

**DETERMINANTS ENHANCING TEACHERS' PROFICIENCY IN  
ENGLISH BRAILLE: CASE OF PRIMARY SCHOOL FOR THE  
BLIND, KIAMBU COUNTY - KENYA**

**KILINGII MARTHA KAGENDO**

**E55/CE/21936/2010**

**A THESIS SUBMITTED IN PARTIAL FULFILLMENT OF THE  
REQUIREMENTS FOR THE AWARD OF A DEGREE OF  
MASTER OF EDUCATION (SPECIAL NEEDS EDUCATION) IN  
THE SCHOOL OF EDUCATION OF KENYATTA UNIVERSITY**

**MARCH, 2020**

## DECLARATION

This thesis is my original work and has not been presented for a degree or any other award in any other University

**Signature:** \_\_\_\_\_ **Date:** \_\_\_\_\_

**Kilingii Martha Kagendo**

**E55/CE/21936/2010**

SUPERVISORS: We confirm that this thesis has been developed under our supervision:

**Signature:** \_\_\_\_\_ **Date:** \_\_\_\_\_

**Dr. Jessina Muthee**

Department of Early Childhood and Special Needs Education,  
Kenyatta University.

**Signature:** \_\_\_\_\_ **Date:** \_\_\_\_\_

**Dr. Chomba Wa Munyi,**

Department of Early Childhood and Special Needs Education,  
Kenyatta University.

## **DEDICATION**

This thesis is dedicated to my husband Samson Muoki, my children; Abby Mutheu, Pearl Nkirote, Keziah Dhahabu, Nemsi Faraja, Longinus, Marijani, my late Parents (Muthoni and Nabea) and my siblings.

## **ACKNOWLEDGEMENTS**

I sincerely acknowledge my supervisors Dr. Chomba Wa Munyi and Dr Jessina Muthee for the guidance and instructions during the development of this thesis.

## TABLE OF CONTENT

<b>DECLARATION</b> .....	ii
<b>DEDICATION</b> .....	iii
<b>ACKNOWLEDGEMENTS</b> .....	iv
<b>TABLE OF CONTENT</b> .....	v
<b>LIST OF TABLES</b> .....	viii
<b>LIST OF FIGURES</b> .....	ix
<b>LIST OF ABBREVIATIONS AND ACRONYMS</b> .....	x
<b>ABSTRACT</b> .....	xi
<b>CHAPTER ONE: INTRODUCTION</b> .....	1
1.0 Introduction.....	1
1.1 Background to the Study.....	1
1.2 Statement of the Problem.....	5
1.3 Purpose of the Study .....	6
1.4 Objectives of the Study.....	6
1.5 Research questions.....	7
1.6 Significance of the Study .....	7
1.7 Assumptions of the Study .....	8
1.8 Scope of the Study .....	8
1.9 Limitations of the Study.....	9
1.10 Theoretical Framework.....	9
1.11 Conceptual Framework.....	10
1.12 Operational Definition of Key Terms .....	11
<b>CHAPTER TWO: REVIEW OF RELATED LITERATURE</b> .....	13
2.0 Introduction.....	13
2.1 Teachers’ Attitude Towards English Braille.....	13
2.2 Teachers’ competence in using English Braille.....	16
2.3 Level of Teachers’ Training.....	19
2.4 Braille Teaching and Learning Materials .....	24

2.5 Summary of the Literature Review .....	27
--	----

**CHAPTER THREE: RESEARCH DESIGN AND METHODOLOGY .....**29

3.0 Introduction.....	29
-----------------------	----

3.1 Research Design.....	29
--------------------------	----

3.2 Variables .....	29
---------------------	----

3.2.1 Independent Variables .....	29
-----------------------------------	----

3.2.2 Dependent Variable .....	30
--------------------------------	----

3.3 Location of the Study.....	30
--------------------------------	----

3.4 Target Population.....	30
----------------------------	----

3.5 Sampling Technique and Sample Size.....	30
---	----

3.6 Research Instruments .....	31
--------------------------------	----

3.7 Piloting.....	31
-------------------	----

3.7.1 Validity .....	32
----------------------	----

3.7.2 Reliability.....	32
------------------------	----

3.8 Data Collection Method.....	32
---------------------------------	----

3.9 Data Analysis and Presentation Method.....	33
--	----

3.10 Logical and Ethical Considerations .....	33
---	----

**CHAPTER FOUR: PRESENTATION OF FINDINGS, INTERPRETATION**

**DISCUSSION .....**35

4.0 Introduction.....	35
-----------------------	----

4.1 Return Rate .....	35
-----------------------	----

4.2 Demographic Data .....	35
----------------------------	----

4.3 Teachers Attitude Towards Teaching Braille .....	37
--	----

4.4 Teachers' Competence in Using Braille Code.....	41
---	----

4.5 Level of Teachers' Training In Braille Codes .....	46
--	----

4.6 Extent of Availability And Suitability of Braille Teaching Materials .....	49
--	----

<b>CHAPTER FIVE: SUMMARY, CONCLUSION AND RECOMMENDATIONS</b>	55
5.0 Introduction	55
5.1 Summary of Findings	55
5.2 Conclusion	57
5.3 Recommendations	58
5.4 Suggestions for Further Studies	59
<b>REFERENCES</b>	60
<b>APPENDICES</b>	68
Appendix I: Transmittal Letter	68
Appendix 2 : Questionnaire	69
Appendix 3: Interview Guide	75
Appendix 4: Permit Letter From NACOSTI	76

## LIST OF TABLES

Table 3.1 Sample Size.....	31
Table 4.1 Gender of respondents .....	35
Table 4.2 Duration in years respondents had been in the school for the blind .....	36
Table 4.3 Respondents acquaintance to reading and writing of Braille .....	36
Table 4.4 Teachers attitude towards teaching Braille .....	38
Table 4.5 Whether teachers’ attitude affects the teaching of Braille .....	39
Table 4.6 Cause of teachers’ attitude towards Braille .....	40
Table 4.7 Major factors affecting teachers’ competence in teaching of Braille .....	41
Table 4.8 The extent the given factors affected teachers’ competence in using Braille.....	43
Table 4.9 Ways of enhancing teachers’ competence on effective Braille teaching.....	44
Table 4.10 Level of training sufficient for a Braille teacher to be effective.....	46
Table 4.11 Frequency of in-service training for Braille teachers .....	47
Table 4.12 Suggestions on improvement of effective teaching of Braille.....	48
Table 4.13 Adequacy and sufficiency of Braille materials in school .....	49
Table 4.14 Source of Braille materials .....	50
Table 4.15 Availability of Braille materials locally.....	51
Table 4.16 Cost of Braille materials according to respondents .....	52
Table 4.17 Possible ways to improve materials sufficiency, adequacy and availability.....	53

## LIST OF FIGURES

Figure 1.1 Conceptual Frameworks .....	10
Figure 4.1 Respondents acquaintance to reading and writing of Braille .....	37
Figure 4.2 Teachers attitude towards teaching Braille.....	38
Figure 4.3 Cause of teachers' attitude towards Braille .....	40
Figure 4.4 Major factors affecting teachers' competence in teaching of Braille.....	42
Figure 4.5 Ways of enhancing teachers' competence on effective Braille teaching ....	45
Figure 4.6 Adequacy and sufficiency of Braille materials in school .....	49
Figure 4.7 Availability of Braille materials locally .....	51
Figure 4.8 Possible ways to improve materials sufficiency, adequacy and availability	53

## **LIST OF ABBREVIATIONS AND ACRONYMS**

<b>BVI</b>	Blind and Visually Impaired
<b>CBA</b>	Canadian Braille Authority
<b>DRC</b>	Disability Resource Centre
<b>KISE</b>	Kenya Institute of Special Education
<b>KSB</b>	Kenya Society for the Blind
<b>LEA</b>	Local Education Authority
<b>MOE</b>	Ministry of Education
<b>RNIB</b>	Royal National Institute of Blind
<b>TTC</b>	Teachers Training College
<b>UK</b>	United Kingdom
<b>USA</b>	United States of America
<b>WHO</b>	World Health Organization

## ABSTRACT

The purpose of this study was to identify determinants enhancing teacher's proficiency in English Braille teaching in a primary school for the blind, Kiambu County, Kenya. Specifically the study sought to identify teachers' attitude towards the Braille literacy, identify teachers' competence in using Braille code, determine the level of teachers' training in Braille code, and identify the extent of availability and suitability of Braille teaching materials. The findings of this study may be useful since determinants for enhancing teachers' proficiency in teaching English Braille in the study area are identified. Since this was a case study, a school for the blind in Kiambu County was purposively selected for the study. Descriptive research design was used to describe the factors affecting the learning of English Braille from the teachers. The target population of the study was 224 consisting of 35 teachers and 189 upper primary learners. The researcher used a sample size of 68 respondents to represent the whole study population. The primary data was collected using questionnaire and interviews guide. Questionnaires for those who could read print and interview guides for the respondents who could not. The data collected was first organized then coded and keyed into the computer for analysis. Descriptive statistics was used to analyze the data which was reported in form of frequency tables and calculated into percentages. Bar graphs and pie charts were also used in presentation for clarity. The study found out that, teachers had mixed attitude towards teaching of Braille the reason being heavy workload, pre-braille experience and the teacher's level of academic qualification. Teachers' competence in teaching of Braille was affected by proficiency in Braille writing and reading, professional & academic training and experience of years in teaching. Workshops, refresher courses as well as seminars on Braille need to be organized to enhance teachers' competence on effective Braille teaching. The level of training sufficient for a Braille teacher was found to be diploma plus visual impairment professionalism and a diploma in special needs. The area of study had no adequate or sufficient Braille materials for enhancement of Braille literacy. The Braille materials were not locally available and had to be ordered nationally or internationally which comes with exorbitant prices. The study recommends that Braille teachers be given in-service training to raise their competence and proficiency in Braille. The government to be involved provision of adequate and sufficiency Braille equipments.

## **CHAPTER ONE**

### **INTRODUCTION**

#### **1.0 Introduction**

This chapter highlights the background of the study, the problem statement, purpose of the study, research objectives, research questions, significance of the study, assumptions of the study, limitations and delimitations of the study. In addition, it highlights the conceptual framework and gives operational definitions of key terms.

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

According to World Health Organization (WHO), disability affects 10 percent of every population. An estimated 650 million people worldwide, of whom 200 million are children, experience some form of disability. Surveys conducted in 55 countries by the Disability Statistics Compendium show prevalence rates varying from 0.2% to 21%. WHO estimates that about 285 million people are visually impaired worldwide with 39 million being blind and 246 having low vision. Africa is the most vulnerable continent of all with over 90% of the world's visually impaired living in the region.

Visual impairments are caused by a number of eye disorders, including albinism, cataracts, retinal degeneration, diabetic retinopathy, glaucoma, corneal disorders, congenital disorders, and infection (Torpyy et al., 2003). There are various challenges facing children with blindness and low vision. The academic world is awash with overwhelming amount of printed material with which learners with blindness and low vision are confronted. Textbooks, class schedules, class syllabus, class handouts, tests, e-mail, overhead transparencies, slides, and videotapes are examples of the

voluminous mass of visual material to which they must have access in an alternate form (Disability Resource Centre (DRC), 2008).

Relevant educational materials aimed at enhancing academic achievement and skill acquisition (of totally blind and low vision) like typewriters, current brailled textbooks, large print text books, computers installed with talking programs, talking calculators, tape recorders and Braille machines, are either in short supply or completely absent. In most primary schools, textbooks that are supplied are in print and since the book production units of the schools are poorly equipped for Braille book production and understaffed, so only a few persons with blindness and low vision can access brailled text books (Boame, 2013).

For any programme to be effective, qualified staffs are needed who can deliver good results. However, this is not the case for persons with blindness and low vision. There is lack of qualified personnel in the various fields or disciplines like academic, vocational and technical skills (Boame, 2013). Most of the Teachers Training College (TTC) in developing countries are not well-equipped to give their graduates the necessary skills to enable them to impact positively on the needs of persons with blindness and low vision. Some of the graduates leave the teaching field to more lucrative employment, creating shortages of specialist staff in the schools Knowlton, M., & Berger, K., (1999). In order to deal with the challenges, most of learner with blindness use a combination of methods to access printed material including readers, audio tape recorded books, Brailled books, or a text-based scanner/reader computer hardware and software.

The Braille system was created in 1821 by a Frenchman, Mullen, E. A. (1990). The Braille system is mainly used by people who have severe visual impairment. It is very important to the lives of these people as the ability to read and write in Braille opens the door to literacy, intellectual freedom, equal opportunity, and personal security. Each letter or number in Braille is made up of a cell that has up to six raised dots in two rows of three dots each, which means 64 possible combinations. Persons with visual impairment read Braille by moving their fingers over these cells and feeling the letters and numbers.

