EFFECTS OF EMBOSSED PICTURE TECHNIQUE ON READING PERFORMANCE OF LEARNERS WITH HEARING IMPAIRMENTS: A CASE OF KAMBUI SCHOOL FOR THE DEAF

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APRIL 2010
DECLARATION

I hereby declare that this thesis is my original work and has not been presented for a degree in any other university.

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DEDICATION

I dedicate this thesis to my children Seraphine, Peter and Faith.
Honor and glory be to the almighty God who gives all knowledge and wisdom. Every good thing that comes to us comes from Him. I wish to acknowledge all those who contributed in various ways towards the success of this study. My sincere gratitude goes to my supervisors, Dr. Franciscakah I. Wamocho and Dr. Leo Odongo for their professional guidance and scholarly input throughout the study. I wish to extend similar gratitude to all departmental lecturers that read this work and gave their comments to improve it. Special thanks go to the head teachers of Machakos and Kambui School for the Hearing Impairments for their support during the data collection period. I wish to thank Kenyatta University Library workers for their tireless support in giving the necessary information for the study. Special thanks to Mr. Bojana for editing this work. I wish to thank my parents for their prayers, financial support and, instilling in me the fact that learning is a continuous process. My heart felt thanks go to my late mother Phanice Munyendo, for encouraging me to pursue this study not forgetting my sister Salome for encouraging me and giving me words of wisdom when the going got tougher. Lastly, I wish to thank my husband Mohamed Nachibati for his moral and financial support towards this study; my daughter Seraphine for typing the work, Peter and Faith for their patience and understanding at the time of the study.
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<td>CKRC</td>
<td>Constitution of Kenya Review Commission</td>
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<td>CRT</td>
<td>Criterion Reference Test</td>
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<td>dB</td>
<td>Decibel</td>
</tr>
<tr>
<td>EHA</td>
<td>Education of the Handicapped Act</td>
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<td>FPE</td>
<td>Free Primary Education</td>
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<td>IDEA</td>
<td>Individuals with Disabilities Education Act</td>
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<tr>
<td>IQ</td>
<td>Intelligence Quotient</td>
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<td>LEA</td>
<td>Language Experience Approach</td>
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<td>SPSS</td>
<td>Statistical Package for Social Sciences.</td>
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<td>T/C</td>
<td>Total Communication</td>
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<td>UK</td>
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ABSTRACT

The central problem of this study was that, despite the critical role of reading in promoting education of pupils with hearing impairments, their performance in reading remained low. The effect of embossed picture technique in teaching reading to the pupils with hearing impairments had not been addressed by the Ministry of education. Therefore, the purpose of this study was to find out the effect of embossed picture technique when used in teaching reading to the pupils with hearing impairments. The study was guided by Piaget’s theory of human mental development. The study adopted an experimental design. The study was carried out at Kambui School for the Hearing Impaired located on Githunguri- Ruiru road in Central province, Kiambu District, Githunguri Division, Ngewa zone, three kilometres off Kwa-Maiko centre. The school was chosen since it caters for all categories of pupils with Hearing Impairments from nursery to class eight. The school also admits pupils from all over the country. Pupils were assigned randomly to the experimental and control groups. Each group consisted of 9 pupils totalling 18. Data were collected from both experimental and control groups for a period of 6 weeks. Criterion reference test (CTR) was used as a pre-test and post test for the purpose of data collection. The Mann-Whitney-Wilcoxon sum of rank test and the Kruskal-Wallis one way analysis of variance (ANOVA) were used to test the significant difference in performance in reading of pupils with hearing impairments taught with embossed picture technique and those taught with “look and say” method. To determine if there was any significant effect of the degree of hearing loss on performance of pupils with hearing impairments in reading, and the difference in performance of pupils of different ages when taught with embossed picture technique, the Kruskal-Wallis one-way Analysis of Variance (ANOVA) which takes care of small samples were used with the different degrees of hearing loss and the different ages as factors. The results showed that there is a high statistical significant difference between pupils taught with embossed picture technique and those taught with the look and say method. The results revealed that there is no significant age effect on reading performance of pupils with hearing impairments of different ages taught with embossed picture technique. The study revealed that there is no significant performance difference in reading of pupils with hearing impairments at different degrees of hearing loss when taught with embossed picture technique. In conclusion, pupils with hearing impairments performed better in reading when taught with embossed picture technique than those taught with the “look and say” method. Age did not affect the reading performance of pupils with hearing impairments when taught with embossed picture technique. Lastly the degree of hearing loss did not affect the reading performance of pupils with hearing impairments when taught with embossed picture technique. The recommendation to the Ministry of Education was that they should consider the use of embossed picture technique in teaching reading to pupils with hearing impairments in class one.
CHAPTER ONE

1.0 Introduction

1.1 Background to the study

Education is a human right and every child has a right to education. Public Law 92-142 (now renamed IDEA). Together with public law 105-17 amendments of 1997 changed the title of the Education of the Handicapped Act (EHA) to the “Individuals with Disability Education Act” or IDEA which according to Kirk, Gallagher, and Anastasiow (2003), provided educational opportunity for the handicapped children by allocating federal funds for the state to develop plans and programs for children and their families from birth on. Maynard and Jack (1977) observe that despite the critics of public Law 92-142, the act affirms several guarantees that, taken together, make it one of the most significant pieces of educational legislation in the history of the United States of America. One of the guarantees states that all pupils with handicapping conditions aged 3 to 21 have a free and appropriate public education. “There will be no financial charges to the family and the programmes provided must uniquely meet the needs” of individual pupils according to their diverse needs. In addition, Ndurumo (2001) states that a child has the right to be educated in the least restrictive environment.

In January 2003, the then democratically elected government of Kenya placed the highest priority on education, by implementing Free Primary Education (FPE) which led to an increase in primary school enrolment to nearly one million, with the number of pupils increasing in individual schools by up to 25%. This placed great financial demands upon the Ministry of Education at all levels according to Imfundo, (2005).
Otieno (2003) in a report on Universal Primary Education’s (UPE) goal by the year 2015, identified inadequate provision of education for pupils with disabilities while on the other hand a paper presented to the Constitution of Kenya Review Commission (CKRC) by Ndurumo (2001), note that persons with disabilities are an integral part of the society who long for equality in opportunities. Ndurumo (2001) further notes that, a dynamic society takes into recognition the needs of its minority group. The right of education is one of the most fundamental needs of a person (Ndurumo, 2001).

According to Cohen (1987), reading is essential for communication. It involves learning to pronounce words, identify words, and get their meanings and learning to bring meaning to a text in order to get meaning from it. In addition, learning skills are placed in the context of authentic reading and writing activities. This definition recognizes the importance of skill instruction as one piece of the reading process and reading as a complex process involving recognition of shapes (Allington & Cunningham, 1996). Cohen (1987) observed that most schools in the USA are not teaching pupils with deaf hearing impairments to read adequately in the first four grades, the published reading achievement scores from large cities are discouraging testimonies to this fact. More discouraging are the experiences of educators who work in the classroom from which these reading achievement scores are drawn. The deprivation of disadvantaged beginning readers looms large when methods and materials for reading are mediocre. The deprivations become insurmountable impediments when the methods and materials for teaching reading are less than mediocre (Cohen, 1987).
According to Sutton (2005), research findings show that a tragic failure of American education in this century has been a failure to teach pupils to read and write. However, Nissen (2005) argues that the central problem of learning to read can be solved with the right methods and tools. It has been noted that a quarter of the pupils in United Kingdom (UK) and United States (US) are illiterate (Nissen, 2005). Part of the problem in reading is due to the difficulty of the English language spelling rules and expectations but the main problem is how reading is taught (Nissen, 2005).

This study adapted the embossed picture technique. The idea of using embossed picture in education of the pupils with blindness has often been tried. Embossed pictures are sometimes referred to as raised letters. They exist in a form that can be touched, felt and seen easily. To be concrete, the embossed outline of a dog gives the shape of the animal as it is seen. The hands toughing the real dog or part of it, move in three dimensions. In an embossed drawing, the dog’s four legs are represented in one plane, whereas to the sense of touch, they are actually at the “four corners” of the dog’s body as the child with blindness expressed it. The embossed outline therefore, constitutes not a representation but a symbol of an object, which becomes meaningful only with added verbal interpretation and explanation (Holbrook & Nannel, 1997).

The use of embossed materials in teaching of geography; geometry and other subjects to pupils should be successful (Lowenfelt, 1955). This study sought to investigate the effectiveness of embossed picture technique in teaching reading to pupils with hearing impairments.
1.2 Statement of the problem

The study sought to investigate the effect of embossed picture technique when used in teaching reading to pupils with hearing impairments specifically the deaf. In spite of good philosophy in the Ministry of education behind special education, the effect of the teaching techniques used in teaching reading to the pupils with hearing impairments has not been addressed. Charles and James (1981) observe that studies of educational achievement have uniformly shown that learners with hearing impairments are retarded from three to four years. This may indicate that the absolute degree of retardation increases with age. In addition, Charles and James (1981) note that although clear division can be made between the pupils who are deaf and pupil who are hard of hearing and many of their problems are sufficiently different to warrant their being educated either separately or by different methods. Hearing impaired pupils with no useful residual hearing must entirely depend on vision and other senses for their education.

Other studies have revealed that pupils who are deaf do not perform well at any level on tests of general ability to read Standard English test (King & Quigley 1985). Ozoji, Umulu, and Olani, (1991) carried out a study to determine the level of verbal performance and academic achievement to be expected of pupils with hearing impairments in Nigeria. The subjects comprised 57 deaf, 27 hard of hearing and 25 normal hearing pupils who were given a series of tests, to determine the level of their speech intelligibility. The results indicated that the normal hearing subjects scored significantly higher than the deaf. It was noted that the hard of hearing manifested two to three years retardation in vocabulary and this retardation increased with chronological age (Ozoji et al., 1991).
Further, studies from Kenya conducted by Ndurumo (1986) reveal that pupils with hearing impairments perform woefully below hearing pupils. According to Ndurumo, despite the strategies and teaching methods used in teaching reading to the pupils with hearing impairments, their performance remains low. While hearing pupils could understand 97% of the 2000 most frequently used words, pupils who are deaf could understand 62%. This shows a significant lag behind in understanding the written words compared to hearing pupils. In addition, Kinaga (1987) found that pupils with hearing impairments lag behind hearing pupils academically. In Kenya embossed picture technique has not been used to teach reading to pupils with hearing impairments. This study sought to investigate the effect of embossed picture technique in teaching reading to the pupils with hearing impairments at Kambui School for the Hearing Impaired.

