaching experiences as indicated in Table 4.2

Table 4.2: Braille Teaching Experience

Braille Teacher	Experience in teaching Braille
Teacher 1	15 years
Teacher 2	7 years
Teacher 3	8 years
Teacher 4	10 years
Teacher 5	20 years
Teacher 6	6 years

From table 4.2, the average braille teaching experience was 11 years, indicating that four teachers had a teaching experience below the average. The revelation that the teachers had different teaching experiences was explained differently. First, the teachers thought that it was dependent on the duration that the teachers had taught braille at the school. The second factor was related to the criterion of selecting braille teachers in the school. From the discussions held, it came up that any teacher could be selected to teach braille regardless of whether he/she was good in braille or not.

During the interviews, one question sought to clarify whether braille-teaching experience had an influence in the learning of braille. While responding to this, one teacher argued that:

> It is not compulsory to have undertaken a course or training in braille in order for one to teach braille effectively, all it requires is the teaching experience, which exposes the teacher to the actual challenges of braille teaching (Teacher 1, 17th October, 2007).

Another teacher gave similar sentiments but noted that although braille learning benefited when taught by experienced braille teachers, the other teachers also needed to gain similar braille teaching exposure. With further discussions, all the braille teachers were in agreement that both the braille teaching experience and the qualifications attained through braille teaching courses were contributory factors to effective braille learning. This finding concurs with Wittenstein et al., (1996) who states that high braille qualifications and braille teaching experience promote braille learning.

According to the researcher, the part played by the braille teaching experience ought not to be under-emphasized. The longer the teacher is engaged in braille teaching, the more he/she is exposed to braille, and the more likely he/she becomes effective in teaching braille. This, if combined with the skills and knowledge gained through braille courses, would gear braille learning forward.

4.2.3 Teachers' Workload

Data gathered from the braille teachers showed that blind learners in standard one were taught simple but important braille skills. The actual braille teaching lessons were from Standard two and continued to Standard seven. Table 4.3 shows the distribution of the blind learners in the various braille classes.

Table 4.3: Distribution of Learners in the Braille Classes.

Class	Girls	Boys	TOTAL
Std 2	7	9	**16**
Std 3	2	12	**14**
Std 4	4	12	**16**
Std 5	8	6	**14**
Std 6	6	8	**14**
Std 7	7	5	**12**
TOTAL	**34**	**52**	**86**

As can be observed from Table 4.3, 86 blind learners (34 girls and 52 boys) from Standard two to Standard seven were undertaking braille lessons at the time of the

study. Six braille teachers had been appointed to teach those classes. Among them, two taught Mathematics braille, two taught English braille and two taught Kiswahili braille. The distribution of the braille classes amongst the braille teachers is shown in Table 4.4

Table 4.4: Distribution of Braille Classes among Braille Teachers

Braille taught	Teacher	Class taught
Mathematics braille	Teacher 1	5,6 and 7
	Teacher 2	2,3 and 4
English braille	Teacher 3	2,3 and 4
	Teacher 4	5,6 and 7
Kiswahili braille	Teacher 5	2,3 and 4
	Teacher 6	5,6 and 7

As can be observed from table 4.4, each braille teacher had three braille classes to teach besides teaching other regular subjects. This meant that the teachers had an additional teaching workload. The head of braille pointed out that the school had organized to partly cater for the heavier workload. The braille teachers who taught braille to the upper classes (Standard 5, 6 and 7) had their overall teaching workload reduced to 23 lessons per week instead of the 28 lessons. For those teachers who taught braille to the lower classes (Standard 2, 3 and 4), they had 27 lessons every week as opposed to 31 lessons for the other teachers who did not teach braille. Even though this was the case, the braille teachers still felt that they had a heavier teaching workload as compared to the other teachers. Besides, they argued that braille teaching was more demanding compared to the teaching of other subjects.

While probing the braille teachers, it became clear that some of the braille teachers were not enthusiastic in teaching braille. They termed braille teaching as an unrecognized and a non-rewarding responsibility, when they compared themselves to their colleagues who did not teach braille. They however felt that if all the

teachers followed up and checked the learners braille as they taught their subjects, great achievement would be realised in braille learning.