Louis Braille became blind himself at the age of three and developed the system in order to improve the books he used at school. Most languages have two grades of Braille. Grade one is used by beginners. Each letter of the word is spelled out. Grade two Braille is an advanced form. It makes reading and writing quicker because it has special codes for words or groups of letters that are often used in that language (Weiss, 2009). Braille proficiency has been found lacking among teachers (Amato, 2002). Children who are blind are not being taught Braille because the teachers who are supposedly trained to do so themselves do not know the Braille codes sufficiently, much less the teaching methodology. This is due to inadequate and inappropriate education of the special education teachers who are not competent or confident themselves in using Braille (Ianuzzi, 1992).

Rosenblum, Lewis, and D'Andrea (2010) in their research which attempted to establish the content validity of several performance statements associated with basic knowledge, production, and reading of Braille by beginning teachers, suggested the

need to establish minimum levels of Braille competence for graduates of university preparation programs. Among the developed countries, there has been reported Braille literacy decrease which have been attributed to teacher incompetence in using and teaching Braille (Lewis & Allman, 2000), teachers' lack of proficiency in Braille (Mullen, 1990), teachers' poor attitude (Mullen, 1990) and inadequate preparation of teachers by the university teacher preparation programs (Spungin and D'Andrea, 2001). Studies on proficiency and determinants to enhance teachers' proficiency in English Braille in developing countries have not been undertaken (Ndung'u, 2011).

According to Kimeto, (2010), there was need to provide adequate learning resources for effective reading and writing of Braille to an estimated 0.7% of the population as it has disability. He added that just like everyone else pupils with visual impairment need to be able to obtain information in an effective and timely manner as well as exchange information accurately with others.

By 2012, South Africa had unified the Braille code for their official 11 languages. This code is now known as the Unified Braille Code (UBC). Initially, UBC materials were produced only for pupils in grades 1-3. After 2008, non-technical literature for all grade levels became available in the unified code and the technical aspect was phased into lower grades. Although the transition has progressed well, a number of respondents expressed the need to train personnel in the technical aspects of the code (Mbith A. N., 2013).

In Kenya, statistics from the government plan (2002-2008) have reported that about 5% (100,000) of 1.8 million children in the country have special needs. Of these proportions, about 1,400 children suffer from visual impairment. Report from Ministry of Health (2012), shows that the number of persons with visual impairment in Kenya stands at 250,000 with different levels of visual impairment (Sight Savers International, 2013). According to the Kenya Society for the Blind (KSB), about 331,593 people were visually impaired in 2009. It is estimated that there are approximately 15,500 visually impaired children in Kenya. However, report released by the Ministry of Education indicated that only 21% of visually impaired children are attending schools (MOE, 2009).

According to Ndung'u (2011), Kenya government education policies and goals are geared towards achieving education for all by 2015 (EFA-2015). In an effort to achieve this, the government launched special needs education policy framework in the year 2010. This recognizes that access to education may not be fully realized, if effective ways of engaging learners with visual impairment are not put in place.

## **1.2 Statement of the Problem**

According to Miller (1985), the literate environment is so important in encouraging development that does not occur naturally to the child who is blind. These sentiments are further supported by Stratton and Wright (1991) who stated that literacy begins to develop at birth and that it does not wait until a child reads his/her first word or even until he/she opens his/her first book. For children who are blind, learning pre-Braille and Braille skills is the first stage in the process of facilitating a visually impaired

child's readiness to read and write as well as communication awareness, since the child is exposed to words, sentences, paragraphs and page layout. Visually impaired children wholly rely on Braille for both recreation and education to enhance their experience or shared information in comparison to their sighted peers. They thus require intense support from parents and teachers in the development of their Braille literacy.

However, numerous explanations have been offered for the increasing decline in performance and literacy among Braille readers. As noted by Wittenstein (1993), instructors have insufficient knowledge of methodology to teaching Braille. Recognizing this insufficiency of knowledge of Braille among teachers of children who are blind in Kenya at a primary school for the blind, the question that the proposed study sought to answer is: what are the determinants that can enhance teachers' proficiency in Braille in order to enhance learners' general performance?

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

The purpose of this study was to identify determinants enhancing teacher's proficiency in English Braille teaching in primary school for the blind, Kiambu County, Kenya.

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

The study was guided by the following specific objectives;

- i) To assess teachers' attitude towards the Braille literacy in a primary school for the blind, Kiambu County, Kenya.

- ii) To identify teachers' competence in using Braille code in a primary school for the blind, Kiambu County, Kenya.
- iii) To determine the level of teachers' training in Braille code in a primary school for the blind, Kiambu County, Kenya.
- iv) To identify the extent of availability and suitability of Braille teaching materials in a primary school for the blind, Kiambu County, Kenya.

### **1.5 Research Questions**

- i) What is the teachers' attitude towards the Braille literacy in a primary school for the blind, Kiambu County, Kenya?
- ii) What is the level of teachers' competence in using Braille code in a primary school for the blind, Kiambu County, Kenya?
- iii) What is the level of teachers' training in Braille code in a primary school for the blind, Kiambu County, Kenya?
- v) To what extent is Braille teaching materials available in a primary school for the blind, Kiambu County, Kenya?

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

The findings of this study would be useful as determinants for enhancing teachers' proficiency in teaching English Braille in schools for learners with visual impairments and intern help such learners access education. The findings and suggestions of this study provides a more comprehensive view of the extent to which primary school teachers of pupils who are blind should use English Braille to teach their pupils.

This knowledge leads to a better understanding and hence effective interaction between the teacher and the pupils who are blind. The appropriate interaction between the teachers and their learners in the long run lead to better academic performance by pupils who are visually impaired. In addition, the recommendations made would help in formulating policies aimed at ensuring that teachers have the right attitude, training and competence in Braille. Further, the study served as a springboard for further research on teachers' proficiency in Braille.

### **1.7 Assumptions of the Study**

The study assumed that the respondents gave timely, unbiased and precise responses meant to give constant data. This means that the responses given in the questionnaires were true and fair for the purpose of this study. The study also assumed that teachers' attitude, competence and training were varied and so affects their proficiency in using Braille code. Also, adequacy and suitability of facilities affects teachers' proficiency in using Braille.

### **1.8 Scope of the Study**

The following study only involved only one primary school for the blind in Kiambu County leaving out other special schools. Also, the study only concentrated on teachers and upper primary learners. The study was based in Kiambu county leaving out other counties.

## **1.9 Limitations of the Study**

This study was conducted within the limits and bounds set for time and money. The annexed budget and time schedule indicated the confines within which the research was conducted.

## **1.10 Theoretical Framework**

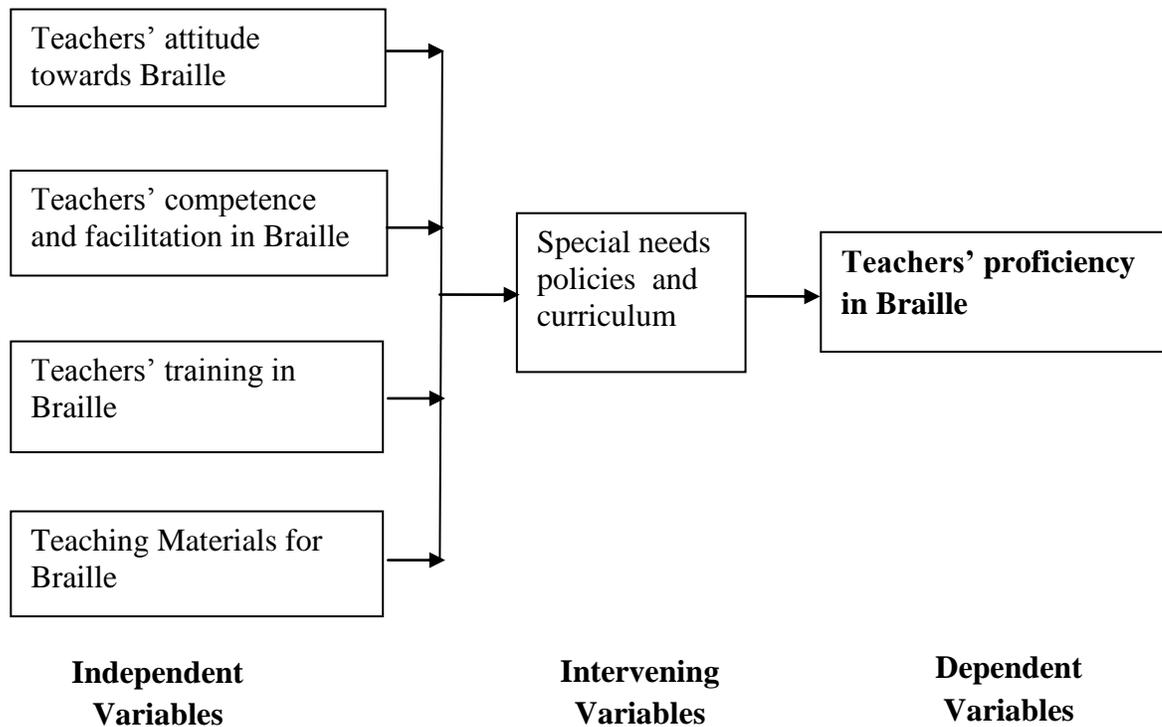
Vygotsky's theory of social cognitive development formed the basis for the theoretical framework. According to this theory, instructional conditions and teacher interventions may enhance students' skills and desired learning experiences. The theory emphasizes that "social interaction plays a fundamental role in the development of cognition" (Kearsley 1994e).

Instruction is most efficient when students engage in activities within a supportive learning environment and when they receive appropriate guidance that is mediated by tools" (Vygotsky 1978, as cited in Gillani & Relan 1997). These instructional tools can be defined as "cognitive strategies, a mentor, peers, computers, printed materials, or any instrument that organizes and provides information for the learner." The role of these instructional tools is to organize dynamic support to help learners complete learn effectively. When teachers are not proficient and lack relevant experience in teaching Braille, a supportive learning environment is not achieved. Hence, there is no effective learning process taking place.

## 1.11 Conceptual Framework

Figure 1.1 Conceptual Frameworks

### Enhancing Teachers' Proficiency in Braille



**Source:** Author, 2020

The figure shows the relationship between the dependent and independent variables of the study. As shown in the figure, performance of teachers' proficiency in Braille was enhanced by attitude, teachers' competence, teachers' training and availability and suitability of Braille teaching materials.

## 1.12 Operational Definition of Key Terms

- Blind** : It refers to a best-corrected central vision of 20/200 or worse in the better eye or a visual acuity of better than 20/200 but with a visual field no greater than 20°.
- Braille literacy** : The ability to read and write and the basic skill or knowledge of Braille
- Braille** : A system of writing and printing for blind or visually impaired people, in which varied arrangements of raised dots representing letters and numerals are identified by touch.
- Determinants** : a factor which decisively affects the nature or outcome of once performance.
- Low vision** : A person with low vision is one who has impairment of visual functioning even after treatment and/or standard refractive correction, and has a visual acuity of less than 6/18 to light perception, or a visual field of less than 10 degree from the point of fixation, but who uses, or is potentially able to use, vision for planning and/or execution of a task.
- Pre-Braille** : Pre-Braille skills are physical and sensory: tactile perception, fine motor skills, particularly finger and hand movements, and ability to identify Braille characters.
- Proficiency** : Refers to the fact of having the skill and experience or expertise for doing something skillfully and efficiently.

**Visual impairment :** having any defect of vision, whether disabling or not. It is a decreased ability to see to a degree that causes problems not fixable by usual means.

## **CHAPTER TWO**

### **REVIEW OF RELATED LITERATURE**

#### **2.0 Introduction**

This chapter presents the Importance of Braille and Statistics of Visually Impaired, Visual impairment, Challenges facing blind and visually impaired people, Braille; Teachers' proficiency in using Braille; Teachers' attitude; Level of teachers' training; and Braille Teaching and Learning Materials.

#### **2.1 Teachers' Attitude Towards English Braille**

Teaching Braille to students with low vision successfully depends a great deal on the teachers having a positive attitude about Braille. It is important to view Braille as a tool which can empower people in situations when the use of large print is cumbersome or impractical rather than a symbol of weakness (Lanuzzi, 1999, Bano I., & Syed, A., 2011).

Holbrook and Koenig, (1992) emphasized the importance of using methods and materials which will motivate students with low vision to learning Braille. Consumer groups in USA have placed partial blame for the decline of braille literacy on teachers' poor attitude toward and lack of proficiency in Braille (Wittenstein, 1994; Schroeder, 1989; Stephens, 1989). While Rex's (1989) informal discussions with teachers did not find them opposed to Braille, he considered that for various reasons, their statements were often not supportive of Braille usage.

According to Wanjiku (2009) teachers of Braille must of necessity know all the symbols and rules on Braille code as they determine the quality of Braille reading and writing. However, most of the employed teachers have limited knowledge and skills in Braille and they have negative attitude towards Braille. In addition, it is the duty of the teacher to encourage the learners' positive attitude towards beginning Braille instructions as well as discuss with children examples of times Braille might be used in everyday living, and make the Braille books interesting (Wanja, 2009).