This study is done on the basis of the foregoing background that methods used in teaching reading affect the reading abilities of pupils who are deaf. It is also based on the general principles that govern linguistic study that new methods will be regularly developed and offered to educators and they should be willing to evaluate their effect in the classroom (Horn, 1970).

1.2.1 Purpose of the study

The purpose of this study was to find out the effects of embossed picture technique when used in teaching reading to pupils who are deaf.

1.3 Objectives of the study

The study focused on the following objectives:
1. To determine if pupils taught with embossed picture technique perform better in reading than those taught with “look and say” method.

2. To determine whether the performance in reading of pupils who are deaf taught with embossed picture technique differs with their ages.

3. To determine whether the degree of hearing loss has effect on performance of pupils with hearing impairments in reading when taught with embossed picture technique.

1.4 Research questions

The study was guided by the following research questions:

1. Do pupils who are deaf taught with embossed picture technique perform significantly better in reading than those taught with the “look and say” method?

2. Does age affect the reading performance of pupils who are deaf when taught with embossed picture technique?

3. Do the different categories of hearing loss differ significantly in reading performance when taught with embossed picture technique?

1.4.1 Null hypotheses

To address the research questions above, three null hypotheses were tested.

Ho1. There is no significant difference in reading performance of pupils who are deaf taught with embossed picture technique and the group taught with “look and say” method.

Ho2. There is no significant age effect on reading performance of pupils who are deaf of different ages when taught with embossed picture technique.

Ho3. There is no significant performance difference in reading of pupils who
are deaf of different degrees of hearing loss when taught with embossed picture technique.

1.5 Significance of the study

Findings of this study will contribute to knowledge on a method that can be used to teach reading to pupils with hearing impairments. It is hoped that the study will stimulate more research in methods of teaching reading to pupils who are deaf. The data generated from the study will also be useful to the curriculum developers and implementers in designing new methods of teaching reading to pupils who are deaf.

1.6 Limitations and delimitations of the study

The study was conducted in one school only in Kenya, in Kiambu, Kambui School for the Deaf, because of financial constraints and time. It was easy for the researcher to get pupils with all categories of hearing loss. The institution was easily accessible to the researcher.

1.7 Assumptions of the study

This study assumed that:

1. None of the pupils with hearing impairments had prior lessons with the use of embossed picture technique.

2. Pupils with hearing impairments encounter unique reading problems due to their disability.

1.8 Theoretical framework

The study was guided by Piaget’s theory of cognitive development (Piaget, 1960) which states that, the first stage in human learning is through the senses where the
individual constructs mental schemes, and sense preceptors that represent phenomena. These sensory motor schemes constitute the first human intelligence to solve practical problems in their environment. The senses that were used in this study were the tactile, vestibular and visual senses which are crucial for learning. They precede language learning. Sensory-motor intelligence is “the capacity to resolve practical problems through activities prior to language acquisition” (Piaget, 1960). The preconception period, which generally extends from 18 or 20 months to four years, is marked by the development of language and symbolic function. Imitation, particularly “deferred” imitations, constitutes the transitional element between sensory-motor schemes and representative thought.

The transition starts with deferred imitation and proceeds through progressive internalization. Thus symbolic images are formed (Piaget, 1960). During the intuitive period which occupies the period from four to seven years, approximately, a gradual coordination of symbolic representations leads the child to the threshold of operations. During the symbolic stages, the child can learn to use tactile embossed pictures to learn to read words and sentences. Intuition or “action executed in thought” is figurative thought and is more refined than conceptual thought in that it deals with wider configuration. Intuition, however, continues to utilize symbolic imagery and still carries with it part of its inherent limitations. So, at this level, intelligence remains “prelogical” that is, it is capable only of actions which are short, unidirectional, and dependent on figurative representation (Piaget, 1960).

At approximately 10 years, the child reaches a plateau in equilibration, which is marked by the relative completion of notions basic to the comprehension of space, time and classification among others. However, the operations formed in this manner
are limited to the “concrete” level; they deal with manipulated objects (Piaget, 1960). This study adapted this theory to teach reading to the pupils with hearing impairments. The study came in at the third stage when the pupils with hearing impairments were likely to be in school. It was assumed that pupils with hearing impairments have a language problem and that they could learn more from tactile sensory experiences, which comes in at the symbolic stage. The tactile, vestibular and visual senses which are crucial for one to read have been used in the three reading levels of comprehension. Reading responds to meaning at three levels, the literal level, the interpretive level and the applied level. They can see, tough, and feel embossed words, pictures and sentences. Thus the literal level is seeing the embossed words, interpretive level is toughing the embossed words and applied level is feeling, saying the word by signing.
1.9 The Conceptual framework

Figure 1.1 Reading Levels of Comprehension

The above conceptual framework portrays that for actual reading to take place; three levels of comprehension must be reached. That is the literal level, the interpretive level, and the applied level. In this study, the three levels are seeing, touch and feeling. Which on the other hand means that one starts to read the lines, then reads between the lines and lastly reads beyond the lines. Embossed pictures emphasize the use of raised words, letters and sentences for reading to take place. The senses of tough, vestibular, and feel have to be involved during the reading process. Reading is a thoughtful process, which embraces the idea of levels of comprehension according to Herber (1978). He maintains that reading responds to meaning at various levels of construction and conceptual difficulty. Although skills are assumed to operate in each
level, the emphasis is clearly on how comprehension skills interact within and among the three levels. Herber (1978) observes that the literal level of reading is another way of saying that pupils can ‘read the lines’ of your content material. They can read the print sufficiently to get the gist of the author’s message.

Herber (1978) maintains that interpretative levels (integrating information) are necessary but not sufficient in constructing meaning from print. According to Herber, good readers search for conceptual complexity in material they “read between the lines”. Readers focus not only on what the authors say, but also on what authors mean by what they say. Herber (1978) states that applied level (constructing knowledge) of reading is a process of reconstructing our messages. Questions like “what does this mean to me?” during a reading process, or when one attempts to seek significance in what they are reading then, it is said to be essentially constructing knowledge (Figure 1.1). In Kenya, pupils who are deaf have been taught to read using the “look and say” method and total communications. It has been noted that their performance still remains low. The teaching technique used to teach reading to pupils who are deaf has not been addressed by the government. Embossed picture technique has not been used to teach reading to pupils who are deaf. That is the gap that this study came in to fill by investigating the effect of embossed picture technique in teaching reading to pupils who are deaf.
1.10 Operational definitions of central terms

An embossed picture: The process of raising a design or piece of writing. The writing or picture is raised above the surface. It can be seen, touched and felt easily. The technique has been used by pupils with visual impairments to read by feeling, touching and interpreting the word.

Communication: The process, by which individuals interact to transmit, and receive messages, including sounds, symbols and gestures.

Deaf: Profound or complete inability to hear. Have a hearing disability that precludes successful processing of information through audition.

Disability: Is the actual loss of function resulting from impairments. For example a person whose legs are paralyzed cannot walk independently.

Dyslexia: It is a reading disability in which children have a combination of problems learning the relationships between sounds and letters. Making it difficult for learners to recognize letters, learning the names of the letters and breaking words into sounds of letters and letter combinations.

Handicapping conditions: These are burdens imposed on pupils as a result of interaction of
a deviant characteristic within an environment.

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<th>Hard of hearing</th>
<th>An impairment in hearing, that adversely affecting a child’s educational performance.</th>
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**Congenital**

**hearing loss** Experienced before the acquisition of speech. When the hearing loss is genetic.

**Language:** It is a process that goes beyond the individual for it is a social activity in which the thought of one mind is conveyed to another. To accomplish these social ends, each speaker must know not only the sound, words, and sentences of a language, but also certain principles of conversation.

**Mild hearing**

**Loss** A hearing loss that ranges from 41-55 Db (decibels)

**Moderate hearing**

**loss:** A hearing loss that ranges from 55- 70 dB (decibels)

**Phonemes:** Any one of the set of the smallest units of speech in a language that distinguishes one word from another.

**Profound**

**hearing loss:** It is a hearing loss that ranges from 91+ dB (decibels) and above.

**Reading:** Is looking and understanding the meaning of written or printed words or symbols.
Severe hearing

loss: A hearing loss that ranges from 71-91 dB

Total communication: Is an approach that advocates for the use of all modes of communication including writing, pointing, drawing, speech, pantomime, signing, among others in order to pass information or knowledge to a pupil hearing impairments.
CHAPTER TWO

LITERATURE REVIEW

2.0 Introduction

The chapter reviews documented literature on reading and its complexity. It focuses on literature on effects of hearing loss on language, reading, theories of language acquisition, reading and academic achievement. The chapter also reviews other methods of teaching reading and finally transferring the image (how embossed pictures are used to learn to read) on the foil, which is an important instrument for experimentation.

2.1 Reading a complex process

Studies by Wendy (1984) have shown that reading is a complex process involving recognition and remembering shapes (symbols) on a page and realizing that those shapes represent words that we know in our language. The discovery of this link between symbols and words is an individual action. For some pupils, it will be a slow process of understanding; for others, it will be a sudden realization. Remembering certain symbols and even writing them down may be more difficult for pupils when showing them shapes they have never seen before and expect them to remember (Wendy, 1984). However, despite the fact that Wendy (1984) observes that reading is a complex process, there was no mention of embossed pictures technique being used in teaching reading to pupils with deaf hearing impairments. That is the gap that the study was filling.
Studies by Kirk (1978) have indicated that failure to learn to read places several social and business restrictions upon pupils. While the inability to read and write was both common and acceptable a few generations back, poor reading closes many doors in today’s world. Although Kirk (1978) notes that poor reading closes many doors for pupils with hearing impairments today, there was no mention on how embossed picture technique was used to teach reading to the same group. Most pupils with hearing impairments exhibited poor reading skills due to the loss and inadequate language exposure.

