The Effect of Embossed Picture Technique on Reading Performance of Learners with Hearing Impairments: A Case of Kambui School for the Deaf

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Abstract

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 impairment. 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 Kiambu District, Githunguri Division, Ngewa zone, 3 kilometers off Kwa-Maiko centre. The school was chosen since it caters for all categories of pupils with hearing impairment 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 totaling 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. Non-parametric tests such as the Mann- Whitney test and the Wilcoxon sum of rank test were used to test the significant difference in performance in reading of pupils with hearing impairment 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 impairment 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 impairment of different ages taught with embossed picture technique. Finally, the study revealed that there is no significant performance difference in reading of pupils with hearing impairment at different degrees of hearing loss when taught with embossed picture technique.

The Effect of Embossed Picture Technique on Reading Performance of Learners with Hearing-Impairment: A Case of Kambui School for the Deaf

Education is a human right and every child has a right to education. Public law 92-142 (1975) in the United States of America (USA) advocates for education for all including pupils with handicapping conditions in the least restrictive environment. Maynard and Jack (1977) observe that despite the criticisms of public law 92-142, the act affirms several principles 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 principles 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.

Evidently in Kenya, the government started implementing Free Primary Education (FPE) in January 2003 which led to an increase in primary school enrolment by 25% in individual schools.

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. In a paper presented to the Constitution of Kenya Review Commission (CKRC) Ndurumo (2001) notes that persons with disabilities are an integral part of the society who long for equality in opportunities.

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 hearing- impairment to read adequately in the first four grades, the published reading achievement scores from large cities are discouraging testimonies to this. 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 deprivation becomes insurmountable impediments when the methods and materials for teaching reading are less than mediocre (Cohen, 1987).

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. 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. Embossed pictures are sometimes referred to as raised letters which can be touched, felt and seen easily. For instance, the embossed outline of a dog gives the shape of the animal as it is seen. The embossed outline therefore, constitutes not a representation but a symbol of the object, which becomes meaningful only with added verbal interpretation and explanation (Holbrock & 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 impairment.

Purpose and Objective of the Study

This study was to find out the effect of embossed picture technique when used in teaching reading to pupils with hearing-impairment. The major objectives of the study were to determine:

- if pupils taught with embossed picture technique perform better in reading than those taught with "look and say" method.
- whether the performance of pupils taught with embossed picture technique differs with their ages.
- whether the degree of hearing loss has effect on performance of pupils with hearing impairment in reading when taught with embossed picture technique.

Theoretical Framework

The study was guided by Piaget's theory of human mental development (Piaget, 1960) 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. They precede language learning. Sensory-motor intelligence is "the capacity to resolve practical problems through activities prior to language acquisition" (Piaget, 1960). The pre-conception 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" imitation, constitutes the transitional element between sensory-motor schemes and representative thought.

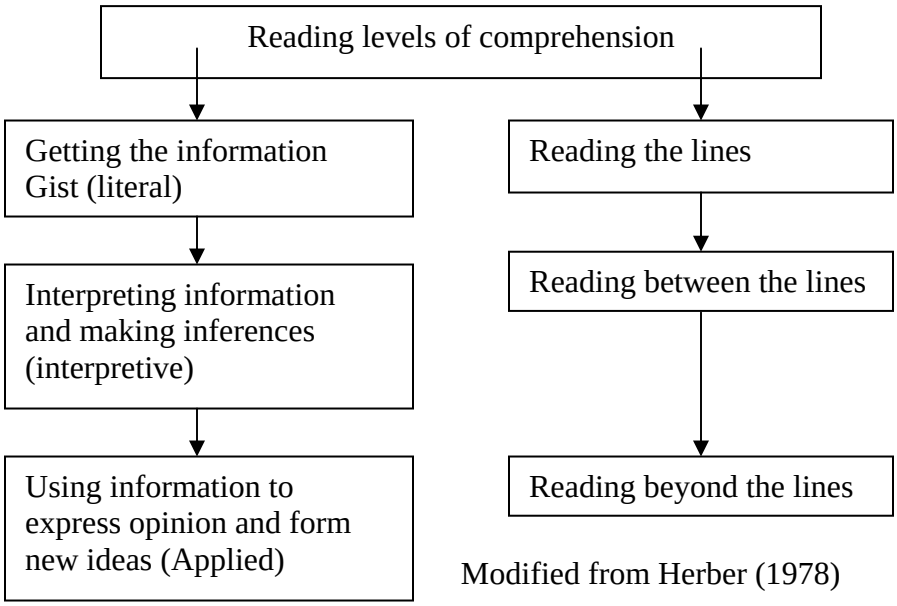
The transition starts with deferred imitation and proceeds through progressive interiozation. Thus, symbolic images are formed (Piaget, 1960). During the intuitive period which occupies the period from four to seven years, approximately, a gradual coordination of symbolic representations leads the child 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.