According to Mugambi (2012), attitude of the teacher depends strongly on teacher's education, availability of support materials, class size and workload. The grading of schools on mean score and comparing to the other schools also affect the attitude of the teachers of visually impaired. Mbithi (2013) added that self-concept which is a set of attitude shape self-identity, self-image and self-esteem, consequently affecting social life of an individual. Academic self-concept is the attitude that individuals hold about themselves based on academic performance. This influences their social life among colleagues. However this could be shaped by acceptance of a condition of disability and the influence by reactions of the community, family and peers among others.

According to Ndung'u (2011), factors that affect the attitude towards Braille use include, increasing use of technology for access to print for both learners with low vision and those who are blind. However, with the big challenge of access to technology, this factor may provide a premise for further investigation related to medium for learners with visual impairment.

According to Basim H. N., Begenirbas, M. and Yalcin, R. C., (2013), burnout could cause negative results for both the employee and organization. This is a serious danger for teachers as they are supposed to listen to their students' problems and give advice, regardless of their emotional state. Burnout is a loss of power because of failure, attrition and overload or the depletion of individual's internal resources as a result of irretrievable demands. It was found that people with visual impairment may display self-repressive behaviour due to the perceived need of special assistance from sighted people, which causes anxiety. People with visual impairment often experience feelings of helplessness, calling for emotional support (Donoyama and Munakata, 2009).

The reviewed literature shows that teaching Braille to students with low vision successfully depends a great deal on the teachers having a positive attitude about Braille. Holbrook and Koenig, (1992) emphasized the importance of using methods and materials which will motivate students with low vision to learning Braille. However, consumer groups in USA have placed partial blame for the decline of Braille literacy on teachers' poor attitude toward and lack of proficiency in Braille. According to Wanjiku (2009) most of the employed teachers have limited knowledge and skills in Braille and they have negative attitude towards Braille. The teachers could be thought to have negative attitude towards Braille. It is only logical for one to show lack of interest in an area of deficiency. If more training and emphasis is put on the qualification of teachers on Braille, then their confidence and self-worth would be boosted, hence improving the teacher attitude positively. It is the duty of the teacher to encourage the learners' positive attitude towards beginning Braille instructions as well as discuss with children examples of times Braille might be used in everyday living,

and make the Braille books interesting. Attitude of the teacher depends strongly on teacher's education, availability of support materials, class size and workload. The question is, have teachers received this support and still failed to perform in teaching Braille?

Further, the literature revealed that attitude could be shaped by acceptance of a condition of disability and the influence by reactions of the community, family and peers among others. It is therefore understandable that the teachers' attitude could be influenced by the environmental interactions during growth and not by the current situation. The family, community, peers and acceptance of reality has great influence on teachers' performance.

According to Basim, (2013), burnout could cause negative results for both the employee and organization. This is a serious danger for teachers as they are supposed to listen to their students' problems and give advice, regardless of their emotional state. Burnout due to workload and extensive syllabus may be the cause of low morale and negative attitude of the teacher. This means that supporting the teachers by lessening their workload could probably improve the teaching of Braille by a great deal.

## **2.2 Teachers' competence in using English Braille**

According to Kimeto, (2010), the status of special education in Kenya has been enhanced through implementation of courses ranging from certificate to doctorate at Kenya Institute of Special Education (KISE), Kenyatta University and Maseno

University. Addressing the concerns of the disabled is also entrenched within the constitution of Kenya to enforce affirmative action.

Despite the fact that Braille plays a crucial role in the social life and academic progress of blind people, there is a growing awareness about the decline in Braille reading and moreover in Braille writing (Walker E., Tobin, M., & McKennell, A., 1991). Braille literacy skills have been referred as the indispensable area for the education of the blind which provides all the prerequisites for achieving in many areas of life, from school to employment (Koenig & Holbrook, 2000).

Frieman (2004) reported that principals and administrators are faced with the challenge of finding competent teachers who have the expertise in Braille to teach children who are blind and visually impaired. These teachers need many skills other than Braille in order to be successful, including the ability to teach compensatory skills; prepare special learning materials; assess student learning; collaborate and consult with other professionals; understand the physiology of the eye and the medical implications of visual impairments; teach orientation and mobility; and other teaching skills.

Allman (1998) notes that, if sighted teachers are expected to teach Braille and related skills, they must learn these skills in their pre-service training. Knowlton and Berger (1999) points out that teacher not only need to know Braille but also need to use the new computer technologies that enhance a teacher's ability to produce Braille

materials. Amato (2002) notes specifically that teachers of Braille need to be able to demonstrate proficiency in all five of the Braille codes: literary, Nemeth (math and science), music, foreign language, and computer.

In their discussion about the decline in braille literacy in the USA, Spungin and D'Andrea (2000) raise concerns about availability of braille textbooks and materials for blind students. There is evidence that resources are a matter of concern for teachers of visually impaired pupils in the UK. Cost, availability and quality of braille resources were a matter of concern for the specialist teachers in Jennings' (1999) study. Many questioned the willingness of Local Education Authority (LEA) to pay for braille materials. Provision of sufficient appropriate resources and materials were regarded as important issues in determining whether or not braille users were adequately supported. Concerns about the availability of reading materials in appropriate formats were also found in (Royal National Institute of Blind) RNIB research into the educational experiences of blind and partially sighted pupils (Franklin A, Keil S, Crofts K and Cole-Hamilton I., 2001).

According to the reviewed literature, principals and administrators are faced with the challenge of finding competent teachers who have the expertise in Braille to teach children who are blind and visually impaired. In addition these teachers must have ability to teach compensatory skills; prepare special learning materials; assess student learning; collaborate and consult with other professionals; understand the physiology of the eye and the medical implications of visual impairments; teach orientation and mobility; and other teaching skills. They are not only need to know Braille but also

need to use the new computer technologies that enhance a teacher's ability to produce Braille materials. In a country that many of the trained teachers are faced with joblessness, the deficiency of the teachers for Braille as well as other disabilities may be due to lack of commitment of the employer and not lack of teaching staff perse. Expecting the available teachers to perform exemplarily without support of teaching aid for the pupils is futile. This does not mean that the teachers are not proficient, but the lack of sufficient facilities water down their efforts.

### **2.3 Level of Teachers' Training**

According to Mugambi (2012) the quality of education and training largely depended on the teacher's academic qualification, professional training, commitment and dedication. Schools can only be effective if teachers are professionally trained and continuously in-serviced to improve their knowledge, pedagogical skills and competency. The training should go along with recognition, for lack of which had adverse effects on teacher-learner ratio.

According to Kimeto, (2010), Kenya lacks professionals in the area of special education in general. Lack of an adequate number of trained personnel for the pupils with visual impairments presents a challenge to reading and writing of Braille. Despite the government efforts to train teachers, the area of special education remains in need for trained professionals.

According to Wanja (2009), the Canadian Braille Authority (CBA) recommended that Braille teacher must have a university degree and basic teacher certification for

students with visual impairments. Some countries made a commitment to provide ongoing training for the teaching staff; a commitment that lacks in Kenya schools for learners with visual impairment. Wanja (2009) added that only 57.14% of the teachers held a Diploma in special needs education, 14.28% were bachelor degree holders, while a massive 28.57% had only taken a three months' training.

Partial blame for the decline of Braille literacy has been played on inadequate preparation of teachers by teacher preparation programs in universities (Spungin, 1989). Norris (1972) in her study of approaches to teaching English to blind pupils in specialist residential schools found no systematic approach to teaching Braille amongst the teachers surveyed. Her findings indicated that many teachers had not received guidance on methods or approaches to teaching Braille and that, "some teachers claimed to have had no knowledge of Braille at all when they started to teach, a number going so far as to claim that this had been no disadvantage since they believed that all that was required was to be one or two steps ahead of their pupils. In the USA, Stephens (1989) noted concerns expressed by the American Council of the Blind about the "widely perceived erosion of standards in the teaching of Braille in mainstream and specialist residential schools.

Rex (1989) discusses the quality of training provided to trainee teachers of visually impaired pupils, both in terms of the students' own Braille proficiency and in teaching reading and writing in Braille. In the UK, training for qualified teachers of the visually impaired is provided at five universities. Braille is a mandatory component of the courses, and students are required to pass this in order to qualify. Most of the Braille

training is by distance learning, and at the time of the research one university was in the process of putting their course onto the university's website. The courses qualify students to read and write grade 2 Braille. They do not teach students how to teach literacy via Braille or cover in detail (other than via voluntary modules) other aspects of Braille teaching such as Braille mathematics, teaching Braille to adventitiously blind pupils, and Braille technology.

Yet Wittenstein and Pardee (1996) found that teaching programmes that emphasized the methodology of teaching reading and writing through Braille produced teachers who were more confident in their own Braille skills and in their ability to pass this knowledge on to their visually impaired pupils. They argue that teacher training courses should not concentrate simply on teaching Braille, but should include literacy skills and Braille reading methods. "Training teachers only in the Braille code is analogous to training teachers of print reading by only teaching them the alphabet and expecting that this minimum competence will prepare them for the complex task of fostering literacy in their students. This view is endorsed by Rex, (1989), and by Stone (1995) who contends that Braille must be taught by teachers who understand both the demands of reading by touch and the additional complexities caused by the Braille code. Without this knowledge there may be a risk of mis-attributing reading errors to a child's literacy difficulties rather than to incorrect finger positioning for example.

Lamb (1996) argues that the teaching of braille literacy has been preoccupied with tactile perception skills and the mechanical aspects of reading by touch, rather than as a language-based skill. She puts forward the view that children who are learning to

read and write using braille need to be taught by teachers who are competent brailleists, who are aware of the special skills required for reading by touch and who can implement these skills within the whole language approach to literacy (Lamb, 1998). In the UK, a pre-requisite for entry onto the specialist courses to become a qualified teacher of the visually impaired is a post-graduate teaching qualification. It could therefore be argued that primary trained teachers on courses will have already received training in teaching literacy through print and that these skills are transferable to teaching literacy in Braille.

Spungin (1989), without citing empirical data, asserts that teachers of students who are blind or visually impaired are “less-than-proficient” Braille instructors and this has contributed to the illiteracy among those who are blind or visually impaired. She does concede, however, that part of the blame for this situation lies with the university training programs for these teachers. According to Spungin, (1989), teacher preparation programs incorporate the instruction of Braille with the process of teaching reading and mathematics. Still, some teacher preparation programs present Braille as a code, viewing the level of knowledge required by a transcriber as sufficient for teachers of literacy.

Amato (2002) completed a descriptive study of standards and criteria for competency in Braille literacy within teacher preparation programs. This study was one of the first to take a comprehensive look at the content of teacher preparation programs relevant to Braille literacy. It served two important purposes. First, the study refuted many of the premises made by Spungin which have unfortunately been used as factual reports

on the status of Braille literacy preparation in teacher education programs. Second, recommendations relevant to Braille literacy instruction were provided for personnel preparation program administrators. Hopefully, such recommendations will assist program administrators to develop teacher preparation courses which provide comprehensive knowledge and skill development in the area of literacy.

According to Wanjiku (2009), every teacher for the blind should know that needs of different children vary though they are all blind. Braille teaching methodology must therefore recognize their uniqueness and so be individualized and learner centered. The teacher must also understand that learners' needs change over time. Thus the more competence they become on Braille the more prepared the pupils are for independence and adulthood. In addition the teacher must consider the age of child at onset of visual impairment, motivation of the pupil to learn Braille, pupils' tactile and perceptual abilities, pupils' intellectual capabilities and any additional disabilities.

Motivation is essential in learning Braille. By having a blind primary-aged child as the main character in the stories, it is hoped that the child will be able to identify with some of the experiences, without ignoring the sight imagery and vocabulary, though giving greater emphasis on the other senses (Arnold, 2004).

Wanjiku (2009) added that there is need for teachers of Braille to have in-service courses to enrich their skills in teaching Braille. Most of the time teachers of Braille are ill-equipped to teach Braille and blind learners often receive inadequate training in reading and writing Braille. The quality of education and training largely depended on

the teacher's academic qualification, professional training, commitment and dedication. Schools can only be effective if teachers are professionally trained and continuously in-serviced to improve their knowledge, pedagogical skills and competency. In Kenya lack of an adequate number of trained personnel for the pupils with visual impairments presents a challenge to reading and writing of Braille. The literature also indicates that some countries made a commitment to provide ongoing training for the teaching staff; a commitment that lacks in Kenya schools for learners with visual impairment. This means that the problem may not be the deficiency of right qualifications on the teaching staff, not lack of commitment or dedication but the large workload and lack of human resource development through in-service training to enhance skills.

Braille teaching methodology must recognize their uniqueness and so be individualized and learner centered. Due to the limited number of teachers handling extensive number of students, it may be difficult for the teacher to identify the individualized needs particular to the different students and hence lead to ineffective teaching in Braille.