2.2 Effects of hearing loss on language

According to studies by Anderson (1992) in language, any degree of hearing loss is significant in a young pupil since hearing loss can affect pupils’ behaviour, self-esteem, academic performance, as well as their social interaction with others. After all, hearing is fundamental to learning language especially among pupils who have yet to master the basic building blocks of speaking. It was revealed that 90 percent of pupils’ learning is through reception of incidental conversation around them. To acquire new information, pupils learn the complex information through a series of complex events and send the information to the brain for further processing. Further, any degree of hearing loss is significant in young pupils since it affects their behaviour and self-esteem Anderson (1992). However, the work never mentioned how embossed picture technique could be used in teaching reading to pupils with deaf hearing impairments. Research by ASHA (2005) maintains that the first four years of pupil’s life are crucial in terms of speech and language development. Speech and language are precursors to higher levels of cognitive maturation. Further, (ASHA, 2005) postulates that 80 percent of pupil’s ability to acquire speech, language and
other cognitive process is determined by the time they are three years of age. However, ASHA (2005) never mentions whether embossed picture technique can be used to teach reading to pupils who are deaf. That is the gap this study was filling. Pupils who cannot hear the world around them are at a distinct disadvantage on a multitude of levels (Yashinago-Itano, 1998). Further observations (ibid) have indicated that early detection of hearing loss and diagnosis up to six months of age, if treated early, the pupils could achieve higher language levels than pupils with delayed diagnosis. Likewise, pupils who are diagnosed and treated early develop speech and language skills which are equivalent to their peers. Yashinago-Itano (1998) observes that pupils who cannot hear the world around them are at a distinct disadvantage in reading. At any rate, there was no mention that embossed picture technique was used to teach reading to pupils with deaf hearing impairments. Some teachers of the pupils with deaf hearing impairments still use old methods like the use of speech to teach reading. Such teachers may be rigid to change with time.

2.3 The effects of hearing loss on reading

Research by Quigley and King (1981) reveals that pupils with deaf hearing impairments, with a hearing loss of 95dB and above have difficulty in acquiring adequate reading skills. This was attributed in part, to inadequate language development. For example, Quigley and King (1976) found that an average deaf pupil of 18 years - old cannot understand or use any of the syntactic structure, sentence patterns that the average 10 year-old hearing pupils understand and use with ease. Thus, the task of learning to read often becomes a language learning process at the same time. These pupils may learn to crack the code of the printed message and be able to identify each individual word. Yet without a solid language base,
comprehension does not occur. Quigley and King (1981) observe that a major need in the education of pupils with deaf hearing impairments is the establishment of a basic language on which reading can be based. They further observe that pupils with deaf hearing impairments have difficulty in acquiring adequate reading skills but never mention that embossed picture technique is used to teach reading to the pupils with hearing impairments. That is the gap that this study intended to fill.

Similarly, a study by Ndurumo (1986) found that a 14 year-old pupil with deaf hearing impairments had an achievement level below that of a 10–year-old hearing pupil in the recognition of words whether with 2,000 words, 5,000 words or 10,000 words. A 10-year-old hearing pupil could understand at least 85% of the 2,000 most frequently used words, 73% of the 5,000 most frequently used words, 61% of the 10,000 most frequently used words and 44% of the 20,000 most frequently used words. A 10 year-old pupil with hearing impairments, on the other hand, could understand only 32% of the 2,000 most frequently used words, 24% of the 5,000 most frequently used, and 22% of the 20,000 most frequently used words as shown in Table 2.1.
Table 2.1 Pupils with hearing impairments ability to understand printed English words (Ndurumo, 1986)

<table>
<thead>
<tr>
<th>Age</th>
<th>Group</th>
<th>Number of printed words that pupils were to read and the word the pupils were able to read</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td>2,000</td>
</tr>
<tr>
<td>10</td>
<td>Deaf</td>
<td>32</td>
</tr>
<tr>
<td></td>
<td>Hearing</td>
<td>85</td>
</tr>
<tr>
<td>11</td>
<td>Deaf</td>
<td>40</td>
</tr>
<tr>
<td></td>
<td>Hearing</td>
<td>92</td>
</tr>
<tr>
<td>12</td>
<td>Deaf</td>
<td>39</td>
</tr>
<tr>
<td></td>
<td>Hearing</td>
<td>94</td>
</tr>
<tr>
<td>13</td>
<td>Deaf</td>
<td>54</td>
</tr>
<tr>
<td></td>
<td>Hearing</td>
<td>95</td>
</tr>
<tr>
<td>14</td>
<td>Deaf</td>
<td>62</td>
</tr>
<tr>
<td></td>
<td>Hearing</td>
<td>97</td>
</tr>
</tbody>
</table>

An enriched environment enhances quick and rapid language acquisition since it lays a better foundation for good academic achievement and reading among pupils with hearing impairments. Ndurumo (1986) never mentions whether embossed picture technique was used to teach reading. This study will seek to fill this gap.

2.4 Effects of hearing loss on academic achievement

Suran (1983) observes that language disorders inherently interfere with educational and cognitive development because this development depends so heavily on linguistic competence, the ability to use the rules of syntax, meaning and sound to produce language. Cognitive development and language are interactive in nature and rely mutually on understanding and expressing ideas. Suran (1983) argues that language disorders inherently interfere with educational and cognitive development, however,
the work never reveals whether embossed pictures could be used to teach reading to pupils with deaf hearing impairments. That is the gap this study was filling.

Linguistic competence obviously hampers such interactions and likely interferes with optimal cognitive development. The situation is further complicated by the fact that the causal factors in language disorders often involve central nervous system dysfunction, retardation, and several emotional disturbances, or an impoverished language environment (Beadle, 1979; Lingwood & Cohen-Sandle, 1980; Tallal, 1980). According to Stevenson and Richman (1976), there is little research bearing on the eventual development level attained by pupils exhibiting early language impairment. Any little evidence there is indicates language with delay in non-verbal and mental abilities (Stevenson & Richman, 1976). Most recent studies from Africa by Aulaintercultural (2007) found that majority of pupils in special primary schools in Kenya, Uganda and Zimbabwe are failing to achieve even a minimum level of English literacy. It is essential to acquire this skill, as English is the language of instruction at the upper levels of primary school and the language in which national exams are set and written. In Kenya, it was found that 1 out of 3 children failed to achieve even a minimum level of literacy in English-measured as the capacity to recognize basic linguistic building blocks such as the alphabets and simple words. In Zimbabwe, a similar study by Aulaintercultural (2007) reveals that more than half (54%) of grade 6 pupils fail the same test: an indication that these pupils are virtually illiterate in English. In Uganda, a study conducted by the national examinations board found that 98% of standard 6 primary pupils failed to achieve the needed mastery of English language to comfortably pursue further education (Aulaintercultural, 2007). According to Aulaintercultural (2007), pupils in special primary schools in Kenya,
Uganda and Zimbabwe are failing to achieve even a minimum level of English literacy. However, there was no mention on how embossed picture technique could be used to teach reading to pupils with deaf hearing impairments. That is the gap this study was filling. Studies carried out in Kenya by Ndurumo (1986) show that pupils with deaf hearing impairments lag behind hearing pupils academically as shown in Table 2.2.
Table 2.2 Relationship between degree of hearing loss and communication efficiency: A case for Kenya (Ndurumo, 1986)

<table>
<thead>
<tr>
<th>Describe loss in speech range</th>
<th>Degree of impairments</th>
<th>Effects on communication</th>
<th>Percentage</th>
</tr>
</thead>
<tbody>
<tr>
<td>27-40</td>
<td>Slight</td>
<td>Have difficulty with whispers and faint speech. They understand conversational speech at 3 feet-5 feet.</td>
<td>Not applicable</td>
</tr>
<tr>
<td>41-55</td>
<td>Mild</td>
<td>They have frequent difficulties with normal speech. With sufficient training and no other impairment will function in regular classroom with minimal help.</td>
<td>5.5</td>
</tr>
<tr>
<td>56-70</td>
<td>Moderate</td>
<td>Conversational speech must be loud: will experience difficulties with classroom discussions and telephone conversations; will need considerable support in acquiring speech; many will use total communication.</td>
<td>32.1</td>
</tr>
<tr>
<td>71-90</td>
<td>Severe</td>
<td>Many hear voices a foot away; have difficulties with consonants; some understand strongly amplified speech; many will use total communication.</td>
<td>43.6</td>
</tr>
<tr>
<td>91+</td>
<td>Profound</td>
<td>Maximally amplified speech is not understood; most will use total communication.</td>
<td>9.4</td>
</tr>
</tbody>
</table>

The extent to which they lag behind based on hearing loss does not yield a clear-cut correlation. For pupils with hearing impairments to read effectively, the teachers were to develop adequate teaching/learning materials and use proper teaching methods.
Skilled teachers go out of their way to develop materials that are suitable for their pupils.

2.5 Developmental reading methods

Wendy (1984) observes that there have been more effort, research and debate in the area of teaching reading than any other area in the school curriculum. Despite these efforts, research into methods of teaching reading has failed to prove that one method is vastly superior to another. Most pupils learn to read using many methods and a variety of materials. This does not mean, however, that materials which have been developed over the years to teach reading to average to learners are not useful with pupils with Hearing Impairments (Wendy, 1984).

2.6 Developmental reading materials

Other studies have revealed that a second great need in teaching reading to pupils with hearing impairments, the deaf, seems to be the development of special reading materials. Most currently available materials do not meet the needs of pupils with hearing impairments. The need for materials that provide gradual systematic and repeated exposure to new language structures and vocabulary is documented by research. Many reading series include a statement that material procedures must be modified for deaf pupils with deaf hearing impairments and other different readers (Carrne & Silbert, 1976; Hall & Ramig, 1978).

According to Kirk (1978), many of these developmental methods and materials are useful in a modified form. Further, studies in the United States reveal that an alphabet method of teaching reading is utilized. Pupils with deaf hearing impairments first learn the alphabets through total communication and then they learn by spelling words. This method was slow and laborious thus the phonic method was found better.
Through the use of the phonics, pupils who are hard of hearing learn the sounds (rather than the name) of the letter. They are able to decode words and thus they learn to read. Educators agree that pupils learn words as wholes without learning either the alphabets or phonics. During the initial stage of reading, pupils with hearing impairments learned even simple phrases and sentences without knowing phonic elements or individual words (Kirk, 1978).

Tumbulukani, Sampa, Musuku, & Linehan (1999) carried out a project which inspected the use of Ici bemba as a language of instruction in 25 primary schools in the Northern Province of Zambia. One component of the programme breakthrough to literacy was child- centered and capitalized on authentic instructional practices such as the Language Experience Approach (LEA), a literacy based method that uses children’s own dictated stories as the basic text for the children’s reading and writing (Stauffer, 1970). It was reported that the pupils involved in this programme made substantive progress in their literacy abilities when compared to children receiving more traditional instructions (Tumbulukani et al., 1999). Umolu’s 1999 report on the benefits of this approach with Nigerian pupils with special needs in the area of deaf hearing impairments and those who were non-readers after their primary school education strengthened the appeal of LEA (Language Experience Approach). As a result of this success, Zambia has put in place a primary reading programme based on this model which will be used in its primary schools for the next few years. Carefully designed methods and materials for reading will actualize the existing reading and language acquisition theories.
2.7 Typical language achievement

Traver, Elliott, & Kratochwill (1993) observed that any of the language achievements that we take for granted are actually amazing accomplishments. They defy any easy explanation. Although imitation is not a powerful linguistic force, it does not seem to be the sole explanation for a youngster’s initiative grasp of grammar, since a pupil hears so many incorrect utterances as outlined in Table 2.3 below.