The researcher also enquired about braille teaching time. It was interesting to note that it was the responsibility of the braille teachers in the various classes to organize when to teach braille. This was due to the fact that braille was not allocated teaching time on the timetable. The teachers mainly scheduled braille classes during preps from 3.10 pm to 4.30 pm or any other available free time. The teachers complained about the braille teaching time arguing that sometimes it could be occupied by extra-curricular activities like games and clubs. This significantly lowered the braille teaching time. The teachers also felt that they were being overworked since they were to schedule braille classes for three different classes, which consumed most of their free time. One teacher mentioned that sometimes it was inevitable to skip braille classes due to commitments or fatigue after classes. This was made worse by the revelation that the teachers were left on their own to plan for their braille classes at a time when the other teachers had gone home.

When asked to comment about the braille teaching time, the head of braille mentioned that there were no laid down guidelines to channel the teaching of braille in the school. He however expressed his satisfaction that the teachers were self-regulating and that they taught braille as expected.

The braille teachers expressed that the braille-learning needs of individual learners were very diverse, saying that some required intensive braille teaching and follow up. They however regretted that they very rarely gave individualized attention to the learners mainly because of the limited contact time. They noted that this partiality was pulling down the braille literacy among the learners.

From the data collected, it was apparent that the braille teachers were discontented with the overall teaching workload, and their braille teaching morale was down. For that reason, it would be better to engage more teachers in the braille teaching exercise to allow fair distribution of teaching workload and to offer quality service to the learners.

4.3 Adequacy of Braille Materials and Equipments

As noted by Wanjohi (2003), braille materials and equipments are very essential for efficient braille learning. The respondents were therefore asked questions aimed at establishing the adequacy of the braille materials and equipments. These included braille machines, slates and styluses, braille papers, erasers, and braille textbooks. It was also found necessary to explore the working conditions of the braille learning resources to determine their worthiness for braille learning purposes.

4.3.1 Adequacy and Working Conditions of Slates and Styluses

From the observations carried out, slates and styluses were found out to be the main braille resources used for writing braille in the school. The head teacher revealed that the slates and styluses were adequate and given to learners from standard two to six although were reported to be lost. The teacher expressed concern on the rate at which the slates got damaged or lost and predicted inadequacy in the near future. She also noted that once damaged, the styluses and some slates emendable or took too long to be repaired due to lack of a qualified braille technician.

The researcher made an impromptu visit to a store that housed some damaged braille equipments. It was noted that there were eleven damaged slates but no styluses. When consulted, the person in charge said that most of the damaged slates and styluses were discarded since they could not be repaired. However, there

were no records available to indicate the actual figures of the discarded slates and styluses.

During the focus group discussions, the researcher probed the learners in order to find out whether the braille learning resources were available and adequate. One learner said that sometimes there were no slates and the learners had to use pocket frames. Nevertheless, all the learners preferred the use of slates as opposed to the pocket frames. They argued that the pocket frames were too small and one had to keep adjusting the braille paper to accommodate more space for brailing. To the learners, this wasted a lot of time slowed the pace of braille learning.

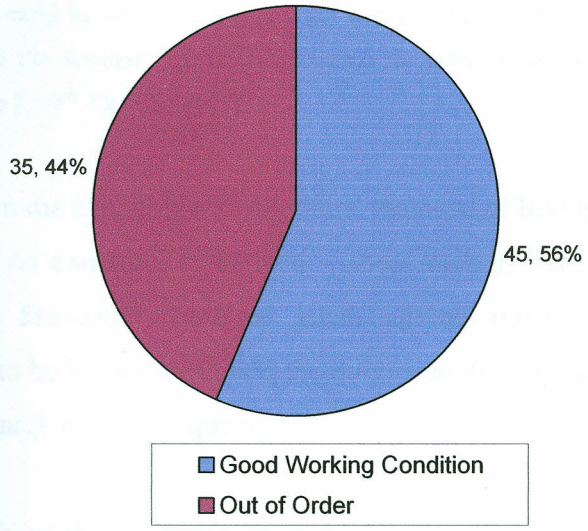
During the braille lesson observations, all the learners in standard three and Standard four had slates and styluses. Nevertheless, among the slates that were being used, an average of two slates in each class had some faults, for instance being broken. However, the learners used the slates in that condition although they dragged behind while brailing.

From the foregoing outcomes, slates and styluses were the main braille learning resources used in the school although their numbers were dropping because of damages and loses. This is a clear prediction of inadequacy in future especially because there were no replacements.

4.3.2 Adequacy and Working Conditions of Braille Machines

To establish the adequacy of braille machines in the school, data were obtained through observations as well as from the respondents. At the time of the study, there were 80 braille machines at the school. Among those, 45(56%) were in good working condition whereas 35(44%) were out of order as shown in Figure 4.1.