#### **2.4 Braille Teaching and Learning Materials**

According to Wanjiku (2009), learners who are blind would benefit more if they would actively participate in Braille learning process; a possibility that would come true if they were provided with Braille learning materials. However there are fewer materials for the Braille writers than print writers. Lack of Braille materials significantly affects the Braille writers in academic achievement as compared to print

writers. For Kenya, the Braille equipments are imported and at exorbitant prices. In addition, the cost of Braille production is high, hence being an obstacle to enhancement of education for the blind. This lack of materials is a great hindrance to effective teaching and learning of the visually impaired learners. The slate and styluses used by most learners reduce with use due to damage and losses. On the other hand, Braille machines are better than slates and styluses, but due to their limited number, only class seven and eight pupils have access to them.

Learners lack necessary Braille textbooks, while teachers share the Braille primer. This forces the learners to sorely depend on the teacher for all Braille instructions; mainly administered by dictation. The available Braille embosser has no one with knowledge of how it operates, hence is of no use. Regardless of the type of reading materials, a child with visual impairment must have all books and reading materials necessary to learn Braille as well as have basal readers, literature anthologies or novels (Wanja, 2009).

According to Mugambi (2012), regular and special need education is disseminated through a central curriculum, irrespective of differences in conditions, hence discouraging the learners with special needs. Though there are adaptations in adoption of the syllabus, some teachers face challenges when it comes to visually impaired.

According to Ndung'u (2011) education programming for learners with visual impairments should be included through ongoing assessment procedures by a multidisciplinary team of qualified professionals and the decision on the most

appropriate medium of literacy determined based on the collective judgment of the team. In Kenya low vision programme process of selecting literacy medium has inclinations to clinical information and in absence of multidisciplinary team approach, with no distinctive standardized learning medium assessment procedures and tools used to determine the appropriate literacy medium.

According to Kimeto, (2010), challenges to read and write Braille are prevalent in adaptation of materials for pupils with visual impairments. However most of the subject's syllabuses are adapted for pupils with visual impairments with complex psychomotor activities replaced by more manageable ones. Lack of funds made acquisition of text books and maintenance of Braille machines difficult. The literature reveals that there are fewer materials for the Braille readers than for print readers. Lack of Braille materials significantly affects the Braille readers in academic achievement as compared to print readers. For Kenya, the Braille equipments are imported and at exorbitant prices. Lack of materials is a great hindrance to effective teaching and learning of the visually impaired learners. This is compounded by lack of necessary Braille textbooks, while teachers share the Braille primer.

According to the Vygotsky (1978) children needs help such as provision of appropriate materials to be able to perform a particular task. Some can almost perform the task independently, but not quite there yet. They need some help in order to perform the task successfully. Social influences, particularly getting instructions from someone are of immense importance on the cognitive development of children.

As children with visual impairment are given instructions or shown how to perform certain tasks using Braille, they organize the new information received in their existing mental schemas. They use this information as guides on how to perform these tasks and eventually learn to perform them independently. Children learn through social interaction that includes collaborative and cooperative dialogue with someone who is more skilled in tasks they're trying to learn. Vygotsky (1978) called these people with higher skill level the More Knowledgeable Other (MKO). They could be teachers, parents, tutors and even peers.

## **2.5 Summary of the Literature Review**

The deficiency of the teachers for Braille as well as other disabilities may be due to lack of commitment of the employer and not lack of teaching staff perse. Teachers may not perform for of lack of sufficient facilities and not lack of proficiency in Braille.

The teachers could develop negative attitude towards Braille or show lack of interest due to feeling of inadequacy. Therefore, more training and emphasis on the qualification of teachers on Braille may boost their confidence and self-worth, hence improving the teacher attitude positively. In addition, attitude of the teacher depends strongly on teacher's education, availability of support materials, class size and workload. Teachers' attitude could also be influenced by family, community, peers and acceptance of reality alongside the environmental interactions during growth. Burnout due to workload and extensive syllabus may as well cause low morale and negative attitude of the teacher. The problem may not be the deficiency of right

qualifications on the teaching staff, not lack of commitment or dedication but the large workload and lack of human resource development through in-service training to enhance skills.

Teachers should be well trained in the Braille code and not by only teaching them the alphabet and expecting that this minimum competence will prepare them for the complex task of fostering literacy in their students. In-service training should follow to consolidate the teachers' proficiency. The teacher-student ratio should be improved so that the teachers can identify the individualized needs particular to the different students and hence lead to ineffective teaching in Braille. In addition lack of materials compounded by lack of necessary Braille textbooks, while teachers share the Braille primer is a great hindrance to effective teaching and learning of the visually impaired learners.

## **CHAPTER THREE**

### **RESEARCH DESIGN AND METHODOLOGY**

#### **3.0 Introduction**

This chapter details the research design, research variables, location of the study, target population, sampling techniques and sample size, data collection method and design, validity and reliability, data analysis and presentation method, and logical and ethical considerations. The chapter explicitly depicts how the research study was conducted and the mode of presentation of the findings.

#### **3.1 Research Design**

The researcher used primarily the descriptive research design to investigate determinants enhancing teachers' proficiency in English Braille at selected primary schools for learners who were visually impaired in Kenya. The respondents responded to the factors that affected the English Braille teachers' proficiency and effectiveness in teaching learners with visual impairments. Therefore the research design was a descriptive case study. The case study was appropriate in this study as it ensured the in-depth understanding of the factors that affected the teachers' proficiency in teaching English Braille.

#### **3.2 Variables**

##### **3.2.1 Independent Variables**

The independent variables in this study included teachers' attitude towards teaching Braille, Teachers' competence and facilitation in Braille, Teachers' training in Braille,

and Teaching Materials for English Braille. Any variation in any of these variables led to a change in the dependent variable.

### **3.2.2 Dependent Variable**

The dependent variable in this study was Teachers' proficiency in English Braille.

### **3.3 Location of the Study**

The study took place in a primary school for the visually impaired. This school is found in Thika West Sub County; an industrial area in Kiambu County. The school is in Thika town which is a cosmopolitan town almost all tribes in Kenya. It was also accessible to the researcher.

### **3.4 Target Population**

The target population constituted of the teaching and the pupils at a primary for visually impaired. The total target population was 224 comprising of, 35 teaching staff, and 189 upper primary school pupils.

### **3.5 Sampling Technique and Sample Size**

The sample size comprised of 15% of the teaching staff and 30% of the upper primary pupils of the target population as this depicted the natural distribution tendency and therefore its probabilities was computed through a table of normal distribution. The sample was proportionately distributed according to stratification of the target population.

**Table 3.1 Sample Size**

<b>Category</b>	<b>Target Population</b>	<b>Sample Size</b>	<b>Percentage</b>
Teaching Staff	35	23	15%
Upper Primary Pupils	189	45	30%
<b>Total</b>	<b>224</b>	<b>68</b>	<b>45%</b>

### **3.6 Research Instruments**

The primary data was collected using questionnaire for those among accessible population who could read print and interview guide for the upper primary learners. However for teachers with visual impairment, the questionnaires were prepared in Braille. The questionnaire had open-ended questions to allow the respondents to air their open views as well as closed-ended questions to ensure that the respondents' answers were consistent with the objectives of the study.

### **3.7 Piloting**

Before the actual study, the data collection instruments were pre-tested to determine their relevance. A primary school for the blind in Meru was selected for the pilot study. This school was selected because it had same characteristics as the school which was being studied. The pilot school did not participate in the actual study. The purpose of the pilot study was to pre-test the research instruments in order to validate and ascertain their reliability.

### **3.7.1 Validity**

According to Almut and Carole (2008), validity refers to the essential truthfulness of a piece of data. By asserting validity, the researcher is asserting that the data actually measure or reflect the specific phenomenon claimed. Validity is the extent to which the interpretations of the results of a test are warranted, which depends on the particular use the test is intended to serve. It is often defined as the extent to which an instrument measures what it purports to measure. By piloting on five respondents, the researcher was able to check on the validity of the data collection instrument as it revealed on the sufficiency of the instrument to collect the data objective enough to answer the research questions.

### **3.7.2 Reliability**

According to Almut and Carole (2008), reliability estimates and evaluates the stability of measures, internal consistency of measurement instruments, and inter-rater reliability of instrument scores. The correctness or freedom from error of the data collection instrument was also detected through the piloting where the data collected from five respondents was analyzed. Test-retest was conducted on the same respondents on a later date using the same instruments looking for correlation between the two sets of scores in order to assess the reliability of the research instruments.

## **3.8 Data Collection Method**

The questionnaire was hand delivered as all the respondents were within reach. The researcher agreed with the respondents on the date to collect them fully filled which was after a week. The interviews were conducted at the convenience of the

respondents. The interview guide addressed similar issues with the questionnaire for ease of analysis. The questionnaires were collected later as agreed for analysis.

### **3.9 Data Analysis and Presentation Method**

The data collected was coded and keyed into the computer. Tables were generated to simplify the data for generation of meaningful findings. From the tables figures were generated for easier understanding of the data findings. The researcher therefore used descriptive statistics only to generate meaningful information.

### **3.10 Logical and Ethical Considerations**

According to Fouka and Mantzorou (2011), major ethical issues in research include informed consent which means that the person knowingly, voluntarily and intelligently, and in a clear and manifest way, gives consent. By this the respondents' rights are protected. The researcher ensured that all the respondents were not coerced or manipulated to give information without their freedom of will to do so. The respondents were briefed on the study requirements and the importance of disclosure of information. Confidentiality and anonymity was ensured to protect the dignity of the respondents. This was ensured in that the names of the respondents were not disclosed, neither were their departments or areas of work be disclosed as this could have led to identification. The privacy of the respondents was ensured; therefore no private information on the respondents was disclosed. No opinions and records concerning the beliefs, attitude or knowledge of the respondents were shared without their express consent.

Due to the vulnerability of some of the respondents, express permission was sought from the school administration through a letter of introduction from the University, to conduct this study in a primary school of the visually impaired.

## CHAPTER FOUR

### PRESENTATION OF FINDINGS, INTERPRETATION

#### DISCUSSION

##### 4.0 Introduction

This chapter covers analysis of data and the findings of the study. The general objective of the study was to establish the determinants enhancing teachers' proficiency in Braille in primary schools for the blind in Kiambu County. The chapter consists of return rate, demographic data of the respondents, data analysis and discussion of the findings based on research questions formulated from the objectives in view of the literature review of the study.

##### 4.1 Return Rate

The return rate of the questionnaires administered to the respondents was 100% as all the 68 questionnaires were returned fully filled. This was possible because the researcher after administering waited the respondents to fill and assisted where necessary. No questionnaire administered was left to be collected on a later date.

##### 4.2 Demographic Data

**Table 4.1 Gender of Respondents**

<b>Gender</b>	<b>Frequency</b>	<b>Percentage (%)</b>
Male	25	37
Female	43	63
<b>Total</b>	<b>68</b>	<b>100</b>

Table 4.1 of the study shows the highest number of the respondents were females having 63% while the male respondents had 37%. This clearly shows that there were females working and learning in the study area than males.

**Table 4.2 Duration in Years Respondents Had Been in the School for the Blind**

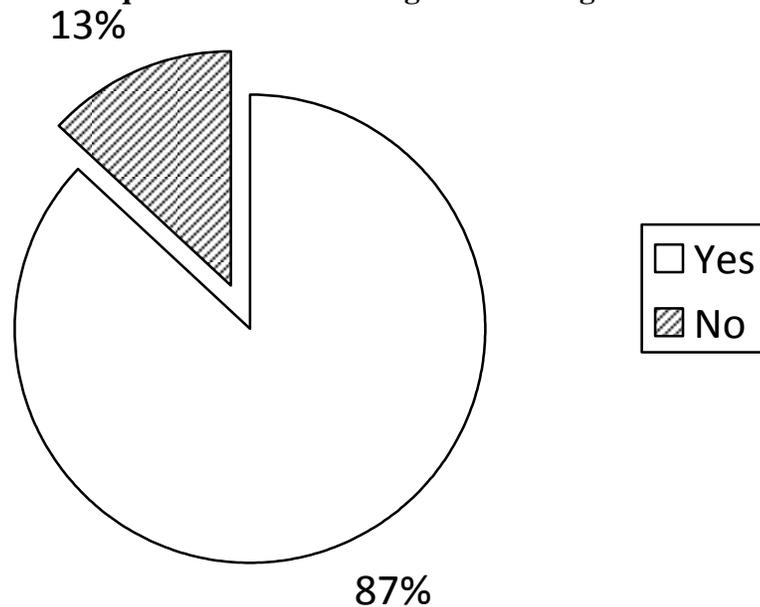
<b>Length in years</b>	<b>Frequency</b>	<b>Percentage (%)</b>
Below 1 year	0	0
1- 5 years	24	35
6 – 10	35	51
11 – 15	3	4
Above 15	6	9
<b>Total</b>	<b>68</b>	<b>100</b>

Table 4.2 of the study shows majority of respondents indicating that they had been in the school on the study for 6 – 10 years having 51% followed by those with 1 – 5 years with 35%, those whose length of time was above 15 years had 9% while the least were those with 11 – 15 years having 4% only. None of the respondents had been in the school of study for less than 1 year.