Similarly, 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 impairment.

The Conceptual Framework

Figure 1: Reading Levels of Comprehension



Modified from Herber (1978)

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. This means that one starts to read the lines, then reads between the lines and lastly reads beyond the lines. 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) 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) on (pg 10). The theoretical framework is relevant to the study since it gives the three important levels that a pupil has to follow systematically to acquire reading skills. Which is a timely guide to this study that seeks to find out the effect of embossed picture technique in teaching reading to pupils with hearing impairment.

Methodology

This study adapted an experimental design, which is perceived by Johnson (1999) as an effective way of studying a problem. Orodho (2004) states that if someone tries a new approach or procedure, to see what its effect will be, it might be referred to as an experiment. 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 and another as a control group. 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 impairment.

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 have special education training while 7 teachers have no training in special education. The study targeted pupils with hearing impairment with all categories 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 totalling eighteen pupils.

Table 1: Sample Frame of Target population

Male	Female	Total
11	7	**18**

Sample Size

All 18 pupils in the class one of Kambui School for the hearing-impaired were purposively selected for the study.

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 color, size, and texture. Nine pieces of paper were then labeled 1 while the other nine were labeled 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 labeled 1 were assigned to the experimental group, while the other nine who picked pieces of paper labeled 2 were assigned to the control group.

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.

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: coloured thread, manila papers, pair of scissors, glue, pencil, felt pens and stencils.

Teacher-Made Test

This is an important indicator of pupils reading performance in content area (Vacca &Vacca,1986). The researchers used 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 three sections; in the first section, pupils matched listed words. In the second they chose correct answers while the third section, they read long sentences.

Data Collection Technique

Primary data were collected from both experimental and control groups 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. 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. 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 minutes once a week. 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 word.
4. Reading sentences.

Data Analysis

Summative and formative evaluation teacher-made tests were used to collect data. This was because a teacher- made test is an important indicator of pupils reading performance in content area (Vacca & Vacca, 1996). Non-parametric tests, such as the Mann- Whitney test and, the Wilcoxon sum of Rank test, which state that:

$$\mathrm{T} = S - \frac{n_1(n_1+1)}{2}$$

Where:

S= sum of rank for the groups

$n_1 =$ number of observations in the group. While the kruskal -Wallis one- way Analysis of Variance (ANOVA). State that:

$$H = \frac{12}{N(n+1)} \quad \sum_{i=1}^{\kappa} \frac{\Re_i^2}{n_i} - 3(\aleph+1)$$

Where:

$R_i =$ Sum of ranks assigned to the observations in the $i-H$ group

$$\aleph = \sum_{i=1}^{k} n_i$$

$n_i =$ number of observations in the $i-H$ group

$h =$ Number of groups (Daniel, 1990); were used in analyzing the data since they make less restrictive assumptions unlike the parametric tests.

Results

This researcher wanted to establish whether pupils with hearing impaired pupils taught using embossed picture technique performed better than those taught using 'look and say' method. From the data obtained, paired difference, the range, the mean and the standard deviation scores for both experimental and control group pre-test and post-test were recorded as shown in the Table 1 below.

Table 2: Performance in reading of control group and experimental group in pre-test and post-test and the paired difference

Control Group Scores (n=9)			Experimental Group (n=9)		
Pre-test	**Post-test**	**Paired D.**	**Pre-test**	**Post-test**	**Paired D**
7	25	**18**	20	60	**40**
7	7	**9**	14	50	**36**
6	9	**3**	12	40	**28**
4	8	**4**	10	40	**30**
4	5	**1**	10	40	**30**
2	5	**3**	5	30	**25**
0	0	**0**	5	20	**15**
0	0	**0**	0	14	**14**
0	0	**0**	0	12	**12**

Key:

- **Control group** –refers to pupils taught with the "look and say" method.
- **Experimental group** –refers to pupils taught with embossed picture technique.

In Table 2 above the control group shows smaller paired difference compared to the experimental group for instance, 18 versus 40, 9 against 36, 3 versus 28, 4 versus 30, 1 against 30, 3 against 25, 0 versus 15, 0 versus 14 and 0 versus 12 respectively. The range, the mean and the standard deviation of the scores obtained by the experimental group in the pre-test were also calculated and recorded as shown in Table 2 on (pg 14).