Figure 4.1: Available Braille Machines and their Working Conditions



Data from figure 4.1 indicates an almost equal number of working (56%) and out of order (44%) braille machines. On the other hand, the ratio of blind learners to operational braillers was 148:45 (3:1). This showed that the number of braille machines available was far much below the number of the blind learners in the school. The head teacher explained this differently. First, it was noted that the braille machines were expensive and the school could not afford to buy for all the learners. Secondly, the braille machines and their spare parts were said to be rare and hard to get locally. Thirdly, most of the learners handled and used the machines inappropriately leading to damages. Although the braille machines were said to be better to use than the slates and the styluses, the school was only able to give them to learners in Standard seven and eight. This was confirmed during braille lesson observations in Standard three and four where no learner was seen using the braille machines.

According to one teacher, it was unfair to give braille machines to the learners in Standard seven and eight. He said,

> What is the point of introducing braille machines at such a late stage? It is better to introduce them early to allow the learners get accustomed to them. After all, this will greatly improve the learners' speed and accuracy in both the reading and writing of braille. (Teacher 2, 17th October 2007).

When commenting on the availability of braillers, the head of braille stated that the school mostly relied on donations from well-wishers such as individuals, African Braille Centre and Standard Chartered Bank among others. However, the donations were said to be inconsistent, and the donors could only donate a few at a time, relative to the large number required.

To beef up the supply of the machines, the school had encompassed several ways of appealing for donations from the well-wishers. One way was through the Salvation Army Church, which played a major role of soliciting for donations either locally or overseas. In addition, during school functions, the learners through their teachers dramatized, sang or recited poems that delivered messages of their requirements. In several occasions, addressees honored the requests.

Through probing, one teacher claimed that *there is no need of struggling to acquire braille machines. After all, our learners make do with the much cheaper slates and styluses.* In spite of such dissenting sentiments, all the other respondents (both teachers and learners) agreed that braille machines were a little advanced and better to use than the slates and styluses. To justify further, they underscored that if the braille paper is removed while using the slate and stylus; it becomes difficult to re-align it to its original position because the braille characters are embossed from right to left but are read from left to right.

As far as the working conditions of the braille machines were concerned, the braille teachers regretted that most of the machines were not in good working conditions. This was associated to lack of a qualified braille technician to deal with the maintenance and repairs of the machines. Due to this, most of the broken-down braille machines were kept in a store.

4.3.3 Adequacy of Braille Papers

From the data collected from the teachers and the learners, braille papers were quoted as being very crucial in the learning of braille. It came up that braille learning geared towards literacy required ample braille papers for constant braille drilling and practice, note taking and for braille assignments. According to Rex (1994), learners should practice braille writing on their own, so as to become effective braille writers and readers.

Although of prime importance, braille papers were quoted to be expensive and only available in selected and isolated bookshops. Commenting on the adequacy of braille papers, the teachers observed that they hardly got enough braille papers to take them through one school term. In times of scarcity, the learners were issued with one braille paper to use for the regular subjects and none for braille lessons. Under such circumstances, the braille teachers opted not to teach braille arguing that it was more of a hands-on than a theoretical subject was, hence, they could not teach without braille papers.

When the scarcity of braille papers was severe and persistent, the teachers asked the learners to write on both sides of the braille paper, a practice that rendered brailed work unreadable and untidy. Nevertheless, all the teachers reiterated that braille ought to be written on one side of the braille paper for legibility and neatness.

Some teachers blamed the scarcity of braille papers on improper storage and wastage by the learners. The researcher confirmed this during the class observations when some unused braille papers were found littered on the class floor.

When asked to give their views on the adequacy of braille papers, one learner purported that *sometimes* the *teachers give us one braille paper;* and *the notes do not fit.* On the same issue, another learner complained that *sometimes when you ask the teacher for an extra braille paper, he tells you that he does not have or he will tell you to use both sides of a braille paper.* All the learners suggested that they should be given at least three braille papers to allow for more braille drilling.

The researcher observed that the learners were given an average of two braille papers per braille lesson. One braille paper was used during the lesson, while the other was meant for the assignments and further braille drilling and practice.

4.3.4 Adequacy of Braille Textbooks and Braille Teaching Methodology

Braille textbooks for both the teachers and the learners are important tools in the teaching and learning of braille. They provide useful information and specialized reading and reference on a variety of topics in braille. The study aimed at finding out if the school had relevant and adequate textbooks for the teaching/learning of braille.