**Table 4.3 Respondents Acquaintance to Reading and Writing of Braille**

<b>Response</b>	<b>Frequency</b>	<b>Percentage (%)</b>
Yes	59	87
No	9	13
<b>Total</b>	<b>68</b>	<b>100</b>

**Figure 4.1 Respondents Acquaintance to Reading and Writing of Braille**



In table 4.3 and figure 4.1 above of the study we find the highest number of respondents indicating that they were acquainted to reading and writing of Braille having 87% while the rest 13% were not acquainted with Braille. Majority of teachers and upper primary pupils were well versed with Braille reading and writing. Braille provides the fundamentals of reading and writing for visually impaired, offering that vital understanding of letters, words, spelling, punctuation, and sentence structures (Strick, 2012).

#### **4.3 Teachers Attitude Towards Teaching Braille**

The researcher sought to identify teachers' attitude towards English Braille proficiency in primary school for the blind.

**Table 4.4 Teachers Attitude Towards Teaching Braille**

<b>Kind of attitude</b>	<b>Frequency</b>	<b>Percentage (%)</b>
Positive	41	61
Negative	9	13
No comment	18	26
<b>Total</b>	<b>68</b>	<b>100</b>

**Figure 4.2 Teachers Attitude Towards Teaching Braille**

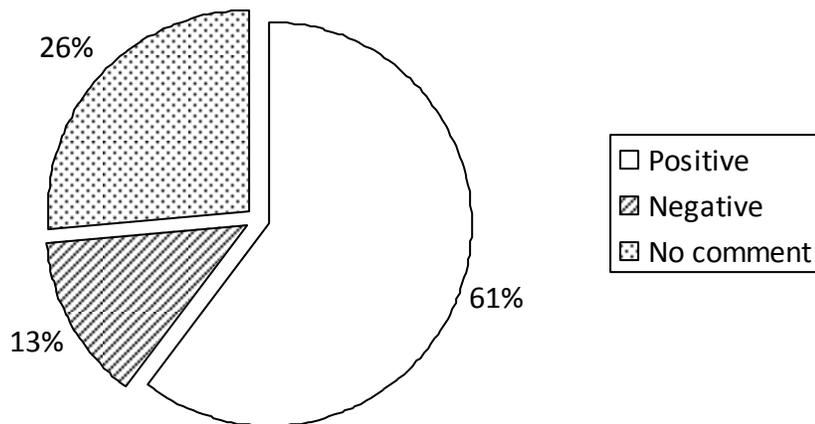


Table 4.4 and figure 4.2 above shows the highest number of respondents indicating that teachers had positive attitude towards teaching Braille having 61% followed by those who had no comment with 26% while least were those who indicated that teachers had negative attitude towards teaching of Braille having 13% only.

According to Lanuzzi, (1999), Bano I., Syed, A., Hashmi, M., Raza, S. and Shaikh, F., (2011), teaching Braille to students with low vision successfully depends a great deal on the teachers having a positive attitude about Braille. Consumer groups in USA have placed partial blame for the decline of braille literacy on teachers' poor attitude and

lack of proficiency in braille (Wittenstein, 1994; Schroeder, 1989; Stephens, 1989). It is important to view Braille as a tool which can empower people in situations when the use of large print is cumbersome or impractical rather than a symbol of weakness

**Table 4.5 Whether Teachers’ Attitude Affects the Teaching of Braille**

<b>Response</b>	<b>Frequency</b>	<b>Percentage (%)</b>
Yes	53	78
No	9	13
No idea	6	9
<b>Total</b>	<b>68</b>	<b>100</b>

Table 4.5 on whether teachers’ attitude affects the teaching of Braille shows majority of respondents indicating that it affects having 78% followed by those who said it did not affect while the least were those who had no idea whether attitude affects teaching of Braille or not having 9% only.

The study concurs with Wanjiku (2009) who posits that teachers of Braille must know all the symbols and rules on Braille code as they determine the quality of Braille reading and writing. The lack of knowledge and proficiency in Braille affects as well as workload leading to negative attitude affects Braille teaching negatively.

**Table 4.6 Cause of Teachers' Attitude Towards Braille**

<b>Response</b>	<b>Frequency</b>	<b>Percentage (%)</b>
Work load	57	84
Level of academic qualification	30	44
Monetary compensation	24	35
Pre-Braille experience	43	63
Social interactions & relations	6	9
Others	18	26

**Figure 4.3 Cause of Teachers' Attitude Towards Braille**

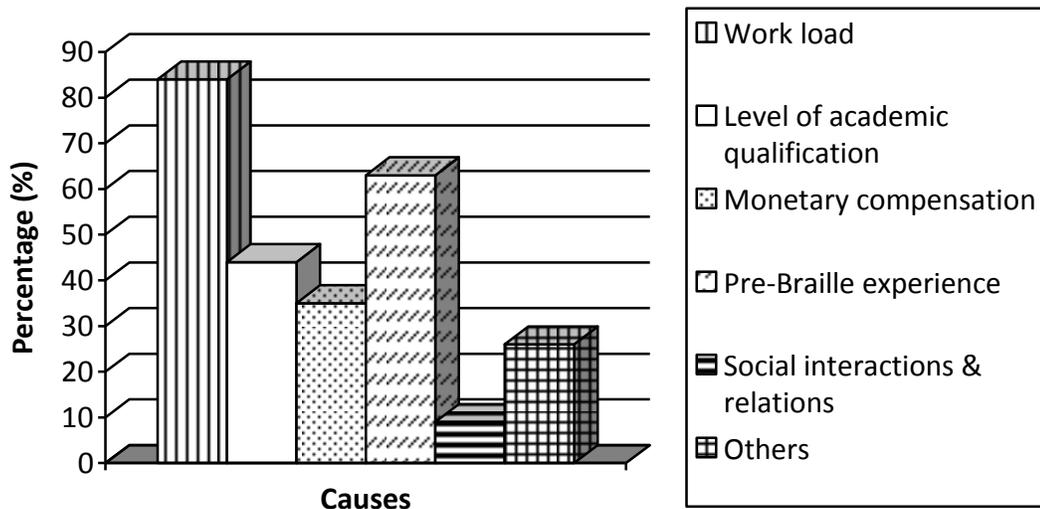


Table 4.6 and figure 4.3 above clearly shows the cause of teachers' attitude towards Braille teaching according to majority of respondents was workload having 84% followed by pre-braille experience with 63% and then level of academic qualification with 44%. Monetary compensation had 35% while the least was other causes and social interactions & relations having 26% and 9% respectively.

The study shows that there were many causes of teachers' attitude towards teaching of Braille. The study disagrees with Donoyama, (2009) who states that teachers' attitude is influenced by the environmental interactions during growth and not by the current situation. According to Mugambi (2012), attitude of the teacher depends strongly on teacher's education, availability of support materials and workload.

#### **4.4 Teachers' Competence in Using Braille Code**

The researcher sought to identify teachers' competence in using English Braille code in primary school for the blind.

**Table 4.7 Major Factors Affecting Teachers' Competence in Teaching of Braille**

<b>Competence factors</b>	<b>Frequency</b>	<b>Percentage (%)</b>
Proficiency in writing and reading	32	48
Experience of years in teaching	15	22
Level of research in Braille	3	4
Professional and academic training	18	26
<b>Total</b>	<b>68</b>	<b>100</b>

**Figure 4.4 Major Factors Affecting Teachers' Competence in Teaching of Braille**

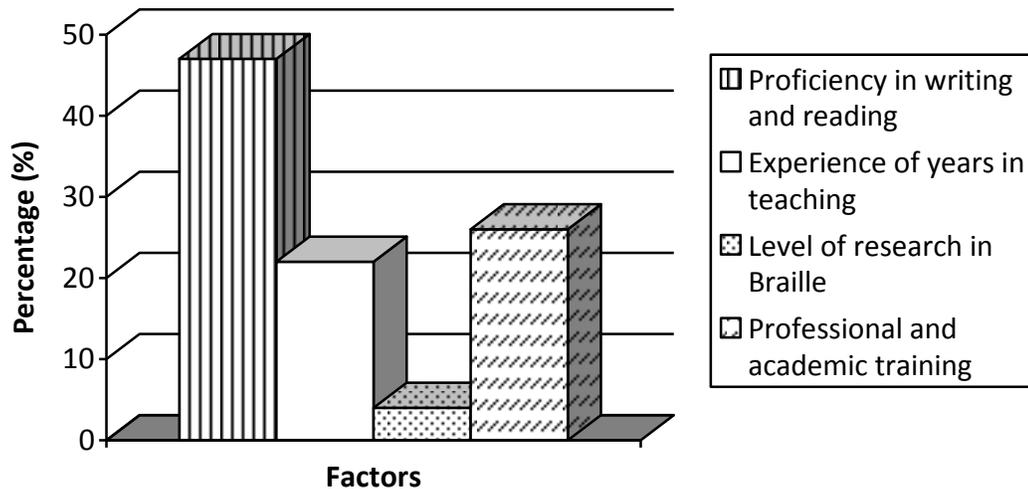


Table 4.7 and figure 4.4 on the major factors affecting teachers' competence in teaching of Braille shows majority of respondents indicating that the major one was proficiency in writing and reading having 47% followed by professional and academic training with 26%, experience of years in teaching had 22% while the least factor was level of research in Braille. The study shows that for a teacher to be competence in teaching Braille, he/she must have proficiency in reading and writing of Braille as well as be professional training in Braille.

Braille proficiency has been found lacking among teachers (Amato, 2002). For any programme to be effective, qualified staffs are needed who can deliver good results. However, this is not the case for persons with blindness and low vision. There was lack of qualified personnel in the various fields or disciplines like academic (Boame, 2013).

**Table 4.8 The Extent the Given Factors Affected Teachers' Competence in Using Braille**

VL – very large; L – large; M – moderate; S – small; NE – no extent

<b>Competence factors</b>	<b>VL</b>	<b>L</b>	<b>M</b>	<b>S</b>	<b>NE</b>	<b>Total</b>
Proficiency in writing and reading	33	23	9	3	0	68
Experience of years in teaching	31	29	6	2	0	68
Level of research in Braille	2	7	17	31	11	68
Professional and academic training	39	24	4	1	0	68
Others	1	3	36	27	1	68
<b>Total</b>	<b>106</b>	<b>86</b>	<b>72</b>	<b>64</b>	<b>12</b>	<b>340</b>
<b>Percentage (%)</b>	<b>31</b>	<b>25</b>	<b>21</b>	<b>19</b>	<b>4</b>	<b>100</b>

In table 4.8 of the study on the extent the stated factors affect teachers' competence in using Braille shows proficiency in writing and reading affected to very large extent according to majority of respondents 33 out of 68 respondents followed by those who indicated that it affected to large extent who were 23. Moderate extent was 9 while the least were those who indicated to small extent who were only 3 respondents. None of the respondents indicated that it affected teachers' competence to no extent. On experience of years in teaching, 31 out of 68 respondents indicated that it affected to very large extent followed closely by those who indicated to large extent who were 29. Moderate and small extent had 6 and 2 respondents respectively and none of the respondents indicated that experience of years in teaching affected the teachers' competence to no extent. Just like proficiency and experience in Braille teaching,

majority of respondents indicated professional and academic training affected to very large extent having 39 respondents, to large extent having 24 respondents. Those who indicated that professional and academic training affected teachers' competence to moderate and to small extents were 4 and 1 respondent respectively.

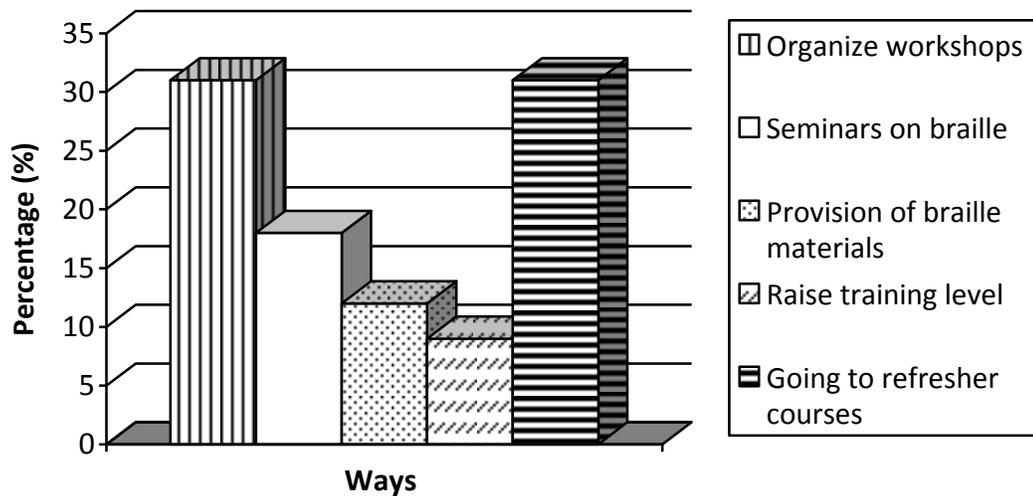
On the level of research in Braille and the other factors majority of respondents indicated that they affected to small and to moderate extents with 31 and 36 respondents respectively. They were followed by those who indicated to moderate and to small extents with 17 and 36 respondents respectively. Some respondents 11 out of 68 indicated that level of research affects to no extent and only a few indicated that it affected to large and to very large extents 7 and 2 respondents respectively.