Table 3: Performance in reading of experimental and control group pre-test and post-test scores obtained and the range, the mean, and the standard deviation

	Control group (n=9)		Experimental group (n=9)	
	Pre-test	**Post-test**	**Pre-test**	**Post-test**
	7	25	20	60
	7	16	14	50
	6	9	12	40
	4	8	10	40
	4	5	10	40
	2	5	5	30
	0	0	5	20
	0	0	0	14
	0	0	0	12
Range →	7	25	20	48
Mean →	3.333	7.555	8.444	34
Standard Deviation →	2.958	8.383	6.597	16.340

Table 3 above shows that pre-test scores for both control and experimental groups had smaller ranges such as 7 against 25 and 20 versus 48 respectively. Post-test scores indicated more heterogeneity than the pre-test scores. This was also observed for the standard deviations. The mean scores for both control and experimental group are higher for post-test than at the pre-test with a mean of 3.333 against 7.56 and 8.44 versus 34 respectively. While the standard deviation scores for control and experimental group were higher for post-test than pre-test with deviations of 2.96 versus 8.38 and 6.59 against 16.34 respectively as shown in Table 3 above. This researcher also intended to establish if there was any age effect on reading performance of pupils of different ages when taught with embossed picture technique. The results are presented on tables 4 and 5.

Table 4: Performance of pupils of ages 8 - 9 and 10-11 in the post-test control Group

Age	***No. of Pupils***	**Score / (ranks)**
8-9	$n_1 = 4$	5 10 12 20 (3.5) (5.5) (7) (9)
10-11	$n_2 = 5$	0 0 5 10 14 (1.5) (1.5) (3.5) (5.5) (8)

Table 4 above shows that pupils in the post-test control group of age 8-9 obtained higher scores of (20) marks than pupils of age 10-11 who scored (9) marks respectively.

Table 5: Performance of pupils of age 8 - 9 and 10 - 11 in the post-test for experimental group

Age	No. of pupils	**Score/ (Rank)**
8-9	$n_1 = 3$	12 40 60 (1) (4) (8)
10-11	$n_2 = 5$	20 30 40 40 50 (2) (3) (5) (5) (7) $n_1 = 3$ $n_2 = 5$ $S = 14$ T = 8

Table 5 shows that pupils in the post-test experimental group of age 8-9 obtained higher scores of (60) than pupils of age 10-11 who scored (50) respectively**.**
Further, the researcher intended to establish if pupils with hearing impairment performed differently at different degrees of hearing loss as shown in Tables 6 and 7.

Table 6: Performance in reading of pupils with different degree of hearing loss in the control group.

Group of Hearing loss	No. of pupils	Scores/ (ranks)	Rank
Moderate hearing loss	$n_1 = 3$	0 5 14 (1.5) (3.5) (8)	$\Re_1 = 13$
Moderately severe	$n_2 = 3$	0 5 12 (1.5) (3.5) (6.6)	$\Re_2 = 11.5$
Severe hearing loss	$n_3 = 1$	10 (5)	$\Re_3 = 5$
Profound hearing loss	$n_4 = 2$	12 20 (6.5) (9)	$\Re_4 = 15.5$

Table 6 shows that in the control group the rank sum of the group of pupils with profound hearing loss was higher (15.5) than moderately severe hearing loss (11.5), moderate hearing loss (13) and severe hearing loss (5) respectively**.**

Table 7: Performance in reading of pupils with different degree of hearing loss in the experimental group

Group of hearing loss	No. of pupils in each group	Scores	(Ranks)
Moderate H. loss	$n_1 = 2$	30 50 (4) (8)	$\Re_1 = 12$
Moderately severe H. loss	$n_2 = 1$	40 (6)	$\Re_2 = 6$
Severe H. loss	$n_3 = 3$	14 20 40 (2) (3) (6)	$\Re_3 = 11$
Profound H. loss	$n_4 = 3$	12 40 60 (1) (6) (9)	$\Re_4 = 16$

Table 7 above shows that in the experimental group, the rank sum of the group of pupils with profound hearing loss was higher (16) than that of moderate hearing loss (12), severe hearing loss (11), and moderately severe hearing loss (6).

Discussion

Studies have been conducted on reading using the "look and say" method among pupils with hearing impairment and hearing pupils. For example (Wendy, 1984), Sutton (2005), and Ndurumo (1986), carried out studies on reading. However, no attention was given on the use of the embossed picture technique. The findings of the study in Table 2 revealed that the control group which used the "look and say" method, showed smaller paired difference compared to the experimental group which used the embossed picture technique, for instance, 18 versus 40, 9 against 36, 3 versus 28, 4 versus 30, 1 against 30,

3 against 25, 0 versus 15, 0 versus 14 and 0 versus 12 respectively while Table 3 showed that pre-test scores for control groups had smaller ranges than the experimental group such as 7 against 25, and 20 versus 48 respectively. Post-test scores indicated more heterogeneity than the pre-test scores. This was also observed for the standard deviations. The mean scores for both control and experimental group are higher for post-test than at the pre-test with a mean of 3.333 against 7.56 and 8.44 versus 34 respectively. The standard deviation scores for control and experimental group were higher for post-test than pre-test with deviations of 2.96 versus 8.38 and 6.59 against 16.34 respectively as shown in Table 3. Further, Table 4 showed that the rank total for the control group was smaller (48) than those of the experimental group (123). The findings of the study revealed that pupils in the experimental group, who were taught using the embossed picture technique scored higher than pupils in the control group who were taught using the " look and say" method.