From the data gathered, the Braille Primer was the only braille reference book used by the teachers. Despite the great need for the textbook, the braille teachers regretted that the school owned only one Braille Primer that was shared between the six braille teachers. Furthermore, the book was in print, which disadvantaged the braille teachers who were blind. The learners did not have Braille Primers hence; the teachers dictated all class work and other braille assignments. The

braille teachers were optimistic that if the Braille Primers were increased, individual braille learning would be encouraged and overdependence on teachers would be discouraged.

During the braille lesson observations, the teachers were using the Braille primer to guide their teaching. However, the learners did not have any textbook to refer to but totally depended on the teachers instructions. Also observed was that most of the learners kept asking the teachers to repeat the braille dictations, which consumed a lot of the braille teaching time.

The head of braille reiterated that the main reason for not having the Braille Primers for the learners was that it took long for print textbooks to be transcribed into braille. This responsibility of transcribing was vested on Kenya Institute for the Blind (KIB), which was said to have many other transcriptions to do. It was interesting to note that the school owned a Braille embosser for transcribing though none of the employees in the institution had the expertise of operate it.

The researcher observed that the teachers attended the braille classes in time, practiced group teaching and hardly got time to offer individualized attention to the learners. This contravenes the views of Kirk (2000) that braille the braille teaching methodology should be individualized and learner centered to cater for the unique needs of the learners.

Majority of the teachers found it convenient to dictate braille assignments and corrections (through pronouncing the dot locations within the braille cell) as the learners counterchecked. However, the teachers gave assignments after every lesson for further braille drilling and practice.

4.3.5 Adequacy of Braille Erasers

All the respondents were in agreement that the school did not provide braille erasers to the learners. In spite of this, most respondents reiterated that erasers were necessary resources for attainment of neat and clear braille.

A few respondents were of the opinion that erasers were unnecessary since the learners mostly used the slate and stylus for brailing. They argued that the use of the slate and stylus reduced the need for erasers because; it was easier to cancel out the work using continuous dots instead of removing the braille paper to erase. Some teachers regretted that due to lack of erasers, many learners had resulted to using their fingers to erase.

During the braille lesson observations, the researcher noted learners using either of the two methods. However, the consequential brailed work looked unsightly and poorly legible. None of the learners was seen using an eraser.

The preceding revelations on the adequacy and working conditions of the braille learning resources and equipments in the school confirm the findings by GoK (2005), that, the facilities and equipment required by learners who are blind are usually inadequate, expensive and not locally available.

4.4 Teachers' and Learners' Challenges in Teaching/Learning Braille

Question 5 of the research instruments asked for the challenges that the teachers and the learners faced in the teaching/ learning of braille. Both the teachers and the learners were of the opinion that braille learning faced major challenges.

4.4.1 Braille Teaching Courses

The teachers explained that the school did not spearhead any braille in- service courses or capacity building workshops for the teachers. This was closely linked to the reason why the teachers had not advanced their braille teaching skills.

4.4.2 Braille Learning Materials and Equipments

Adequate braille learning resources are necessary for drilling and practice of braille. However, inadequate, insufficient or breakdown of braille equipments were a major hindrance to proper teaching/ learning of braille. This situation was further worsened by lack of a qualified braille technician to deal with the maintenance and repairs of the braille equipments. Sometimes the braille teachers had to repair the braille machines, though unskillfully.

Many of the learners readily disclosed that the low morale in learning braille was a result of lack of braille learning resources. Definitely, this was a hindrance to efficient braille learning.

4.4.3 Braille Teaching Time

Braille was not included in the school syllabi and neither was it time tabled like the other regular subjects. Because of this, braille was taught after classes, which was unfavorable and inconveniencing to the teachers. Furthermore, braille-learning time was sometimes interrupted by other school activities like games and clubs. This indicated that the teachers did not have enough time to attend to all the braille difficulties that the learners encountered. At the same time, the teachers were unable to offer individualized attention to the learners.

4.4.4 Learners and Braille Learning

Learners were not allowed to carry their braille learning tools like braillers, slates and styluses when going for their vacations. This denied them the much-needed braille practice for mastery.

Another challenge was that the braille learners were not examined in braille. Examinations are known to keep the teachers and the learners on their toes as they target to achieve. Without the examinations, the braille teachers and the learners had nothing to look up to hence, lacked the enthusiasm in teaching/learning braille.