In general the above stated factors affected the teachers' competence in using Braille to very large extents having 106 responses (31%) followed by large extent with 86 (25%), the responses indicated to moderate extent had 72 (21%) while the least was small and to no extent having 64 (19%) and 12 (4%) respectively.

**Table 4.9 Ways of Enhancing Teachers' Competence on Effective Braille Teaching**

<b>Ways to enhance competence</b>	<b>Frequency</b>	<b>Percentage (%)</b>
Organize workshops	21	31
Seminars on Braille	12	17
Provision of Braille materials	8	12
Raise training level	6	9
Going to refresher courses	21	31
<b>Total</b>	<b>68</b>	<b>100</b>

**Figure 4.5 Ways of Enhancing Teachers' Competence on Effective Braille Teaching**



In table 4.9 figure 4.5 the study shows the best way of enhancing teachers' competence on effective Braille teaching according to majority of respondents were organizing workshops and going to refresher courses having 31% each followed by seminars in Braille with 18% while the least ways were provision of Braille materials and raise training level having 12% and 9% respectively. The study shows there was a need for workshops, refresher courses and seminars on Braille for teachers in order for them to be competent in using materials and teaching Braille.

Allman, (2000), asserts that among the developed countries, there has been reported Braille literacy decrease which has been attributed to teacher incompetence in using and teaching Braille, teachers' lack of proficiency in Braille, teachers' poor attitude and inadequate preparation of teachers by the training preparation programs. Most of the employed teachers have limited knowledge and skills in Braille and they have negative attitude towards Braille (Wanja, 2009).

#### 4.5 Level of Teachers' Training In Braille Codes

The researcher sought to determine the level of teachers' training in English Braille code in a primary school for the blind.

**Table 4.10 Level of Training Sufficient for a Braille Teacher to be Effective**

<b>Level of training</b>	<b>Frequency</b>	<b>Percentage (%)</b>
Up to 6 months course	3	4
Certificate	9	13
Diploma in special needs	15	22
Diploma + VI professionalism	38	57
Degree	3	4
Masters	0	0
<b>Total</b>	<b>68</b>	<b>100</b>

Table 4.10 shows the highest number of respondents indicating that the level of training sufficient for a Braille teacher to be effective was diploma + VI professionalism having 55% followed by diploma in special needs with 22%. Those who indicated certificate had 13% while the least were those who indicated that up to 6 months course and degree as sufficient having 4% each. None of the respondents indicated masters as sufficient for a Braille teacher to be effective. The study agrees with Kimeto, (2010), who stated that Kenya lacks professionals in the area of special education in general. Lack of an adequate number of trained personnel for the pupils with visual impairments presents a challenge to reading and writing of Braille.

**Table 4.11 Frequency of In-Service Training for Braille Teachers**

<b>Response</b>	<b>Frequency</b>	<b>Percentage (%)</b>
Frequently	3	4
Fairly	13	19
Rarely	46	68
Not at all	6	9
<b>Total</b>	<b>68</b>	<b>100</b>

Table 4.11 shows the highest number of respondents indicating that the in-service training for Braille teachers was rarely done in the school having 68% followed at a distance by those who indicated it was fairly done with 19% while the least indicated were those who indicated that the training was not at all and frequently done in the their school having 9% and 4% respectively.

This shows that the response on the frequency of in-service training was determined by the period the respondent had been in the school. Those who had stayed long had seen it been done while those who had been in the school for a short time especially the pupils had not seen it done in the school. Upper primary pupils who had visual impairment were not taught Braille because the teachers who were supposedly trained to do so themselves didn't know the Braille codes sufficiently, much less the teaching methodology. This was due to inadequate and inappropriate education of the special education teachers who were not competent or confident in using Braille (Ianuzzi, 1992).

**Table 4.12 Suggestions on Improvement of Effective Teaching of Braille**

<b>Suggestions</b>	<b>Frequency</b>	<b>Percentage (%)</b>
In-service training	22	32
Regular training for Braille competence	12	19
Adequate Braille equipments	22	32
Regular Braille teachers workshop	9	13
Practical training in class	3	4
<b>Total</b>	<b>68</b>	<b>100</b>

In table 4.12 on the suggestions on improvement of effective teaching by Braille teachers shows majority of respondents indicating the major ones were in-service training and provision of adequate Braille equipments having 32% each followed by regular training for Braille competence with 18% while the least was regular Braille teachers' workshop and practical training in class having 13% and 4% respectively. This shows that improvement on effective teaching on Braille can be improved provision of adequate necessary Braille equipment and retraining of teachers on the same.

According to Boame, (2013) every programme require qualified staff to deliver good results. Knowlton and Berger (1999) points out that teacher not only need to know Braille but also need to use the new computer technologies that enhance a teacher's ability to produce Braille materials. If more training and emphasis is put on the qualification of teachers on Braille, then their confidence and self-worth would be boosted, hence improving the teacher attitude positively.

#### 4.6 Extent of Availability And Suitability of Braille Teaching Materials

The researcher sought to identify the extent of availability and suitability of Braille teaching materials in a primary school for the blind.

**Table 4.13 Adequacy and Sufficiency of Braille Materials in School**

Response	Frequency	Percentage (%)
Adequate	7	10
Inadequate	54	79
No idea	7	10
<b>Total</b>	<b>68</b>	<b>100</b>

**Figure 4.6 Adequacy and Sufficiency of Braille Materials in School**

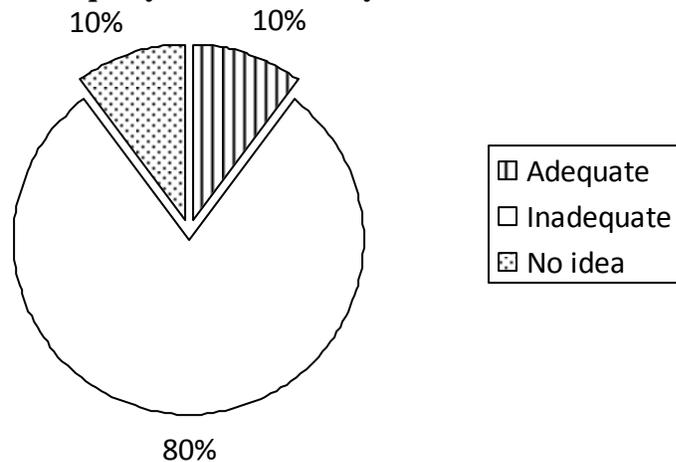


Table 4.13 and figure 4.6 on adequacy and sufficiency of Braille materials in school shows the highest number of respondents indicating that they were inadequate having 79% with those who indicated that they were adequate and those who had no idea of the adequacy and sufficiency having 10% each. The study shows that Braille materials were neither adequate nor sufficient for smooth teaching and learning of Braille.

According to Kimeto, (2010), there was need to provide adequate learning resources for effective reading and writing of Braille. He added that just like everyone else pupils with visual impairment need to be able to obtain information in an effective and timely manner as well as exchange information accurately with others.

**Table 4.14 Source of Braille Materials**

<b>Source</b>	<b>Frequency</b>	<b>Percentage (%)</b>
National	49	72
International	16	24
Local Bookshops	3	4
<b>Total</b>	<b>68</b>	<b>100</b>

In table 4.14 on the source of Braille materials, the highest number of respondents indicated that Braille materials were sourced nationally in special needs institutions like KISE, having 72% followed by international sources like American Printing House (APH) and National Library Service with 24%. The least source of Braille materials according to respondents was local bookshops having 4% only. This indicates that Braille materials were not locally sourced leading to inadequacy of the same in schools for the blind. The study agrees with D’Andrea (2000) that there is evidence that resources are a matter of concern for teachers of visually impaired pupils in the UK as well as other developed and developing countries. He adds that cost, availability and quality of Braille resources are a matter of concern for a specialist teacher.

**Table 4.15 Availability of Braille Materials Locally**

Availability	Frequency	Percentage (%)
Readily available	3	4
Available	18	26
Not available	47	70
<b>Total</b>	<b>68</b>	<b>100</b>

**Figure 4.7 Availability of Braille materials locally**

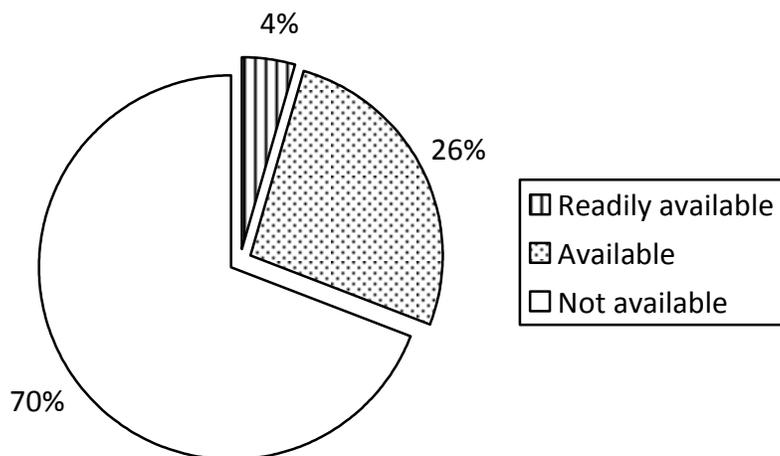


Table 4.15 and figure 4.7 above shows majority of respondents indicating that Braille materials were not locally available having 69% followed by those indicated that they were available with 26% while the rest 4% indicated that the materials were readily available. Those who indicated that the Braille materials were readily available probably were the teaching staffs who were not using them while those who indicated they were locally unavailable could be pupils and Braille teachers who were directly involved in use of Braille.

According to Wanjiku (2009), learners who are blind would benefit more if they would actively participate in Braille learning process; a possibility that would come true if they were provided with Braille learning materials. However there are fewer materials for the Braille writers than print writers.

**Table 4.16 Cost of Braille Materials According to Respondents**

<b>Costs</b>	<b>Frequency</b>	<b>Percentage (%)</b>
Cheap	3	4
Fair	18	26
Exorbitant	38	56
Prohibitive	9	13
<b>Total</b>	<b>68</b>	<b>100</b>

Table 4.16 show the cost of Braille materials was exorbitant according to majority of respondents having 56% followed by those who indicated that the cost was fair with 26%. The least indicated that the costs were prohibitive and cheap having 13% and 4% respectively. According to the study the Braille materials were expensive and that the reason they were insufficiency for both teachers and learners in the school for the blind.

The study concurs with Wanja (2009) assertion that the Braille equipments are imported at exorbitant prices. In addition, the cost of Braille production is high, hence being an obstacle to enhancement of education for the blind.

**Table 4.17 Possible ways to Improve Materials Sufficiency, Adequacy and Availability**

Possible ways	Frequency	Percentage (%)
Prioritize Braille equipments	21	31
Proper usage	35	51
Government involvement	43	63
Involve NGO	3	4
Invite well-wishers to assists	6	9
Lower costs	41	60

**Figure 4.8 Possible ways to Improve Materials Sufficiency, Adequacy and Availability**

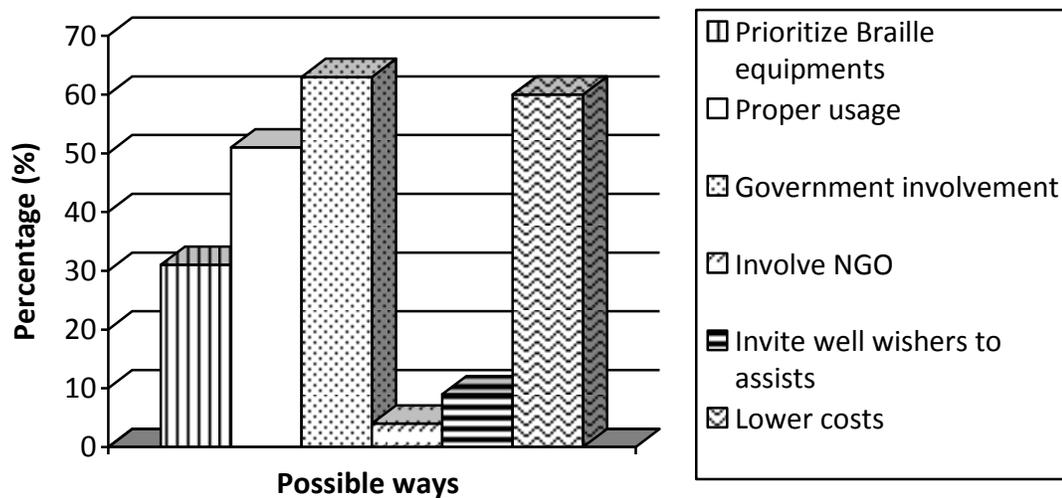


Table 4.17 and figure 4.8 of study shows the major possible ways to improve the issue of materials sufficiency, adequacy and availability according to majority of respondents was government involvement in improving Braille materials having 63%

closely followed by lowering the costs with 60% and then proper usage of the available materials having 51%. School giving priority to Braille equipments had 31% while the least was invite well-wishers to assists having 9% and 4% respectively.