Table 2.3 Typical reading and writing accomplishments (Traver, Elliott, & Kratochwill, 1993)

<table>
<thead>
<tr>
<th>Age (year)</th>
<th>Language Accomplishments</th>
</tr>
</thead>
<tbody>
<tr>
<td>6</td>
<td>A pupil has a vocabulary of about 2,000 thousand words. Such a pupil can understand the use and meaning of a complex sentence. Pupils of age 6 use language as a tool and they possess some reading ability.</td>
</tr>
<tr>
<td>7</td>
<td>A pupil’s motor control improves and she or he is able to use a pencil. Pupil can usually print several sentences and begin to tell time thus speech has improved. A pupil will write well and loses the tendency to reverse (b, d).</td>
</tr>
<tr>
<td>8</td>
<td>Motor control starts to improve. Movement becomes more graceful. A pupil is able to write as well as print. A pupil understands that words have more than one meaning and a pupil uses total sentences to determine meaning. Thus uses speech to interpret meaning.</td>
</tr>
<tr>
<td>9</td>
<td>Can describe objects in details and have little difficulty in telling time. A pupil can write well and uses sentence content to determine meaning.</td>
</tr>
<tr>
<td>10</td>
<td>A pupil describes situations by cause and effect and can write fairly lengthy essays like mystery and science stories. A pupil masters dictionary skills and a good sense of grammar.</td>
</tr>
</tbody>
</table>

2.8 Bottom-up theory of reading

Sutton (2005) observes that this theory places emphasis on reading by word recognition. According to this theory, comprehension is also seen as a hierarchy of
sub-skills, such as locating details, recognizing main ideas, which combine into large units to provide the meaning of a text. Embossed pictures technique places emphasis on raising the written word for easy toughing, feeling and seeing. The hierarchy of sub-skills above is also compared to the three reading levels used in this study. For instance the skill of locating details, in this study was the sense of seeing, while recognizing main ideas, was the sense of tough and combining large units, in this study was the sense of feeling embossed words to interpret the meaning.

Emphasis by Sutton (2005) is placed on reading by word recognition. The work never mentions how embossed picture technique can be used to teach reading to pupils with hearing impairments. A report by Leonard Cheshire International in Kenya (2001), states that the “whole language approach” has been introduced in Oriang, Western Kenya. This approach is based on the interconnections between the six language skills of reading writing, speaking, listening, observing and dramatizing. It also provides a useful platform for exploiting children’s interest in nature, stories, poems, humor and music. As children participate in interesting but purposeful activities, their language abilities and thinking skills will develop in natural ways. Comparison of the theories and methods while teaching reading to the pupils with hearing impairments has to be taken into account to ensure effective and successful reading. This method emphasizes on word recognition as a whole unit or as strings of clusters, while in the “look and say” method they memorize the appearance of the word and recognize it by looking at the first and the last word. To read by the use of embossed pictures, pupils see, feel and say the word.
2.9 The “look and say” method

According to Sutton (2005), the “look and say” method introduces selected words in progressive text to pupils. Pupils who are deaf memorize the appearance of the words and they learn to recognize the words by looking at the first and last letters. This is the gap that embossed picture technique comes in to fill by raising all the words for easy toughing, feeling and seeing. The “look and say” skill stays with the pupil for his or her entire life. Repetition is also used and as a pupil gets in contact with the same word over and over again, it becomes familiar. The pupil gradually and automatically learns to associate the shapes of the words and the letters with sounds of the word. The method depends on memorization and cannot be applicable in teaching new words (vocabulary). This is another gap that embossed picture technique comes in to fill. The pupils taught using this method often attempt to look for pictures which tell them what the word refers to and means (Sutton, 2005). Most teachers have adapted several methods to teach reading to their pupils. Both teachers of hearing pupils and of pupils with deaf hearing impairments have adapted the “look and say” method to teach reading to their pupils.

2.10 Transferring the image to the foil

Research by Birth (1982), notes that the first step in constructing a master display is to transfer the desired image (map and graph) to the black or white surface of the foil. This task can be accomplished in one or two ways. The first involves drawing the image freehand directly on the white backing of the foil that will appear in reverse on the front of the foil. Consequently, direct free - hand drawing is best when the image is simple (and thus easily reversed when drawing), when the image is symmetrical (for example, a circle), or when the orientation of the image is not important (for
example, the outline of an insect). The second method of image preparation involves a two-step process. Construct the image you wish to produce by drawing it freehand on a sheet of paper, placing a sheet of tracing paper over the image and photocopy it (Birth, 1982). Research by Birth (1982) explains how pupils with visual impairments can read using raised images but the work never mentions whether embossed pictures can be used to teach pupils with hearing impairments to read. This study intends to fill gap. The use of raised dots has enabled the pupils with visual impairment to excel academically.

2.11 Embossed literary: How embossed pictures were used to learn to read

(Raised letter typing)

Research by Armitage (1986) states that in the middle ages, few people except those in the holy orders could read and write, but with the coming of printing, the translation of the Bible into English and later, the establishment of grammar schools, more people were able to enjoy being literate. For pupils with visual impairments, this was not the case. It was going to be long before education of the pupils with visual impairments could be well established. Later, it was realized that organized education for pupils with visual impairments was possible and would hopefully, lead to employment. In 1784 and 1786, schools for the pupils with visual impairments were established in Paris. Louis Braille 1809-1852 attended his first school in Paris as a boy of nine. During his studies, he must have found the few books there, which had embossed lettering very difficult and slow to read. He was extremely interested in a system of punctiform printing invented by a French artillery officer named M.Barbier Armitage (1986).
In Braille’s findings, he realized that points are actually much easier to interpret than lines but the method needed many refinements. This is the gap that embossed picture technique comes in to fill by emphasizing on raised words and sentences for easy toughing, feeling and seeing among pupils who are deaf. M.Barbier re-planned the code using less phonic method. It was innovation of enormous potential, which meant that for the first time blind people were able to read and write more successfully. According to Armitage (1986), dots were tactually much easier to interpret than lines by pupils with visual impairments the work never mentioned how embossed picture technique could be used to teach reading to pupils with hearing impairments.

More experiments carried out in rapid reading by Olson (1975), shows substantial improvement in the abilities of pupils with visual impairment in reading braille. Olson (1975) concludes that it was best for training in faster speed to begin at the pre – reading stage (Harley et al., 1987).

2.12 Summary of literature review

The review of what other researchers have done shows that reading is a complex process, which involves recognizing and remembering shapes. The reader searches for and constructs meaning from the text. Pupils learn to build meaning by connecting new knowledge to the knowledge they already have. However, this process of learning reading becomes difficult for the pupils with deaf hearing impairments who start going to school without a first language. Further research has shown that hearing loss affects language and reading. Pupils who are deaf have difficulties in acquiring adequate reading skills. This has been attributed to inadequate language development. The discovery of embossed pictures revealed that points are actually much easier to
interpret than lines. It was innovation of enormous potential, which meant that for the first time blind people were able to read and write more successfully. According to Armitage (1986), dots were tactually much easier to interpret than lines by pupils with visual impairments. Other research findings have shown that most pupils learn to read using many methods and a variety of materials.

Research has revealed that the use of embossed (tactile) or raised dots and letters have enabled the visually impaired pupils to read and write well. Most research reviewed has shown that hearing loss has an adverse effect on academic achievement. Considering the fact that reading is necessary for effective learning of pupils with deaf hearing impairments, researchers should experiment with new methods or adapt conventional methods of teaching reading to improve the reading skill of pupils who are deaf.
3.0 Introduction

This chapter provides a description of the procedures used to investigate the problem. The chapter also describes the research design, variables, location of the study, target population, sample and sampling procedure employed, research instruments used, pilot study, validity and reliability, data analysis, logistical and ethical considerations of the study.

3.1 Research design

According to Johnson (1999), a research design is the plan for carrying out the study with the specification of the elements to be examined and the procedures to be followed. This study adapted an experimental design, which is perceived by Johnson (1999) as an effective way of studying a problem. Orodho (2004) observes that if someone tries a new approach or procedure, to see what its effect will be, it might be referred to as an experiment. This study was not a comparative study. It was an experimental study which investigated the effects of embossed picture technique on reading performance among pupils with hearing impairments. Jegede (1999) asserts that an experimental design is where the population under study is divided into groups. One group is assigned as a treatment group, in this study the embossed picture technique was the treatment group and the “look and say” method as a control group did not receive any treatment. Pupils in the treatment group were taught reading using the embossed picture technique, while the control group was taught reading using the conventional method “look and say” technique. This experiment aimed at testing the effect of embossed picture technique in teaching reading to pupils with hearing
impairments. The experiment was highly controlled by the researcher hence any threats of validity were overcome.

3.2 Variables

A variable is a particular trait, which can take a range of values in a population or sample (Ingule & Gatumu, 1996). This study considered both independent and dependent variables as shown below.

3.2.1 Independent variables

Independent variables are those that are manipulated by the researcher. They are hypothesized to cause change in dependent variables (Trochim, 2002). In this study, the independent variable was the use of embossed picture technique.

3.2.2 Dependent variables

According to Trochim (2002), dependent variables are those that are only measured and or registered under conditions of independent variables. In this study, the dependent variable was reading scores.

3.3 Location of the study

The study was carried out at Kambui School for the deaf children. The school is located in central province on Githunguri- Ruiru road in Kiambu District, Githunguri Division, Ngewa zone, 3 kilometers off Kwa-Maiko centre. The school was chosen since it caters for all pupils with different degrees of hearing loss from nursery level up to class eight. The school admits pupils from all over the country.
3.4 Target population

The total enrolment in the school was 210 pupils. The school had 23 teachers and 21 non-teaching staff. Among the 23 teachers, 16 teachers had special education training while 7 teachers had no training in special education. The study targeted deaf children with different degrees of hearing loss in class one since formal reading starts in lower classes. The class had one teacher. It had eleven boys and seven girls totaling eighteen pupils.