Braille learning augments the teaching of the other subjects. Nevertheless, braille teachers complained that while they insisted that the learners should use correct braille, some colleague teachers were reluctant to implement this while teaching their subjects, or they were braille illiterate. This lowered the braille teachers' determination of making the learners braille literate. As stated by Schroeder (1989), cooperation of teachers in the schools for the visually impaired plays a major role in enhancing braille literacy.

4.5 Teachers' and Learners' Perspectives on Improvement of Braille Learning

Ideas were sought from the head teacher, teachers of braille and the learners on appropriate measures that could be taken to enhance braille learning. Their suggestions included the following:

4.5.1 Resource Mobilization

Both the teachers and the learners were of the opinion that the school should constantly look for ways of boosting the braille learning resources in the school. This could be from donors and other well-wishers like Sight Savers, Kenya Union of the Blind, Standard Chartered and Barclays Bank

4.5.2 Maintenance of Braille Equipments

The respondents thought that the challenge of maintenance and repair of braille equipments could be solved through employment of a qualified braille technician. This could partly solve the problem of inadequacy of braille equipments like braille machines and slates.

4.5.3 Policy Formulation

Due to the fact that braille did not have a syllabus nor was it examinable, the teachers did not have clear guidelines on how to teach or examine it. Therefore, the teachers proposed that the government through Kenya Institute of Education (KIE) should have clear policies regarding the teaching and examining of braille. This would make the teachers and the learners more committed in teaching/learning braille.

4.5.4 Teacher and Braille Teaching

The school administration, through the relevant Municipal Education Office should organize braille in-service courses and capacity building workshops for all the teachers in the school. This would increase the teachers' knowledge and skills in braille teaching.

The school administration should also ensure that more teachers are engaged to teach braille. This would inculcate teamwork and individualized braille teaching, as well as lessen the workload of the six braille teachers.

4.5.5 Creation of Braille Learning Interest

To create braille-learning interest, both the teachers and the learners suggested creation of braille clubs, braille discussion groups, braille competitions and braille peer teaching which would encourage sharing of ideas amongst the learners.

The respondents also recommended that the learners should be allowed to carry the slates, styluses and braille papers when going for long vacations. This would encourage self-driven braille drilling and practice.

The practicality of the abovementioned recommendations by the respondents are worthy of reflections. For instance, looking for donors to boost the braille resource base may sound viable. However, getting people or willing organizations to give donations is quite a task. This therefore means that the government ought to be in the forefront in ensuring that all the required braille resources are supplied to the learners.

Other recommendations like the introduction of braille clubs to facilitate braille discussions are viable. Another recommendation like making sure that learners go home with the braille learning resources for drilling and practice is sound but can become tricky especially if the learners lose the resources. Nevertheless, most of there commendations are possible if the government, school, teachers, parents and the learners collaborated.

CHAPTER FIVE
SUMMARY, CONCLUSIONS AND RECOMMENDATIONS

5.0 Introduction

This chapter presents the summary of the main findings, conclusions drawn and recommendations for the improvement of braille learning. The chapter concludes with suggestions for future research.

5.1 Summary

The following section looks at a summary of the main findings derived from the study. It covers sections like learners and braille learning, braille-teaching courses undertaken by the teachers, braille teaching experience and teaching workload, adequacy and working conditions of braille learning materials and equipments. It also encompasses the challenges teachers and the learners encounter, and their perspectives of improving braille teaching/learning.

5.1.1 Learners and Braille Learning

The study established that braille literacy among the learners was generally low. Most of the learners thought that braille rules were difficult and hence had adopted their own ways of writing braille rather than following the correct braille rules. Due to this, the teachers had problems in understanding the brailed work and sometimes had to guess what was embossed.

The learners wasted valuable time before settling for braille lessons and they were not fully participatory. Teachers gave adequate braille assignments during class time and for further braille drilling and practice. However, the learners did minimal braille drilling and practice on their own, and rarely completed the assignments.

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5.1.2 Braille teaching courses, Teaching experience and workload

The findings regarding the number of braille teachers in the school established that there were six braille teachers. Among them, two taught English braille, two taught Mathematics braille and two taught Kiswahili braille. However, the appointment of the teachers was not based on the braille teaching courses taken. Nevertheless, all the teachers agreed that although this was the case, braille-teaching courses contributed positively to braille learning. The teachers regretted that the school had not offered them any braille in-service course or training to improve their braille skills.

The findings indicated that only one of the braille teachers had undertaken short courses in Kiswahili braille, Music braille and Mathematics braille. The other five braille teachers owed their braille teaching skills on the basic braille knowledge they had acquired in school/ college or relied wholly on the braille they had learnt on their own.