The study shows that effective improvement on materials sufficiency, adequacy and availability is possible if government is fully involved, exorbitant costs are lowered and school management prioritizing on the Braille equipments. This agrees with Kimeto, (2010) who stated that lack of materials is a great hindrance to effective teaching and learning of the visually impaired learners also lack of funds make acquisition of text books and maintenance of Braille machines difficult.

## **CHAPTER FIVE**

### **SUMMARY, CONCLUSION AND RECOMMENDATIONS**

#### **5.0 Introduction**

In this chapter the researcher first gives the summary of the findings, draws the conclusion and then gives the recommendations in line with the study objectives.

#### **5.1 Summary of Findings**

The study found out that the study area fraternity, females were more than their male counterparts. Majority of teachers and upper primary pupils had knowledge of school's Braille literacy as they had been in the study area for more than 6 years. All the teachers and upper primary pupils were acquainted to reading and writing of Braille.

Teaching Braille to students with visual impairment successfully depended a great deal on the teachers having a positive attitude about Braille. According to the study teachers had positive attitude towards teaching Braille as shown in table 4.4 of the study. Teacher's attitude affected the teaching of Braille. The attitude depended mostly on the workload, pre-braille experience and the teacher's level of academic qualification. Monetary compensation and social interactions & relations played a small role in teachers' attitude on Braille.

The major factors affecting teachers' competence in teaching of Braille according to the study were proficiency in Braille writing and reading, professional & academic training as well as experience of years in teaching. Braille proficiency has been found

lacking among many teachers. The study shows that these factors affected the teachers' competence in using Braille to very large and to large extent represented by 31% and 25% respectively as shown in table 4.8 of the study. The study shows various ways of enhancing teachers' competence on effective Braille teaching. The major ways were found to be organizing workshops and taking teachers to refresher courses as well as seminars on Braille. Braille materials should also be provided for teachers use.

According to the study the common level of training sufficient for a Braille teacher to be effective was diploma + VI professionalism represented by 55% as shown in table 4.10 of the study. Another level found sufficient was diploma in special needs. Lack of an adequate number of teachers trained in these levels for visually impaired learners would pose a challenge to reading and writing of Braille. In-service training for Braille teachers though important were rarely done in the study area. In-service training and provision of adequate Braille equipments play a big role in imparting knowledge to teachers on Braille codes and teaching methodology sufficiently. This improves the effective teaching by Braille teachers.

The study shows that Braille materials were neither adequate nor sufficient for smooth teaching and learning of Braille. There was need to provide adequate learning resources for effective reading and writing of Braille. The reason for inadequacy and insufficiency was the source as these materials were not available in local bookshops thus needed to be ordered either nationally or internationally. The cost of materials was also another reason for insufficiency. The Braille equipments are imported at

exorbitant prices. The study shows the possible ways to improve the issue of materials sufficiency, adequacy and availability was government involvement in improving Braille teaching in school for the blind and lowering the costs represented by 63% and 60% respectively as well as proper usage of the available materials. The school for the blind management should also prioritize on Braille equipments as lack of materials is a great hindrance to effective teaching and learning of the visually impaired learners.

## **5.2 Conclusion**

The study found out that, Braille teachers needs to have positive attitude for them to successfully teach English Braille to visually impaired learners in primary school for the blind. Teacher's attitude mostly depended on the workload, pre-braille experience and the teacher's level of academic qualification. Monetary compensation and social interactions & relations played a small role.

The major factors affecting teachers' competence in teaching of Braille was found to be proficiency in Braille writing and reading, professional & academic training and experience of years in teaching. The major ways of enhancing teachers' competence on effective Braille teaching were found to be organizing workshops and taking teachers to refresher courses as well as seminars on Braille.

The study found the common level of training sufficient for a Braille teacher to be effective was diploma + VI professionalism and a diploma in special needs. Lack of an adequate number of teachers trained in these levels poses a challenge to reading

and writing of Braille. In-service training and provision of adequate Braille equipments play a big role in improving the effective teaching by Braille teachers.

The area of study had neither adequate nor sufficient Braille materials for smooth teaching and learning of Braille. Adequate and sufficient learning Braille resources were required for effective reading and writing of Braille. Braille materials were not locally available in local bookshops and thus were ordered nationally or internationally. This led them to be acquired with exorbitant prices. In order to improve the issue of materials sufficiency, adequacy and availability, the study found government involvement, lowering the costs and proper usage of the available materials to be of paramount importance.

### **5.3 Recommendations**

The researcher came up with the following recommendations:-

- i) English Braille teachers need to be sensitized to have positive attitude towards teaching of Braille to visually impaired learners in primary school for the blind.
- ii) Primary schools teachers in the study area should be encouraged to enroll for further studies in line with special needs in order to be competent in teaching learners with visual impairment.
- iii) The school head should lessen the Braille teachers workload to avoid them being burnout and also in order to enable them have more time on individual Braille learner.

- iv) The school management should frequently organize workshops, seminars as well as refresher courses for teachers in order to increase their competence in Braille and proficiency in Braille writing and reading.
- v) The government through TSC should post teachers with diploma in special needs and have specialized or are professional in visual impairment to the study area so as to have well qualified teachers for Braille literacy in the school.
- vi) The government should supply adequate and sufficient Braille equipments in the study area in order to improve the effective teaching and learning of Braille. It should also make these Braille materials locally.
- vii) The government should exempt taxes and import duties on Braille equipments imported in Kenya so as to make their prices affordable by the schools for the blind as well as individual learners with visual impairment.

#### **5.4 Suggestions for Further Studies**

- i) Another study on determinants enhancing teachers' proficiency in Braille should be done now on a wider scope covering both the primary school and secondary schools for blind in the Kiambu County.
- ii) A study should be done on competence and academic qualifications of teachers teaching in primary schools for the blind in Kiambu County.

## REFERENCES

- AFB, (2013). *American Foundation for the Blind*. Specialized Education Services for Students with Vision Loss
- Allman, C. B., (1998). *Braille communication skills: What teachers teach and visually impaired adults use*. *Journal of Visual Impairment and Blindness*, 92:331-338
- Almut, G. Winterstein and Carole, L. Kimberlin, (2008). *Research fundamentals measurement instruments 2276 Am J Health-Syst Pharm—Vol 65 Dec 1, 2008*
- Amato, S., (2002). *Standards for competence in Braille literacy skills in teacher preparation programs*. *Journal of Visual Impairment and Blindness*, 96:143-154.
- Amato, S.S. (2002). *Standards and Criteria for Competence in Braille Literacy*. Teacher Preparation Programs in the United States and Canada. *Journal of Visual Impairment & Blindness* 88:516-524.
- Arnold, A., (2004). *Learning to read by touch: Developing Braille reading schemes*. *British Journal of Visual Impairment* 2004 22:89
- AVRE, (2013). *Association for Vision Rehabilitation and Employment, inc. Insight Braille- The key to literacy*
- Bano, I., Syed, A., Hashmi, M., Raza, S. and Shaikh, F., (2011). *Comparative Analysis of Computer Software and Braille Literacy to Educate Students Having Visual Impairment*. *Australian Journal of Business and Management Research* 1:85-89

- Basim, H. N., Begenirbas, M. and Yalcin, R. C., (2013). *Effect of teacher personalities on emotional exhaustion: Mediating role of emotional labour*. Educational sciences, Theory and Practice 13(3)
- Beck, K., (2010). *Challenges That Blind People Face*. Available at <http://www.livestrong.com> retrieved October 2013
- Boame, C., (2013). *Educational Empowerment of The Blind and Persons with Low Vision in Ghana, A Shared Responsibility*. A paper presented by Coordinator Inclusive Education Programme, Krachi East and West Districts, Ghana
- Boame, D.C., (2012). *Educational empowerment for the blind and persons with low vision in ghana, A shared responsibility*. Inclusive education programme Krachi east and west districts.
- Chambel, T., P. Antunes, C. Duarte, L. Carriço and Guimarães, N., (2009). *Reflections on Teaching Human Computer Interaction to Blind Students*. Creativity and Hci: From Experience to Design in Education. Selected Contributions from Hci2007, Aveiro, Portugal.
- Cooper, L., (2006). *A Brief History of Tactile Writing Systems for Readers With Blindness and Visual Impairments*. Spring. Outreach Assistive Technology Consultant, TSBVI
- Corn, A., Ferrell, K.A., Spungin, S.J., & Zimmerman, G., (1996). *What We Know about Teacher Preparation Programs in Blindness and Visual Impairment* (Report prepared for the National NASDE Policy Forum: Training Educators to Work with Students Who Are Blind or Visually Impaired). Washington, DC: Authors, September 1996.

- Doake, David B., (1995). *Literacy learning: A revolution in progress*. Bothell, WA: The Wright Group.
- Donoyama, N. and Munakata, T., (2009). *Trait anxiety among Japanese message practitioners with visual impairment: What is required in Japanese rehabilitation education?* British Journal of Visual Impairment 2009 27:25
- DRC, (2008). *Support services for students with disabilities*. Disability Resource Centre. Lehigh university.
- Erin, J.N., Daugherty, W., Dignan, K., & Pearson, N., (1990). *Teachers of Visually Handicapped Students with Multiple Disabilities: Perceptions of Adequacy*. Journal of Visual Impairment & Blindness, 1990:16-20.
- Fouka, G. and Mantzorou, M., (2011). *What are the major ethical issues in conducting research? Is there a conflict between the research ethics and the nature of nursing?* Health Science Journal, Vol. 5 (1) pp: 3-14
- Franklin A, Keil S, Crofts K and Cole-Hamilton I., (2001). *Shaping the future research report 2: The educational experiences of 5 to 16 year-old blind and partially sighted children and young people*. London: RNIB.
- Frieman, B., (2006). *Future Reflections Fall*. State Braille Standards for Teachers of Students Who Are Blind or Visually Impaired: A National Survey. Future Reflections Fall 2006
- Gillani, B.B. & Relan, A., (1997). *Incorporating interactivity and multimedia into web-based instruction*. In B. H. Khan (Ed.), *Web-based instruction*, (pp. 231-237). Educational Technology Publications: New Jersey.

- Ianuzzi, J. W., (1999). *Braille Literacy in America: A student's view*. Online:  
Available from Other visions e-zine.
- Ianuzzi, J.W., (1992). *Braille Literacy in America: A Student's View*. Travel Vision.  
Available at <http://www.travelvision.org/ov/ov0599.htm>. (Accessed May 11,  
2013).
- ICEBI, (2009). *The International Council for Education of People with Visual  
Impairment*. The Braille Code: Past-Present-Future. The Educator Volume  
XXI, Issue 2
- Irwin, R. B., (1956). *As I Saw It*. Online: available from the New York Institute of  
Special Education.
- Jennings J., (1999). 'Print or braille? Decision making in the choice of primary  
literacy medium for pupils with a severe visual impairment'. The British  
Journal of Visual Impairment. 17:11-16.
- Johnson, L., (1996). *The Braille Literacy Crisis for Children*. Journal of visual  
impairment and blindness; 90(3).
- Kearsley, G., (1994). *Social development theory* (L. Vygotsky). [Online]. Available:  
<http://www.gwu.edu/~tip/vygotsky.html> [Accessed July 7<sup>th</sup> 2013].
- Kimeto, A. C., (2010). *Challenges to effective learning of English Braille for pupils  
with visual impairment in integrated primary schools in Bomet District in  
Kenya*, Nairobi, Kenyatta University school of Education, Unpublished Thesis
- Knowlton, M., & Berger, K., (1999). *Competencies required of Braille teachers*.  
*Review*, 30:151-160.