Table 3.1: Sample of the target population

<table>
<thead>
<tr>
<th>Male</th>
<th>Female</th>
<th>Total</th>
</tr>
</thead>
<tbody>
<tr>
<td>11</td>
<td>7</td>
<td>18</td>
</tr>
</tbody>
</table>

3.4.1 Sampling technique

Pupils in the experimental and control group were randomly assigned using the following procedure: The researcher prepared eighteen pieces of paper of same colour, size, and texture. Nine pieces of paper were then labelled 1 while the other nine were labelled 2. The papers were carefully folded to conceal the numbers on them. The eighteen papers were then mixed by reshuffling them. The eighteen pupils were then asked to pick one piece of paper each. Those pupils who picked pieces of paper labelled 1 were assigned to the experimental group, while the other nine who picked pieces of paper labelled 2 were assigned to the control group. Then the researcher used simple random sampling to select one teacher who taught using embossed picture technique with the experimental group and the other teacher who used the “look and say” method with the control group.
3.4.2 Sample size:

All 18 pupils in the class one of Kambui School for the deaf children were purposively selected for the study.

3.5 Construction of research instruments

The study used two research instruments to collect data. The experimental group was taught with the embossed picture technique and the control group with the “look and say” method. The researcher developed a non-standardized teacher-made summative evaluation test (Criterion Reference Test) and formative evaluation test as the research instrument. Both summative and formative evaluation tests were used as an integral part of information gathering. Summative evaluation test was given periodically to determine what pupils knew and what they did not know at a particular point in time (Tabid, 2008). Formative evaluation test was part of the instructional process. “When incorporated into classroom practices; it provides the information needed to adjust teaching and learning Tabid, (2008)” The formative evaluation test helped the researcher to see the progress of the pupils as they mastered the content.

3.5.1 Embossed pictures

Embossed pictures are sometimes referred to as raised letters (tactile dots). The embossed pictures exist in a form that can be touched, felt, and seen easily by the pupils. In the study, the researcher raised or embossed letters, words, sentences and pictures. To make embossed letters, words, sentences, and pictures, the researcher used the following materials or items: coloured threads, manila papers, pair of scissors, glue, pencil, felt pens and stencils.
3.5.2 Teacher - made test

A teacher made- test is an important indicator of pupils reading performance in content area (Vacca & Vacca, 1986). The researcher used a Criterion Reference Test (CRT) to test both experimental and control group. The test comprised questions drawn from the work covered in class by both groups. It was divided into 3 sections; in the first section, pupils marched listed words. In the second section, they chose correct answers while in the third section, they read long sentences.

3.6 Pilot study

The experiment on embossed picture technique was pre-tested using a different school, which was Machakos School for the Hearing Impaired. The school was chosen since it catered for all categories of pupils with hearing impairment from nursery level up to class eight. The school also admitted pupils from all over the country. The total enrolment of the school was 255 (176 boys and 79 girls). The school had 24 teachers and 20 non-teaching staff. The study targeted deaf children with hearing impairments with all the different degrees of hearing loss in class one. The class had 10 boys and 6 girls totalling 16 pupils. All the 16 pupils in class one class participated in the pilot study. Two teachers were randomly selected, one taught using embossed picture technique and the other used “look and say” method. Piloting was done for 6 weeks. The school and pupils that were used in the pilot study were not used for the main study.
3.6.1 Validity

Embossed picture technique has been successfully used with the people who have visual impairments after realizing that points are tactually much easier to interpret than lines. That is points are easier to tough and feel than lines. Studies carried out by Harley, Truan, & Stanford, (1987) established that pupils with visual impairments were able to read and write thus it is deemed to be valid and reliable among pupils with visual impairments. Piloting of the summative evaluation test and formative evaluation was done to establish its validity among pupils with hearing impairments. The outcomes of the study established that embossed picture technique was equally valid when used with deaf children.

3.6.2 Reliability

According to Anastasi (1982), reliability is the consistency of the scores obtained by the same person when re-examined with the same test on different occasions. The study set out to experiment the method by teaching reading to the deaf children. The outcome of the pre-test and post-test of the summative evaluation test and the formative evaluation test were used to establish the reliability of the instruments.

3.7 Data collection procedure

Primary data were collected from both experimental and control group for a period of 6 weeks. The criterion reference test (CRT) was used as a pre-post test for the purpose of data collection. First, specification of the content, the lesson plan and tests were prepared. Both pupils in the experimental and the control group were subjected to the same duration of learning. They were both taught how to read for 35 minute’s ones a
week for 6 weeks. The researcher divided the day’s lesson for the experimental group into the following sections:

1. Matching raised words.
2. Finger spelling raised letters.
3. Reading raised words.
4. Reading raised sentences.

The lesson for the control group was divided into the following sections:

1. Matching words.
2. Finger spelling letters.
3. Reading words.
4. Reading sentences.

3.8 Method of data analysis

Kothari (2004) defines experimental data analysis as involving estimating the values of unknown parameters of the population and testing of the hypotheses for drawing inferences. Analysis may therefore, be categorized as descriptive analysis and inferential analysis. For the analysis of data collected in this study, descriptive and inferential statistics were used. Descriptive statistics were used to determine the score while inferential statistics was used to test the three hypotheses. The significant level for testing the hypothesis was .05. If the test value was greater than .05 level of significance, then the hypothesis was rejected. If on the other hand it was less then the hypothesis was accepted. The tests used were The Mann- Whitney test and the Wilcoxon sum of Rank test statistics given by:

\[ T = S - \frac{n_1(n_1 + 1)}{2} \]
Where:

S = sum of rank for the groups

\[ n_i = \text{Number of observations in the group.} \]

Which was used to test first research hypothesis that stated: There is no significant difference in performance in reading of pupils with hearing impairments taught with embossed picture technique and the group taught with the “look and say” method. It was also used to test the second research hypothesis which stated that: There was no significant age effect on reading performance of pupils with hearing impairment taught with embossed picture technique. The Kruskal-Wallis one-way Analysis of Variance (ANOVA) test statistics was given by:

\[
H = \frac{12}{N(N+1)} \sum_{i=1}^{k} \frac{R_i^2}{n_i} - 3(N+1)
\]

Where:

\[ R_i = \text{Sum of ranks assigned to the observations in the } i^{th} \text{ group} \]

\[ N = \sum_{i=1}^{k} n_i \]

\[ n_i = \text{Number of observations in the } i^{th} \text{ group} \]

\[ h = \text{Number of groups (Daniel, 1990); which was used to test the third research hypothesis that stated: There is no significant difference in performance in reading of pupils with hearing impairment of different degrees of hearing loss when taught with embossed picture technique. They were used in analyzing the data since they make less restrictive assumptions unlike the parametric tests.} \]
3.9 Logistical and ethical considerations

Before the commencement of this study, the researcher obtained a research permit from the Permanent Secretary Ministry of Education through the Director, Graduate School, Kenyatta University and from the Headteacher, Kambui School for the deaf. The researcher also sought permission and consent of parents and guardians before embarking on the study. The data collected were treated confidentially and used for the academic purpose of this study only.
CHAPTER FOUR

DATA ANALYSIS, RESULTS AND DISCUSSION

4.0 Introduction

This chapter gives the data analysis, interpretation, results and discussion of the findings which was done by focusing on research questions that the study addressed. The main objective of the study was to find out the effect of embossed picture technique when used in teaching reading to deaf children. The chapter is divided into two sections; the first section on descriptive statistics gives answers to questions explored in the study and gives an overall picture of the observations of one or more samples (Rayton, 1992). The second section on statistical inferences deals with the results of the tests of hypotheses formulated.

SECTION ONE

This section focused on descriptive statistics which gave answers to the research questions that guided this study.

4.1 Research question 1: Do pupils with hearing impairments taught with embossed picture technique (experimental group) perform significantly better in reading than those taught with “look and say” method (control group)?

This research question was to establish whether embossed picture technique when used to teach reading to pupils with hearing impairments yields superior results to pupils taught with “look and say” method. From the data obtained the ranks for both experimental and control group post-test were recorded as shown in Table 4.1.
Table 4.1: Performance in reading of control group and experimental group in the post-test and their ranks.

<table>
<thead>
<tr>
<th>Control Group Scores/ Ranks (n=9)</th>
<th>Experimental Group Scores/ Ranks (n=9)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Pre-test</td>
<td>Post-test/ (Ranks)</td>
</tr>
<tr>
<td>7</td>
<td>25 (7)</td>
</tr>
<tr>
<td>7</td>
<td>7 (13)</td>
</tr>
<tr>
<td>6</td>
<td>9 (11)</td>
</tr>
<tr>
<td>4</td>
<td>8 (12)</td>
</tr>
<tr>
<td>4</td>
<td>5 (14.5)</td>
</tr>
<tr>
<td>2</td>
<td>5 (14.5)</td>
</tr>
<tr>
<td>0</td>
<td>0 (17)</td>
</tr>
<tr>
<td>0</td>
<td>0 (17)</td>
</tr>
<tr>
<td>0</td>
<td>0 (17)</td>
</tr>
</tbody>
</table>

Key:

Control group – refers to pupils taught with the “look and say” method.

Experimental group – refers to pupils taught with embossed picture technique.

Table 4.1 above shows that the control group had lower ranks in the post-test compared to the experimental group for instance, 7 versus 1, among others. According to the findings pupils in the experimental group obtained better ranks than the control group in the post-test. Table 4.2 gives the range, the mean and the standard deviation of the scores obtained by the control and experimental group.
Table 4.2: Performance in reading of experimental and control group pre-test post-test scores, the range, the mean, and the standard deviation

<table>
<thead>
<tr>
<th></th>
<th>Control group (n=9)</th>
<th>Experimental group (n=9)</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Pre-test</td>
<td>Post-test</td>
</tr>
<tr>
<td>7</td>
<td>7</td>
<td>25</td>
</tr>
<tr>
<td>7</td>
<td>7</td>
<td>16</td>
</tr>
<tr>
<td>6</td>
<td>6</td>
<td>9</td>
</tr>
<tr>
<td>4</td>
<td>4</td>
<td>8</td>
</tr>
<tr>
<td>4</td>
<td>4</td>
<td>5</td>
</tr>
<tr>
<td>2</td>
<td>2</td>
<td>5</td>
</tr>
<tr>
<td>0</td>
<td>0</td>
<td>0</td>
</tr>
<tr>
<td>0</td>
<td>0</td>
<td>0</td>
</tr>
<tr>
<td>0</td>
<td>0</td>
<td>0</td>
</tr>
<tr>
<td>Range</td>
<td>7</td>
<td>25</td>
</tr>
<tr>
<td>Mean</td>
<td>3.333</td>
<td>7.555</td>
</tr>
</tbody>
</table>

Table 4.2 above shows small ranges for both control and experimental groups pre-test were smaller like 7 against 20. The post-test range indicated more dispersion in the sores. This was also observed for the standard deviations. Better means are seen for both control and experimental group post-test than pre-test like of 3.333 against 7.56 and 8.44 versus 34. While the standard deviation for control and experimental group were large at the post-test than at the pre-test with deviations of 2.96 versus 8.38 and 6.59 against 16.34. Table 4.2 shows that the experimental group obtained a better mean than the control group.
4.2 Research question 2: Do age affect the reading performance of pupils with hearing impairments when taught with embossed picture technique? This research question intended to establish if there was any age effect on reading performance of pupils of different ages when taught with embossed picture technique.