The average braille teaching experience was eleven years. This showed that four teachers had a teaching experience below the average. However, the teachers approved that braille-teaching experience was necessary since it enhanced the teachers' ability to handle braille challenges more effectively.

It also emerged that braille lessons were not time tabled, hence, the teachers taught braille after classes. Additionally, there were no clear laid down guidelines on the teaching/learning of braille and the teachers were left to organize their braille classes. The braille classes were occasionally interrupted by other activities like games and clubs, which were sometimes scheduled to take place at the same time. In addition, braille-teaching time was insufficient to allow the teachers to offer individualized attention to the learners.

Regarding the teaching workload, it came up that among the six braille teachers, two taught Mathematics braille, two taught English braille while two taught Kiswahili braille. Over and above the regular subjects that the teachers taught, each of them had an extra three braille classes to teach which suggested a heavy teaching workload. This effect pulled down the teachers' enthusiasm in teaching braille.

5.1.3 Adequacy and Working Conditions of Braille Learning Resources

Braille teachers and the learners felt that braille machines/braillers, braille papers, slate and styluses, braille erasers and brailed textbooks were all necessary for effective braille teaching/learning. However, braille machines, braille papers, braille textbooks and braille erasers were inadequate, which was mainly attributed to their high costs as well as being locally unavailable. To some extent, the learners were said to have lost or damaged some braille resources.

The study found out that majority of the learners in the school used slates and styluses. However, the number of slates and styluses were decreasing because of emendable damages or losses.

Although the teachers suggested that braille machines were better to use than the commonly used slates and the styluses, the working braille machines in the school were only forty-five, used by learners in Standard seven and Standard eight.

As for the braille erasers, it was observed that though both the teachers and the learners considered them necessary in braille learning, the school did not have them. Following this, the learners had devised their own ways of erasing braille using their fingers or canceling out the work using continuous dots. This rendered the brailed work untidy and poorly legible.

The study established that the learners lacked the necessary brailed textbooks to guide them in the learning of braille. The teachers on the other hand shared one textbook, the Braille Primer. As a result, the learners wholly relied on the teachers for all braille instructions, mainly administered through dictations. Surprisingly, the school possessed a braille embosser though no one in the institution knew how to operate it.

From the respondents' sentiments, braille papers were rarely enough for the day-to-day requirements. Sometimes the learners had to write on both sides of the braille paper or sometimes do without them. The inadequacy of braille papers was mainly associated to the high cost of braille papers, and to a lesser extent on wastage and improper use by the learners.

The teachers and the learners agreed that braille-learning resources contributed heavily in making braille learning more real and increased the learners' motivation and understanding of braille concepts. Inadequacy and unavailability of essential braille resources however denied the learners their rightful chance of practicing braille, which was vital for the attainment of braille literacy.

5.1.4 Braille Learning Challenges

The teachers and the learners gave several challenges that influenced the teaching and learning of braille. The main challenges that the braille teachers faced included lack of in-service training and capacity building workshops, inadequate braille teaching time and insufficient braille teaching resources.

The learners encountered challenges like scarcity of braille learning resources, insufficient braille learning resources and interruption of braille learning time and low motivation towards braille learning.

5.1.5 Teachers' and Learners' Perspectives on Improvement of Braille Learning

The respondents suggested some recommendations to enhance braille learning. These included clear policy formulation regarding the teaching/learning braille, in-service braille training for teachers, vigorous sourcing for donors, creation of braille learning interest and the employment of a qualified braille technician.

5.2 Conclusions of the Findings

The general indication from the findings was that braille literacy among the blind learners in Thika Primary School for the Blind was wanting. The learners low enthusiasm in learning braille, the minimal braille drilling and practice, failure to complete braille assignments and the many braille writing mistakes were some of the factors which were undermining the process of effective braille learning in the school.

It was also evident that the teachers had not received relevant braille in-service training to boost their braille teaching skills and knowledge. Additionally, braille-teaching experience was quoted necessary for effective braille teaching.

The school experienced inadequacy of braille learning materials and equipments like braille machines, slates and styluses, erasers, braille papers and the braille textbooks. The reasons for inadequacies included their high costs and not being available locally.

In the light of the findings, there were no laid down policies regarding the teaching/learning of braille. As a result, braille teaching was not guided by a syllabus and braille was not examined. Due to this, the teachers and the learners enthusiasm towards teaching/learning was low.