- Koenig, A., J. & Holbrook, M. C., (2000). *Literacy Skills*. In Koenig, A. J. & Holbrook, M. C., (Ed). Foundations of Education. Vol. II. Instructional Strategies for Teaching Children and Youths with Visual Impairments. AFB Press.
- Lamb, G., (1996). *Beginning braille: a whole language based strategy*. Journal of Visual Impairment and Blindness 90:184 – 189.
- Lamb, G., (1998). *Dots for tots: emergent literacy and Braille reading*. The British Journal of Visual Impairment. 16:111 – 115.
- Lewis, S., & Allman, C. B., (2000). *Educational programming*. Foundations of education: Instructional strategies for teaching children and youth with visual impairments. (2<sup>nd</sup> ed.). New York: American Foundation for the Blind
- Mbith A. N., (2013), *Social and academic experiences of pupils with low vision in integrated primary schools*. Nairobi County, Kenya. Kenyatta University, Unpublished Thesis
- MoE, (2009). *Enrolment of Visually Impaired Learners*. Republic of Kenya, Ministry of Education, June 2009
- Mugambi, M. K., (2012). *Challenges facing teachers in teaching students with visual impairment in integrated school: A study of Moi Girls' school, Nairobi*. Kenyatta University, Unpublished thesis
- Mullen, E. A. (1990). *Decreased Braille literacy: A symptom of a system in need of reassessment*. Review, 22, 164-169.
- Ndung'u, R. R., (2011). *Literacy medium for learners with visual impairments: Primary literacy medium used by secondary school learners with low vision in Kenya*. University of Oslo, Norway, Unpublished Thesis

- Norris, N., (1972). *Aims and methods in the teaching of English to the visually handicapped*. Social Science Research Council project. Research Centre for the Education of the Visually Handicapped and the Oracy Research Unit, Faculty of Education, University of Birmingham.
- Odle, T., (2009). *Visual impairments*. Available online at <http://www.education.com/> retrieved October 11, 2013
- Pierangelo, R. and Giuliani, G., (2007). *The educator's manual of disabilities and disorders*. San Francisco: John Wiley & Sons.
- Pogrud, R., Fazzi, D.L., & Lampert, J.S., (1992). *Early Focus: Working with Young Blind and Visually Impaired Children and Their Families*. New York: American Foundation for the Blind, 1992.
- Rex, E. J., (1989). *Issues related to literacy of legally blind learners*. Journal of Visual Impairment and Blindness. 1989:306 – 313.
- Rex, E. J., (1989). *Issues Related to Literacy of Legally Blind Learners*. Journal of Visual Impairment and Blindness 83:306-307,10-13.
- Rex, E. J., Koenig, A. J., Wormsley, D. P., and Baker, R. L., (1994). *Foundations of Braille literacy New York: American Foundation for the Blind*.
- Rosenblum, L. P., Lewis, S. and D'Andrea, F. M., (2012). *The Development of Accepted Performance Items to Demonstrate Competence in Literary Braille*. Journal of Visual Impairment & Blindness 106:197-211
- Ryles, R., (1995). *Beyond Braille*. Speech Presented at Getting in touch with literacy. Austin, TX.

- Ryles, R., (1996). *The impact of Braille reading skills on employment, income, education and reading habits*. Journal of visual impairment and blindness; 90(3).
- Schroeder, F., (1989). *Literacy: The Key to Opportunity*. Journal of Visual Impairment and Blindness. 83, 290-93.
- Sight Savers International, (2013). *Children who are blind or have low vision*. Findings from recent research supported by Sight Savers International. Available at [www.sightsavers.org](http://www.sightsavers.org)
- Spungin, S. J. and D'Andrea, F. M., (2000). *In Braille into the next millennium*. Washington DC: National Library Service for the Blind and Physically Handicapped and Friends of Libraries for Blind and Physically Handicapped Individuals in North America, Braille literacy. pp. 434 – 461.
- Spungin, S. J., (1989). *Braille literacy: Issues for blind persons, families, professionals, and producers of braille*. New York: American Foundation for the Blind.
- Spungin, S. J., (1996). *Braille and beyond: Braille literacy in a larger context*. Journal of visual impairment and blindness; 90(3), 271-274.
- Spungin, S.J. & D'Andrea, F.M., (2001). “*Braille literacy*” in Library of Congress, *Braille into the next millennium*, pp. 444-446.
- Stephens, (1989). *Braille - implications for living*. Journal of Visual Impairment and Blindness 1989:288 – 289.
- Strick, A., (2012). *The right to read Braille*. Available at <http://www.booktrust.org.uk>, The RNIB survey. London: HMSO.

- Torpy, J., Lynn, C. and Glass, R., (2003). *Causes of Visual Impairment*. Journal of American Medical Association 290:2088.
- Tsengu, D. V., Brodtkorb, S. and Almnes, T. (2000). “*CBR and economic empowerment of persons with disabilities*” in Hartley, S. (ed.), *CBR as Part of Community Development: A Poverty Reduction Strategy*. University College London. Centre for International Child Health: London.
- U.S. Department of Education, (1996). *Eighteenth Annual Report to Congress on the Implementation of the Individuals with Disabilities Act*. Washington, DC: Author, 1996.
- Walker, E., Tobin, M., & McKennell, A., (1991). *Blind and partially sighted children*. London: Britain
- Wanja, S. N., (2009). *Factors affecting Braille competency among learners with total loss of vision in Kenya*, Kenyatta University library, unpublished thesis
- Wanjiku, S. M., (2009). *Factors that influence braille learning in Thika Primary School for the Blind*. Kenyatta University Library, unpublished Thesis
- Weiss, T. (2009). *Braille facts*, information and example pictures
- Wittenstein, S. H., (1994). *Braille training and teacher attitude: Implications for personnel preparation*. Review 25:103-111.
- Wittenstein, S. H., & Pardee, M.L., (1996). *Teachers voices: Comments on Braille and literacy from the field*. Journal of Visual Impairment and Blindness 90:201-210

## **APPENDIX I: TRANSMITTAL LETTER**

Martha Kagendo  
P.O Box 80, 01000  
Thika

20<sup>th</sup> November, 2013

To Respondents,  
Dear Sir/ Madam,

### **RE: Collection of Data for Academic Research**

I'm a student of Kenyatta University currently undertaking a research study on determinants enhancing teachers' proficiency in English Braille, as part of a requirement leading to award of Master of Education.

I am therefore requesting your cooperation in filling in the attached questionnaire. All your views will be held confidential and will only be used for this academic study.

Thanking you in advance  
Yours faithfully,

Martha Kagendo  
KU Student Researcher

## APPENDIX 2 : QUESTIONNAIRE

### Section A: General information

- 1) How long have you been in this school? \_\_\_\_\_years/ Months
- 2) Indicate your gender      Male       Female
- 3) Are you acquitted to reading and writing of Braille?  
Yes       No

### Section B: Teachers' attitude towards the Braille literacy

- 4) Do you think the attitude of the teacher affects the teaching of Braille in any way?

Opinion	Tick	Explanation of answer
Yes		
No		
Cannot tell		

- 5) According to you what attitude do teachers have on teaching Braille? Explain.

---

---

6) What do you think affects the attitude of the teacher towards Braille?

<b>Effects</b>	<b>Tick</b>	<b>Explanation of the Effect</b>
Work load		
Level of academic qualification		
Monetary compensation		
Pre-Braille experience		
Social interactions and relations		
Others (Explain)		

7) Rate the factors affecting attitude on a scale of 1-5 with 1 being of least effect and 5 most effect

<b>Effects</b>	<b>Rating</b>				
	<b>1</b>	<b>2</b>	<b>3</b>	<b>4</b>	<b>5</b>
Work load					
Level of academic qualification					
Monetary compensation					
Pre-Braille experience					
Social interactions and relations					
Others (Explain)					

**Section C: Teachers' competence in using Braille code**

8) How do you think the competence of the teacher affects the teaching of Braille?

Competence factors	Tick	Explanation of effects
Proficiency in writing and reading		
Experience of years in teaching		
Level of research in Braille		
Professional and academic training		

9) To what extent does the following factors affects teachers' competence in using Braille?

VL – very large; L – large; M – moderate; S – small; NE – No extent

Competence factors	VL	L	M	S	NE	Total
Proficiency in writing and reading						
Experience of years in teaching						
Level of research in Braille						
Professional and academic training						
Others (Specify)						

10) Suggest what could be done to enhance the competence of the teachers of Braille for more effectiveness (in the space provided) \_\_\_\_\_

---



---

**Section D: Level of teachers' training in Braille code**

11) What level of training do you think is sufficient for a Braille teacher to be effective?

<b>Level of Education</b>	<b>Tick</b>	<b>Explanation of Opinion</b>
Up to 6 months course		
Certificate		
Diploma in special needs		
Degree		
Diploma/Degree plus Professional qualification		
Masters		

12) Do you think the training that has been given to the Braille teachers has been sufficient?

<b>Opinion</b>	<b>Tick</b>	<b>Explanation of Opinion</b>
Yes		
No		

13) Has there been in-service training for the teachers of Braille?

Yes                      No

14) Suggest how the training of teachers of Braille could be improved for effectiveness

(in the space provided) \_\_\_\_\_

\_\_\_\_\_

**Section E: Extent of availability and suitability of Braille teaching materials**

15) Describe the adequacy and sufficiency of the Braille materials available in the school

<b>Situation</b>	<b>Tick</b>	<b>Explanation</b>
Adequate		
Sufficient		
Inadequate		
Insufficient		
Other Specify)		

16) Which is the source of the materials for Braille?

<b>Source</b>	<b>Tick</b>
National	
International	
Local Bookshops	

17) Describe the availability of the Braille materials

<b>Source</b>	<b>Tick</b>	<b>Explanation of Response</b>
National		
International		
Local Bookshops		

18) Describe the cost of the Braille materials

<b>Source</b>	<b>Tick</b>	<b>Explanation of Response</b>
Cheap		
Exorbitant		
Prohibitive		

19) Suggest what could be done to improve the issue of materials sufficiency, adequacy and availability (in the space provided) \_\_\_\_\_

---

---

**Thank you for your Co-operation**

### APPENDIX 3: INTERVIEW GUIDE

**Section A: General information**

- 1) For how long have you been in this school?
- 2) Which is your category in the school (teaching staff or pupil)?
- 3) What is your gender?
- 4) Are you acquainted to reading and writing of Braille?

**Section B: Teachers’ attitude towards the Braille literacy**

- 5) Explain how you think attitude of the teacher affects the teaching of Braille in any way
- 6) What would you suggest to be favourable attitude for the teacher to effectively teach Braille?
- 7) How would you rate the factors affecting attitude on a scale of 1-5 with 1 being of least effect and 5 most effect?

Effects	Rating				
	1	2	3	4	5
Work load					
Level of academic qualification					
Monetary compensation					
Pre-Braille experience					
Social interactions and relations					
Others (Explain)					

**Section C: Teachers’ competence in using Braille code**

- 8) How would you rate the competence factors on a scale of 1-5 with 1 being of least effect and 5 of most effect?

Competence factors	1	2	3	4	5
Proficiency in writing and reading					
Experience of years in teaching					
Level of research in Braille					
Professional and academic training					
Others (Specify)					

- 9) What do you suggest could be done to enhance the competence of the teachers of Braille for more effectiveness?

**Section D: Level of teachers' training in Braille code**

- 10) Explain the level of training you think is sufficient for a Braille teacher to be effective
- 11) Explain whether the training that has been given to the Braille teachers has been sufficient
- 12) Has there been in-service training for the teachers of Braille?
- 13) What suggestions do you have that could improve the training of the Braille teachers to be more effective?

**Section E: Extent of availability and suitability of Braille teaching materials**

- 14) How would you briefly describe the adequacy and sufficiency of the Braille materials available in the school?
- 15) How would you describe the source, availability of the Braille materials and why?
- 16) How would you describe and explain the cost of the Braille materials?
- 17) What would you suggest what could be done to improve the issue of materials sufficiency, adequacy and availability?

**Thank you for your Co-operation**

## APPENDI 4: PERMIT LETTER FROM NACOSTI

THE SCIENCE, TECHNOLOGY AND INNOVATION ACT, 2013

The Grant of Research Licenses is guided by the Science, Technology and Innovation (Research Licensing) Regulations, 2014.

**CONDITIONS**

1. The License is valid for the proposed research, location and specified period.
2. The License and any rights thereunder are non-transferable.
3. The Licensee shall inform the County Governor before commencement of the research.
4. Excavation, filming and collection of specimens are subject to further necessary clearance from relevant Government Agencies.
5. The License does not give authority to transfer research materials.
6. NACOSTI may monitor and evaluate the licensed research project.
7. The Licensee shall submit one hard copy and upload a soft copy of their final report within one year of completion of the research.
8. NACOSTI reserves the right to modify the conditions of the License including cancellation without prior notice.

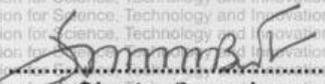
National Commission for Science, Technology and innovation  
P.O. Box 30623 - 00100, Nairobi, Kenya  
TEL: 020 400 7000, 0713 788787, 0735 404245  
Email: dg@nacosti.go.ke, registry@nacosti.go.ke  
Website: www.nacosti.go.ke

**REPUBLIC OF KENYA**  
National Commission for Science, Technology and Innovation  
**RESEARCH LICENSE**  
Serial No.A 21317  
CONDITIONS: see back page

**THIS IS TO CERTIFY THAT:**  
**MS. MARTHA KAGENDO KILINGII**  
**of KENYATTA UNIVERSITY, 80-1000**  
**Thika, has been permitted to conduct**  
**research in Kiambu County**  
**on the topic: STRATEGIES TO ENHANCE**  
**TEACHERS PROFICIENCY IN BRAILLE**  
**for the period ending:**  
**15th October, 2019.**

**Permit No : NACOSTI/P/18/95650/25051**  
**Date Of Issue : 17th October, 2018**  
**Fee Received : Ksh 1000**

  
**Applicant's Signature**

  
  
**Director General**  
**National Commission for Science, Technology & Innovation**