Table 4.3 performance of pupils aged 8 - 9 and 10 – 11 in reading at post-test when taught with embossed picture technique.

<table>
<thead>
<tr>
<th>Age</th>
<th>No. of pupils</th>
<th>Score/ (Rank)</th>
<th>Total Rank</th>
</tr>
</thead>
<tbody>
<tr>
<td>8 - 9</td>
<td>$n_1 = 3$</td>
<td>12 (8) 40 (4) 60 (1)</td>
<td>13</td>
</tr>
<tr>
<td>10 - 11</td>
<td>$n_2 = 5$</td>
<td>20 (7) 30 (6) 40 (4) 40 (4) 50 (2)</td>
<td>23</td>
</tr>
</tbody>
</table>

Table 4.3 above shows that pupils aged 8-9 taught with embossed picture technique group got ranks of (8), (4), and (1) in the post-test. While pupils aged 10-11 obtained ranks of (7), (6), (4), and (2). From the findings in Table 4.5, pupils aged 8-9 and 10-11 years in the experimental group obtained similar score like 40 with a similar rank of 4 despite of their age differences.

4.3 Research question 3: Do the different degree of hearing loss differ significantly in reading performance among pupils with hearing impairments when taught with embossed picture technique?

This research question intended to establish if pupils with hearing impairments performed significantly different at different degrees of hearing loss when taught with embossed picture technique.
Table 4.4: Performance in reading of pupils with different degrees of hearing loss when taught with embossed picture technique.

<table>
<thead>
<tr>
<th>Categories of hearing loss</th>
<th>No. of pupils in each group</th>
<th>Scores/( Ranks )</th>
<th>Sum of Rank</th>
</tr>
</thead>
<tbody>
<tr>
<td>Mild H. loss</td>
<td>( n_1 = 2 )</td>
<td>30 (6) 50 (2)</td>
<td>( R_1 = 8 )</td>
</tr>
<tr>
<td>Moderate H. loss</td>
<td>( n_2 = 1 )</td>
<td>40 (4)</td>
<td>( R_2 = 4 )</td>
</tr>
<tr>
<td>Severe H. loss</td>
<td>( n_3 = 3 )</td>
<td>14 (8) 20 (7) 40 (4)</td>
<td>( R_3 = 19 )</td>
</tr>
<tr>
<td>Profound H. loss</td>
<td>( n_4 = 3 )</td>
<td>12 (9) 40 (4) 60 (1)</td>
<td>( R_4 = 14 )</td>
</tr>
</tbody>
</table>

Table 4.4 pupils taught with embossed picture technique in the group of mild hearing loss obtained a sum rank of 8, a pupil in the group with moderate hearing loss got a rank of 4, while pupils in the group of severe hearing loss had a rank of 19 and those in the group of profound hearing loss obtained a sum rank of 14. According to the findings, pupils in the group of moderate hearing loss, severe hearing loss, and profound hearing loss obtained a score of 40 and a rank of 4 each. Thus similar ranks were obtained by pupils with different hearing loss.

SECTION TWO

This section deals with inferential statistics which focuses on the null hypothesis formulated in this study.

4.1.1 Null hypothesis 1: There is no significant performance difference in reading of pupils with hearing impairments taught with embossed picture technique and the group taught with “look and say” method. This null hypothesis was to establish
whether the findings of the research question 1 was statistically significant. The Mann–Whitney–Wilcoxon Sum of Rank test was used to analyze the findings as shown in Table 4.5 below.

**Table 4.5: Analysis of the ranks for post-test scores for the control group and experimental group**

<table>
<thead>
<tr>
<th>Control group post-test rank</th>
<th>Experimental group post-test rank</th>
</tr>
</thead>
<tbody>
<tr>
<td>( n_2 = 9 ) rank ((y))</td>
<td>( n_1 = 9 ) rank ((x))</td>
</tr>
<tr>
<td>25  (7)</td>
<td>60  (1)</td>
</tr>
<tr>
<td>7   (13)</td>
<td>50  (2)</td>
</tr>
<tr>
<td>9   (11)</td>
<td>40  (4)</td>
</tr>
<tr>
<td>8   (12)</td>
<td>40  (4)</td>
</tr>
<tr>
<td>5   (14.5)</td>
<td>40  (4)</td>
</tr>
<tr>
<td>5   (14.5)</td>
<td>30  (6)</td>
</tr>
<tr>
<td>0   (17)</td>
<td>20  (8)</td>
</tr>
<tr>
<td>0   (17)</td>
<td>14  (9)</td>
</tr>
<tr>
<td>0   (17)</td>
<td>12  (10)</td>
</tr>
<tr>
<td><strong>Sum of rank</strong></td>
<td><strong>123</strong></td>
</tr>
</tbody>
</table>

Table 4.5 above shows that the rank total for the control group were (123) while those of the experimental group were (48). Table 4.5 reveals that pupils in the experimental group obtained better ranks than those in the control group.

The Mann–Whitney test and the Wilcoxon sum of Rank test of Table A.7 (Daniel, 1990)

\( n_{\text{1}} = n_{\text{2}} = 9 \)

\( T \leq 8 \) since

\( T = 3 \)

\( T \leq 8 \) as \( T = 3 \) \( p \text{-value} < 0.001 \)

Thus the \( p \)-value < 0.001

The null hypothesis is rejected at \( \alpha = 0.001 \) level of significance.
The difference between the mean for the control group and the experimental group was highly significant. There is high significant difference in performance in reading deaf children taught with embossed picture technique than the group taught with “look and say” method. The study rejected the null hypothesis which stated that there is no significant performance difference in reading of deaf children taught with embossed picture technique and the group taught with “look and say” method. The study revealed that pupils with hearing impairments performed better in reading when taught with embossed picture technique than those taught with the “look and say” method.

4.1.2 Null hypothesis 2: There is no significant age effect on reading performance of pupils with hearing impairments of different ages when taught with embossed picture technique. This null hypothesis was to establish whether the findings of the research question 2 were statistically significant. The Mann-Whitney-Wilcoxon sum of Rank test statistics was used. Where:

\[ S = 13 \]

\[ T = s - n_1 (n_1+1) \]

\[ = 13 - 3 (4) \]

\[ = 13 - 6 \]

\[ = 7 \]

\[ n_1 = 3 \quad n_2 = 5 \quad \alpha = 0.10 \]

The critical rejection point was:

\[ T \leq 3 \]

Which rejects the
P – Value > 0.10

The study did not reject the null hypothesis at \( \alpha = 0.10 \) level of significance.
There was no significant age effect in performance in reading of pupils with hearing impairments aged 8-9 and 10-11 years when taught with embossed picture technique. The study accepts the null hypothesis which stated that there is no significant age effect on performance in reading of pupils with hearing impairments of different ages taught with embossed picture technique. Thus age did not affect reading performance of pupils with hearing impairments when taught with embossed picture technique.

4.1.3 Null hypothesis 3: There is no significant difference in performance in reading of pupils with hearing impairments of different degrees of hearing loss when taught with embossed picture technique. This null hypothesis was to establish whether the findings of the research question 3 were statistically significant. The Kruskal -Wallis one-way Analysis of Variance (ANOVA) was used to analyze the findings in Table 4.4.

\[
H = \frac{12}{9(10)} (233.666) - 3(10)
\]

\[
= \frac{2}{15} (233.666) - 3(10)
\]

\[
= 1.16 < 7.82 \ P – Value > 0.05
\]

Study did not reject a null hypothesis at \( \alpha = 0.05 \) level of significance. There was no significant difference in performance in reading of pupils with hearing impairments of different degrees of hearing loss when taught with embossed picture technique. Therefore the null hypothesis which stated that there is no significant
performance difference in reading of pupils with hearing impairments of different degrees of hearing loss when taught with embossed picture technique was accepted. The degree of hearing loss did not affect the reading performance of pupils with hearing impairments when taught with embossed picture technique.

4.4 Discussion

The study gave high significant performance difference in reading of pupils with hearing impairments taught with embossed picture technique than the group taught with “look and say” method. Most pupils in the control group obtained lower ranks in the post-test compared to the experimental group for instance, 7 versus 1, and 13 against 2 among others. The experimental group showed a better mean than the control group at the post-test when the control got a mean of 3.333 against 7.56 and 8.44 versus 34. The same outcome was shown by the standard deviation for experimental group which were larger at the post-test than that of the control group; when the control group showed deviations of 2.96 versus 8.38 and 6.59 against 16.34. This revealed that pupils in the experimental group obtained better ranks than the control group. The Mann –Whitney –Wilcoxon Sum of Rank test was used to establish if there was significant difference in performance in reading of the control and experimental group. When tested at a significant level of .05, the null hypothesis was rejected at $\alpha = 0.001$ level of significance. According to the findings of this study, pupils taught by embossed pictures technique showed substantial improvement in the reading performance. The study agrees with research findings by Olson (1975) which reveals that experiments carried out in rapid reading showed substantial improvement in the abilities of pupils with visual impairments in reading Braille. The study also concurs with the confirmation of Armitage (1986) that in Braille’s findings,
points were actually much easier to interpret than lines but the method needed many refinements. It was innovation of enormous potential, which meant that for the first time blind people were able to read and write more successfully.

The second null hypothesis stated that: There is no significant age effect on reading performance of pupils with hearing impairments of different ages when taught with embossed picture technique, From the data obtained, pupils aged 8-9 obtained ranks of (8), (4), and (1) in the post-test. Those aged 10-11 obtained ranks of (7), (6), (4), and (2). From the findings in pupils aged 8-9 and those aged 10-11 obtained similar score like 40 with a similar rank of 4 despite of their age differences.

The study showed that the difference in performance between the pupils aged 8-9 and 10-11 years with hearing impairments taught with embossed picture technique was not highly significant. Therefore, there was no significant age effect in performance in reading of pupils with hearing impairments aged 8-9 and 10-11 years when taught with embossed picture technique. To test if the findings were statistically significant, the Mann-Whitney-Wilcoxon Sum of Rank test was used to analyze the findings. The study did not reject a null hypothesis at $\alpha = 0.10$ level of significance.