5.3 Recommendations

Based on the study findings and in relation to the braille learning process in Thika Primary School for the Blind, the following recommendations have been made for consideration by the relevant persons, authorities and other stakeholders.

5.3.1 Recommendations to the School Management

As can be drawn from the findings, some braille learning limitations could be solved at the school level. These limitations cover inadequacy of braille learning resources, braille-teaching courses and the interest in both teaching and learning braille.

One way of dealing with inadequacy of braille learning resources would be to aggressively source for donors and well-wishers to boost the supply. This could be done successfully through the Schools' Board of Governors and the sponsor, the Salvation Army church. In addition, the school can liaise with the African Braille Centre, which trains personnel on repair and maintenance of braille equipments like braillers, so that they get a qualified braille technician.

The teachers have the responsibility of sensitizing the learners regularly on the appropriate use, care, maintenance and storage of the various braille learning resources. This will guarantee lesser purchases and longer lifespan of the braille resources. The school can also increase the number of braille reference books by employing or hiring a qualified person to train the teachers on the use of the braille embosser.

To elevate braille-learning interest among the learners, the braille teachers should introduce braille clubs, braille discussion groups, braille competitions and braille peer teaching. The teachers should be the patrons of the various groups to help

them steer forward. This will encourage the learners to embrace braille as part of what they require in their communication.

Improvement of braille teaching should entail continuous skills upgrading for teachers. However, lack of opportunities for in- service training has denied the teachers the chance to enhance their skills beyond those acquired during their pre-service training. The school administration should therefore organize in-service braille courses for the braille teachers. These will update the teachers on the current and upcoming developments in braille as well as make them more effective and innovative in teaching braille.

5.3.2 Recommendations to Kenya Institute of Education (KIE)

A closer look on braille learning in Thika School for the Blind points to near negligence from policy makers, especially on the part of KIE. The school lacks clear guidelines and support on how braille ought to be taught. To make it worse, there is no laid down syllabus related to braille teaching, hence, it is not time tabled and it is taught at odd hours. This can nevertheless be unraveled through implementation of a curriculum that is child centered and one that embraces a braille syllabus.

5.3.3 Recommendations to the Teachers Service Commission (TSC)

The study established that some teachers joined Thika Primary school for the Blind without prior braille background, yet they were expected to teach braille. This insensitivity could totally be blamed on the TSC whose responsibility is to deploy teachers to institutions where their services benefit the learners. The government continues to train primary school teachers in Special Education to improve their capacity. Therefore, the TSC should endeavor to deploy qualified braille teachers to the schools to promote braille literacy among the learners.

5.3.4 Recommendations to Kenya National Examinations Council (KNEC)

A keen check on the learning process at the school showed that braille was not viewed with much significance like the other regular subjects. Less emphasis was accorded to braille since it was not examinable. In actual sense, the demands placed by examinations create greater keenness in both the teaching and learning and no wonder, the morale of both the teachers and the learners were low.

The Kenya National Examinations Council should therefore conduct braille examinations in class 8 and award grades to the learners. This will go a long way in encouraging the braille learners to become more zealous in learning braille as well as compel the teachers to become more committed in teaching braille.

5.4 Suggestions for Further Research

Deducing from the discussions of the findings of this study, the researcher has suggested the following possible areas for further research.

1) A study to investigate the factors that influence the acquisition and availability of braille learning materials and equipments in the institutions for the visually impaired.
2) Investigating the relationship between braille literacy and the general academic performance of the learners.
3) An intensive study to find out the difficulties encountered by the learners in learning various braille codes.

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APPENDIX A

INTERVIEW GUIDE FOR THE HEAD TEACHER

1.Preliminaries

a) How long have you been the head of this institution?
b) Which braille courses have you undertaken?

Main question/ Issue	Probing Notes
2. What teacher related factors influence the learning of braille?	▪ Number of braille teachers, braille qualifications and experience in braille teaching. ▪ Whether teachers of braille are adequate and teaching workload. ▪ Positive or negative concerns related to teaching of braille.
3. Which learner related factors would you say contribute positively or negatively to braille learning?	▪ Whether they show interest in learning braille and reasons ▪ Whether the learners can be said to be braille literate.
4. Does the school have enough braille learning resource materials?	▪ Adequate and inadequate braille resources. ▪ Reasons associated with the presence or absence of the resource materials.
5 a. What do you think are the major challenges that face teachers and the learners in teaching\learning braille respectively? b. What would you recommend to enhance braille learning among the learners?	Related to the school, teachers and learners.