There was no significant age effect in performance in reading of pupils with hearing impairments aged 8-9 and 10-11 when taught with embossed picture technique. Literature review revealed that the younger the age of a child the better the ability to acquire language. The study did not agree with the findings of Ndurumo (1986) when he observed that an average 18-year-old pupil with hearing impairments cannot understand or use any of the syntactic structure, sentence patterns that the average 10 year-old hearing pupil understand and use with ease.
The third null hypothesis stated that: There is no significant performance difference in reading among pupils with hearing impairments of different degrees of hearing loss when taught with embossed picture technique. The study showed that the difference in performance in reading of group of pupils with different degrees of hearing loss taught with embossed picture technique was not highly significant. The data obtained showed that pupils taught with embossed picture technique in the group of moderate hearing loss obtained a sum rank of 8, a pupil in the moderately severe hearing loss got a rank of 4, while pupils in the group of severe hearing loss had a rank of 19 and those in the group of profound hearing loss obtained a sum rank of 14.

According to the findings, pupils in the group of moderate hearing loss, severe hearing loss, and profound hearing loss obtained a score of 40 and a rank of 4. Thus similar rank obtained by pupils with different degrees of hearing loss. The Kruskal - Wallis one- way Analysis of Variance (ANOVA) was used to analyze the findings. The study did not reject a null hypothesis at $\alpha = 0.05$ level of significance. There was no significant performance difference in reading of pupils with hearing impairments of different degrees of hearing loss when taught with embossed picture technique.

The study does not agree with the findings by Ndurumo (1986), which state that a higher degree of hearing loss will adversely affect the communication of pupils with hearing impairments. The researcher observed that part of the difference in the findings could be due to the use of embossed picture technique which none of the researchers in the literature reviewed used. The findings of the study revealed that the degree of hearing loss does not affect performance of pupils with deaf hearing impairments in reading when taught with embossed picture technique.
CHAPTER FIVE

SUMMARY, CONCLUSION AND RECOMMENDATIONS

5.0 Introduction

The chapter gives an overview of the findings that is, the summary, implications, and conclusion, and recommendations that could be useful to stakeholders in the area of education. The recommendations made in this study suggest workable solutions in an attempt to solve the research problem identified in the course of the study. The summary of the study was based on the objectives that guided the study.

5.1 Summary

The purpose of this study was to find out the effect of embossed picture technique when used in teaching reading to pupils with hearing impairment. The problem under study was that in spite of good philosophy behind special education, the effect of the teaching techniques used in teaching reading to the pupils with hearing impairment has not been addressed. Charles and James (1981) observe that studies of educational achievement have uniformly shown that learners with hearing impairment are retarded from three to four years. This may indicate that the absolute amount of retardation increases with age. To investigate the problem, the study focused on the following objectives:

1. To determine if pupils taught with embossed picture technique perform better in reading than those taught with “look and say” method.

2. To determine whether the performance in reading of pupils taught with embossed picture technique differs with their ages.
3. To determine whether the degree of hearing loss has effect on performance of pupils with hearing impairment in reading when taught with embossed picture technique.

The following research questions guided the study.

1. Do pupils with hearing impairment taught with embossed picture technique perform significantly better in reading than those taught with the “look and say” method?

2. Does age affect the reading performance of pupils with hearing impairment when taught with embossed picture technique?

3. Does the degree of hearing loss affect performance in reading at different degrees hearing loss among pupils with hearing impairment when taught with embossed picture technique?

This study adapted an experimental research design. Kambui School for the Hearing Impaired was chosen since it caters for all categories of pupils with Hearing Impairment from nursery level up to class eight. The school admits pupils from all over the country. All 18 pupils in the class one of Kambui School for the Hearing Impaired were purposively selected for the study. Two research instruments were used to collect data. The experimental group was taught with the embossed picture technique and the control group with the “look and say” method. The researcher developed a non-standardized teacher - made summative evaluation test (Criterion Reference Test) and formative evaluation test as the research instrument. Both summative and formative evaluation tests were used as an integral part of information gathering
Descriptive and inferential statistics were used to analyze the data. The Mann-Whitney- Wilcoxon sum of Rank test statistics were used to test first and the second null hypothesis. While the kruskal -Wallis one- way Analysis of Variance (ANOVA) test statistics was used to test the third null hypothesis. The three research hypotheses tested were:

**HO$_1$:** There is no significant performance difference in reading of pupils with hearing impairments taught with embossed picture technique and the group taught with “look and say” method.

**HO$_2$:** There is no significant age effect on reading performance of pupils with hearing impairments of different ages when taught with embossed picture technique

**HO$_3$:** There is no significant performance difference in reading of pupils with hearing impairments of different degrees of hearing loss when taught with embossed picture technique.

**Hypothesis one:**

The study revealed that the difference between the mean score for the control group and the experimental group was highly significant. The results were tested for significance using The Mann –Whitney –Wilcoxon Sum of Rank at a significant level of .05. The null hypothesis was rejected at $\alpha = 0.001$ level of significance since the calculated significance was less than .05. It was concluded that There is high significant difference in performance in reading of pupils with hearing impairment taught with embossed picture technique than the group taught with “look and say” method. The null hypothesis was thus rejected.
Hypothesis two:

The study revealed that the difference in performance between the mean for age 8-9 and age 10-11 was not highly significant. The results were tested for significance using The Mann –Whitney –Wilcoxon Sum of Rank at a significant level of .05. The study did not reject a null hypothesis at \( \alpha = 0.10 \) level of significance. Since the calculated value was greater than .05, it was concluded that there was no significant age effect in performance in reading of pupils with hearing impairment of age 8-9 and 10-11 when taught with embossed picture technique. The null hypothesis was thus accepted.

Hypothesis three:

The study showed that the difference in performance in reading of groups of pupils with different degrees of hearing loss taught with embossed picture technique was not highly significant. The results were tested for significance using The Kruskal -Wallis one- way Analysis of Variance (ANOVA). The findings were analyzed at a significant level of .05. They yielded a level of significance of 1.16. Since the calculated significance was greater than .05, it was concluded that there is no significant difference in performance in reading at different degree of hearing loss among pupils with hearing impairment when taught with embossed picture technique. Thus the null hypothesis was not rejected.

5.2 Implications of the findings

The following were the implications of the findings based on the hypothesis that guided the study.

Reading among pupils with deaf hearing impairments can be improved by using embossed picture technique in class one where reading starts. Pupils who will be
taught reading with embossed picture technique will perform better than those who will be taught with “look and say” method.

Pupils of different ages will not be affected significantly in performance in reading when taught with embossed picture technique.

Pupils with different degrees of hearing loss will not be affected significantly in performance in reading when taught with embossed picture technique.

5.3 Conclusion:

The study revealed that pupils with hearing impairments performed better in reading when taught with embossed picture technique than those taught with the “look and say” method. Embossed picture technique yielded better results when used in teaching reading to deaf children.

Age did not affect the reading performance of pupils with hearing impairments when taught with embossed picture technique. Reading performance of pupils of different ages was not affected when embossed picture technique were used to teach reading.

Pupils aged 8 – 9 obtained better ranks than those of aged 10 – 11.

The degree of hearing loss did not affect the reading performance of pupils with hearing impairments when taught with embossed picture technique. The different degrees of hearing loss had no affect on reading performance. Pupils with profound hearing loss obtained higher scores and better ranks than other groups.

5.4 Suggestions for further research

The researcher proposed the following areas for further research in the areas that were related to reading.

- This study has to be replicated in the same school using a new set of samples.
• This study covered one school in the lower primary. Another study can be carried out in several schools in lower primary.

• The study was conducted in a rural setting in class one. Another study can be done in an urban setting in class one.

• This study was an experiment involving small population sample. Another experimental study can be carried out involving large samples.

5.5 Recommendations

The following recommendation to the government through the Ministry of Education were made based on the findings of the study.

• The Ministry of Education should consider the use of embossed picture technique in teaching reading to pupils with hearing impairments in class one
REFERENCES


Schools: Virginia Reston.


APPENDIX I

SPECIFICATION OF THE CONTENT FOR UNIT I

(Sub-topics covered in class by pupils)

TOPIC: Greeting (immediate environment of the learner-The home)

SUB-TOPIC: greetings at the home environment.

Hello:
- Hello mother?
- Hello father?
- Hello brother?
- Hello sister?

Good morning:
- Good morning mother?
- Good morning father?
- Good morning sister?
- Good morning brother?

Greetings by finger spelling:

Hello:
- Hello mother?
- Hello father?
- Hello brother?
- Hello sister?

Good morning:
- Good morning mother?
- Good morning father?
• Good morning sister?
• Good morning brother?
APPENDIX II

SPECIFICATION OF THE CONTENT FOR UNIT II

(Sub-topics covered in class by pupils)

TOPIC: Greeting (A wider environment)

SUB- TOPIC: Greetings in the school environment

Hello:

- Hello Teacher?
- Hello Madam?
- Hello Mr. Kamau?
- Hello Mrs. Kamau?
- Hello children?
- Hello class one children?
- Hello I am Kamau?
- Hello I am Mary.
- Hello, how are you?

Good morning:

- Good morning Mrs. Kamau?
- Good morning teacher?
- Good morning madam?
- Good morning children?
- Good morning Mr. Kamau?
- Good morning Mrs. Kamau?
- Good morning Tom and Mary?
- Good morning our visitors?
Read by finger spelling

Hello:

- Hello Teacher?
- Hello Madam?
- Hello Mr. Kamau?
- Hello Mrs. Kamau?
- Hello children?
- Hello class one children?
- Hello I am Kamau.
- Hello I am Mary?
- Hello, how are you?

Good morning:

- Good morning Mrs. Kamau?
- Good morning teacher?
- Good morning madam?
- Good morning children?
- Good morning Mr. Kamau?
- Good morning Mrs. Kamau?
- Good morning Tom and Mary?
- Good morning our visitors?
APPENDIX III

SPECIFICATION OF THE CONTENT FOR UNIT III

(Sub-topics covered in class by pupils)

TOPIC: SENTENCE CONSTRUCTION

SUB-TOPIC: sentence construction by reading long sentences

Hello:

- Hello father, how are you?
- Hello Mr. Kamau, we are fine.
- Hello Madam Owino, I am in class one.
- Hello, my name is Tom, what is your name?
- Hello, my brother is coming.
- Hello children, we are going to read a story
- Hello, my sister’s name is Anne.

Good morning:

- Good morning mother, we have been waiting for you
- Good morning I am in class one.
- Good morning Mary, my brother is sick.
- Good morning Madam, how are you?
- Good morning, it is time for English

Read sentences by finger spelling

Hello:

- Hello father, how are you?
- Hello Mr. Kamau, we are fine.
- Hello Mr. Owino, I am in class one.
• Hello, my name is Tom, what is your name?

• Hello, my brother is coming.

• Hello children; we are going to read a story.

• Hello, my sisters’ name is Anne

**Good morning:**

• Good morning mother, we have been waiting for you.

• Good morning, I am in class one.

• Good morning Mary, my brother is sick

• Good morning madam, how are you?

• Good morning, it is time for English.
APPENDIX IV

SPECIFICATION OF INSTRUCTIONAL OBJECTIVES BASED ON THE CONTENT.

INSTRUCTIONAL OBJECTIVES FOR UNIT I

By the end of the lesson, pupils should be able to:

Greet people in their immediate environment by signing using the term:

**Hello:**

- Hello mother.
- Hello father.
- Hello brother.
- Hello sister.

**Good morning:**

- Good morning father.
- Good morning mother.
- Good morning brother.
- Good morning sister.

**Finger spelling:**

**Hello:**

- Hello mother.
- Hello father.
- Hello brother.
- Hello sister.
Good morning:

- Good morning father.
- Good morning mother.
- Good morning brother.
- Good morning sister.
APPENDIX V

SPECIFICATION OF INSTRUCTIONAL OBJECTIVES BASED ON THE CONTENT.

INSTRUCTIONAL OBJECTIVES FOR UNIT II

By the end of the lesson, pupils should be able to:

- Greet people in a wider environment (the school) by signing using the following terms:

  **Hello:**
  - Hello teacher?
  - Hello madam?
  - Hello Mr. Kamau?
  - Hello Mrs. Kamau?
  - Hello children?
  - Hello, how are you?

  **Good morning:**
  - Good morning teacher?
  - Good morning Madam?
  - Good morning children?
  - Good morning Mr. Kamau?
  - Good morning Mrs. Kamau?
  - Good morning our visitors?
  - Good morning Tom and Mary?
Finger spelling

Hello:

- Hello teacher?
- Hello madam?
- Hello Mr. Kamau?
- Hello Mrs. Kamau?
- Hello children?
- Hello, how are you?

Good morning:

- Good morning teacher?
- Good morning madam?
- Good morning children?
- Good morning Mr. Kamau?
- Good morning Mrs. Kamau?
- Good morning our visitors?
- Good morning Tom and Mary?
APPENDIX VI

SPECIFICATION OF INSTRUCTIONAL OBJECTIVES BASED ON THE CONTENT.

INSTRUCTIONAL OBJECTIVES FOR UNIT III

By the end of the lesson, pupils should be able to construct sentences by reading long sentences using the term:

**Hello:**

- Hello father, how are you?
- Hello Mr. Kamau we are fine.
- Hello madam Owino, I am in class one.
- Hello my name is Tom, what is your name?
- Hello John, my brother is coming.
- Hello, my sister’s name is Anne.

**Good morning:**

- Good morning mother, we have been waiting for you.
- Good morning Alice, I am going to play.
- Good morning Mary, my brother is sick.
- Good morning teacher, I am going to play.
- Good morning children, it is time for English.

**Read sentences by finger spelling**

**Hello:**

- Hello father, how are you?
- Hello Mr. Kamau, we are fine.
• Hello madam Owino, I am in class one.

• Hello my name is Tom and what is your name?

• Hello John, my brother is coming.

• Hello, my sister’s name is Anne.

Good morning:

• Good morning mother, we have been waiting for you.

• Good morning Alice, I am going to play.

• Good morning Mary, my brother is sick.

• Good morning teacher, I am going to play.

• Good morning children, it is time for English.
APPENDIX VII

SUMMATIVE EVALUATION TEST (CRT).

SUBJECT : Testing reading ability

CLASS : One Year: 2007

DURATION : 35 minutes

INSTRUCTIONS:

- Read all the questions carefully.
- Answer all the questions from all the sections.
- There are three sections, A, B and C.
- The total marks scored were (20 x 50 =100).

SECTION A:

Match the listed words to the words on the flash cards.

1. Hello mother (2 marks)
2. Hello brother (2 marks)
3. Good morning father (2 marks)

SECTION B

Choose the correct answer

1. Hello -------------( a ) Children ( b ) Desks ( c ) Books ( 2 marks)
2. ------------ are you? (a ) Fine ( b ) Why (c ) How (2marks)
3. Good morning Mrs. -------------- (a ) Jane (b) Anne (c ) Kamau (2 marks)
SECTION C

Read the following long sentences.

1. Hello, my name is Tom what is your name?  (2 marks)

2. Hello father, how are you? (2 marks)

3. Good morning mother, we have been waiting for your. (2 marks)

4. Good morning children, it is time for English. (2 marks)

(20 x 5 = 100)
Read and match the following words with similar words on the flash cards.

- Hello?
- Hello mother?
- Hello father?
- Hello brother?
- Hello sister?
- Good morning?
- Good morning mother?
- Good morning father?
- Good morning sister?
- Good morning brother?
FORMATIVE EVALUATION TEST BASED ON UNIT II

Choose the correct answer from the following words by circling the correct answer:

1. Hello Mr.___________  (a) Mary  (b) Kamau  (c)None of those
2. ___________ are you?  (a) Fine  (b) Why  (c)How
3. Hello ___________  (a) Children  (b) Desks  (c) Books
4. ___________ Teacher  (a) How  (b) Hello  (c) None
5. Good morning Mrs._____  (a) Jane  (b) Anne  (c) Kamau

Read by finger spelling the following words:

6. Morning
7. Visitors
8. Madam
9. Teacher
10. Tom
APPENDIX X

FORMATIVE EVALUATION TEST ITEMS BASED ON UNIT III

Read the following long sentence by signing:

1. Hello father, how are you?
2. Hello Mr. Kamau, we are fine.
3. Hello my name is Tom and what is your name?
4. Hello John, my brother is coming.
5. Hello madam Owino, I am in class one.
6. Good morning Alice, I am going to play
7. Good morning mother, we have been waiting for you.
8. Good morning teacher, I am going to play.
9. Good morning children, it is time for English.
10. Good morning Mary, my brother is sick.
APPENDIX XI

SCORING KEY FOR FORMATIVE EVALUATION TEST ITEMS ON UNIT I.

1. Hello                                       2 marks
2. Hello mother                           2 marks
3. Hello father                             2 marks
4. Hello brother                          2 marks
5. Hello sister                              2 marks
6. Good morning                         2 marks
7. Good morning mother             2 marks
8. Good morning father               2 marks
9. Good morning sister                2 marks
10. Good morning brother             2 marks

(10 x 2= 20 marks)
APPENDIX XII

SCORING KEY FOR FORMATIVE EVALUATION TEST

ITEMS ON UNIT II

B  (Kamau)     2 marks
C  (How)            2 marks
A  (Children)   2 marks
B  (Hello)       2 marks
C  (Kamau)      2 marks

Read the following words by finger spelling:

6. Morning       2 marks
7. Visitors      2 marks
8. Madam         2 marks
9. Teacher       2 marks
10. Tom          2 marks

(10 X 2 = 20)

Total = 20 marks.
APPENDIX XIII

SCORING KEY FOR FORMATIVE EVALUATION

TEST ITEMS ON UNIT III

1. Sign the following sentences. (2 marks)
2. Hello father, how are you? (2 marks)
3. Hello Mr. Kamau, we are fine. (2 marks)
4. Hello my name is Tom, what is your name? (2 marks)
5. Hello John, my brother is coming. (2 marks)
6. Hello madam Owino, I am in class one. (2 marks)
7. Good morning Alice, I am going to play. (2 marks)
8. Good morning mother, we have been waiting for you. (2 marks)
9. Good morning teacher, I am going to play. (2 marks)
10. Good morning children, it is time for English. (2 marks)
11. Good morning Mary, my brother is sick. (2 marks)

10 x 2 = 20

Total = 20 marks
APPENDIX XIV

SCORING KEY OF THE SUMMATIVE EVALUATION TEST

ITEMS CRITERION REFERENCE TEST (C.R.T.)

SECTION A:  SECTION B:

1. Hello mother  (2 marks)  4. A  (2 marks)
2. Hello brother  (2 marks)  5. C  (2 marks)
3. Good morning father  (2 marks)  6. C  (2 marks)

SECTION C:

Read the following long sentences by signing.

7. Hello, my name is Tom what is your name?  (2 marks)
8. Hello father, how are you?  (2 marks)
9. Good morning mother, we have been waiting for you.  (2 marks)
10. Good morning children, it is time for English.  (2 marks)

20 x 5 =100
Total =100%
# APPENDIX XV

## KENYATTA UNIVERSITY LESSON PLAN.

**NAME:** Sella Munyendo  
**REG. NO.:** E55/10945/04

**SCHOOL/INST:** Kambui School for the Deaf.  
**FORM/LEVEL:** Class 1.

**SUBJECT:** Reading  
**TOPIC:** Greetings (immediate environment - the home).

**WEEK:** 1  
**LESSON NO.:** 1  
**DATE:**  
**TIME:**

**OBJECTIVE(S):** By the end of the lesson, pupils should be able to greet people in their immediate environment using the term:

- Hello mother, hello father, hello sister.
- Good morning mother, good morning father, good morning sister, among others.

<table>
<thead>
<tr>
<th>TIME</th>
<th>CONTENT</th>
<th>LEARNERS ACTIVITIES</th>
<th>RESOURCE MATERIALS</th>
</tr>
</thead>
<tbody>
<tr>
<td>2 MIN INTRODUCTION</td>
<td>Explanation of embossed pictures</td>
<td>Look at pictures, Match pictures, Fingerspell letters and words.</td>
<td>Pictures, Flash cards</td>
</tr>
<tr>
<td>6 MIN DEVELOPMENT</td>
<td>STEP I: Show pictures of a home, Demonstrate greetings: Say words like Hello mother and fingerspell words like hello mother etc.</td>
<td>Greet people, Say words like Hello, Finger spell words, Sign words, Ask questions, Answer questions</td>
<td>Pictures, Flash cards</td>
</tr>
<tr>
<td>6 MIN</td>
<td>STEP II: Use embossed pictures to read words by signing Hello mother, hello sister etc</td>
<td>Greet people by demonstration, Say words, Sign words, Read words</td>
<td>Flash cards with words Hello, Mother, Father etc</td>
</tr>
<tr>
<td>6 MIN</td>
<td>STEP III: Read by finger spelling words Good morning using embossed pictures.</td>
<td>Say Good morning, Sign Good morning, Fingerspell Good morning, Ask questions, Answer questions</td>
<td>Pictures, Flash cards with words</td>
</tr>
</tbody>
</table>
A sample of an embossed picture technique sentence on the next page.