APPENDIX B

INTERVIEW GUIDE FOR THE HEAD OF BRAILLE

1. **Preliminaries**
   a) When did you join this school?
   b) How long have you served as the head of braille and how long have you taught braille?

Main question/issue	Probing Notes
2. According to your own views, what teacher related factors influence the learning of braille in the school?	▪ Number of braille teachers, their braille qualifications and experience in teaching braille. ▪ Braille courses/seminars attended ▪ Braille teachers teaching workload. ▪ Number of learners per braille class ▪ What time braille is taught ▪ Whether teachers are committed in teaching braille. ▪ Positive or negative comments regarding braille teaching.
3. In what ways do you think learners contribute to their being literate in braille?	▪ Comment on learners' braille proficiency ▪ Any complaints or compliments raised by teachers regarding their braille literacy. ▪ Learner's enthusiasm in learning braille and possible reasons.
4. What would you comment about the adequacy of braille learning resources and their contribution to braille learning?	▪ Available braille learning resources ▪ Unavailable braille resources ▪ Condition of the existing braille resources. ▪ Reasons for presence or lack of resources
5) a. What are the challenges facing teachers and the learners in teaching/learning braille? b. What would you recommend in order to enhance braille literacy among the learners?	Related to the school, teachers and the learners

APPENDIX C

INTERVIEW GUIDE FOR THE BRAILLE TEACHERS

1. **Preliminaries**
   a) What braille qualifications do you possess?
   b) How long have you taught braille?

Main question/ Issue	Probing notes
2) a. Which braille learning resources are available? b. Would you say that the available braille learning resources are adequate for braille teaching/learning?	▪ Range of available resources. ▪ Unavailable resources, reasons ▪ Working condition of the existing braille resources
3. What would you consider to be the main teacher factors that affect braille learning?	▪ Teacher qualifications. ▪ Braille courses/seminars attended ▪ Whether braille training/experience was relevant in teaching braille ▪ Number of braille learners per class and the effects ▪ What is liked about the teaching of braille ▪ What is not liked about the teaching of braille ▪ What time braille is taught
4. Do the learners play a part in as far as acquisition of braille literacy is concerned?	▪ Whether the learners are eager in learning braille, why? ▪ Do the learners ask questions, do assignments and corrections? ▪ Do the learners do braille practice? ▪ Are the learners braille literate, why?
5) a. Which challenges do the teachers and learners face in teaching/learning braille? b. What can be done to enhance braille learning?(By who?)	▪ Related to the school, teachers and the learners.

APPENDIX D

FOCUS GROUP DISCUSSION GUIDE FOR THE LEARNERS

Researcher's notes

- Researcher and the learners introduce themselves
- Researcher explains the purpose of the study
- Researcher describes the methodology of the discussion
- Researcher leads the discussion and intervenes with short narratives to enhance attention span

1. Ice Breaker
   a) How long have you been learning braille?
   b) Do you think it is important to know how to read and write braille?
   c) Is everyone in your class able to read and write in braille?
   d) Do you think you write braille the way it should?
   e) Are you sometimes unable to read braille written by another person?

Main question/ Issue	**Probing notes**
2. a) Do you look forward to the braille lessons? Why? b) What are some of the factors that have assisted you in learning braille? c) What are some of the things that can make you not enjoy learning braille?	i. What they like/not like about braille ii. What time braille is taught iii. Whether they think the time for learning braille is enough. iv. Whether teachers mark their assignments and do corrections
3. Do you have enough braille learning materials for use during lessons	i. Materials / resources available ii. Working conditions of braille resources iii. Materials not available
4. What else can you say about braille learning? 5. What do you think should be done to make you be very good in braille? (By who and when?)	i. In relation to time allocation, teachers and braille resources ii. Any other comments related to braille learning.

APPENDIX E

OBSERVATION GUIDE

Class.....
Date.....
Time.....
No. of learners present.....

1. How many learners have/do not have:
    i) Braille machines
    ii) Slates and styluses
    iii) Braille papers
    iv) Braille primer or other braille learning textbook
    v) Erasers

2. General working conditions of braille learning resources
    i) Braille machines
    ii) Slates and styluses
    iii) Braille primers or other textbooks

3. Participation of the learners during the lesson
    i) Asking and answering of questions
    ii) Doing assignments
    iii) General class involvement

4. Methods of teaching employed
    i) Individualized or group teaching
    ii) Methods of assessment