The findings of the study also revealed that pupils with hearing impairment perform far below the expected reading standard for instance pupils in the control group scored 0 marks while those in the control group scored 12 marks in the post-test according to Table 2. The study's findings agree with research established by Ndurumo (1986), which found that 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. While a 10 year-old pupil with hearing impairment, on the other hand, could only understand 32 % of the 2,000 most frequently used words, 24 % of the 5,000 most frequently used words, and 22 % of 20,000 most frequently used words. The findings also concur with research findings by Quingley et al., (1976), which reveal that an 18 year-old hearing impaired pupil cannot understand or use any of the syntactic structures and sentence patterns that an average 10 year-old hearing pupil can understand and use with ease. The findings of the study also agree with research findings by Aulaintercultural (2007), which reveal that 98 % of standard 6 primary pupils failed to achieve the needed mastery of English language to comfortably pursue further education. The study further confirms that pupils in special primary schools in Kenya, Uganda and Zimbabwe are failing to achieve even a minimum level of English literacy (Aulaintercultural, 2007).

The study established in Table 4 that pupils in the control group of age 8-9 obtained higher scores (20) in the post-test than pupils of age 10-11 who scored (9). Table 5 (p.19) showed that pupils in the experimental group of age 8-9 obtained higher scores (60) in the post-test than pupils of age 10-11 who scored (50). From the findings, pupils of age 8-9 performed better than those of age 10-11. Findings in Table 4 and Table 6 on (pg 16 and 17) above revealed that pupils of age 8 - 9 in the control and experimental group had a higher performance than those of age 10 - 11. The study supported findings by Ndurumo (1986) when he observed that an average 18-year- old pupil with hearing impairment cannot understand or use any of the syntactic structure, sentence patterns that the average 10 year- old hearing pupil understands and uses with ease. The findings of the study agree with recent research findings from Africa by Aulaintercultural (2007), which suggest that a majority of pupils in special primary schools in Kenya, Uganda, Zimbabwe (and elsewhere in Africa) are failing to achieve even a minimum level of

English literacy. The findings of the study showed that there was no significant age effect on reading performance of pupils with hearing impairment when taught with embossed picture technique and those taught with the “look and say” method.

The research findings in Table 6 showed that pupils with profound hearing loss in the control group had a rank sum that was higher (15.5) than pupils with moderately severe hearing loss (11.5), moderate hearing loss (13) and severe hearing loss (5) respectively. Table 7 showed that pupils with profound hearing loss in the experimental group had a rank sum that was higher (16) than that of pupils with moderate hearing loss (12), severe hearing loss (11), and moderately severe hearing loss (6). The study disagreed with research studies carried out by Ndurumo (1986), which stated that a higher degree of hearing loss would adversely affect the communication of pupils with hearing-impairment. The findings of the study showed that pupils with hearing impairment and with profound hearing loss performed better than all the other groups in the study despite of the fact that pupils with profound hearing loss suffered a loss of 91 dB and above, and they can benefit in learning when total communication (T/C) is used. The research findings also agreed with the study carried out by Ozoji (1993) which observes that pupils with hard-of- hearing manifested two to three years retardation in vocabulary and this retardation increases with chronological age. The researcher observed that part of the difference in the research 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 there is no significant performance difference in reading at different degree of hearing loss among pupils with hearing impairment when taught with embossed picture technique and those taught with the “look and say “method.

Hypothesis One which stated that there is no significant difference in performance in reading of pupils with hearing-impairment taught with embossed picture technique and those taught with “look and say” method. The study revealed that the control group showed smaller paired difference compared to the experimental group for instance, 14 verses 40, 9 against 36, 3 versus 28, 4 versus 30, 1 against 30, 3 against 25, 0 versus 15, 0 versus 14 and 0 versus 12 respectively. The study further revealed that pre-test scores for both control and experimental groups showed smaller ranges like 7 against 25 and 20 versus 48 respectively. Post-test scores indicated more homogeneity at pre-test than at post-test scores. The same trend was observed in the standard deviation scores. The mean scores for both control and experimental group were higher for post-test than at the pre-test with a mean of 3.333 against 7.56 and 8.44 versus 34 respectively. The standard deviation scores for control and experimental group were higher for post-test than pre-test with a deviation of 2.96 versus 8.38 and 6.59 against 16.34 respectively.

The results were tested for statistical significance using non-parametric tests such as the Mann-Whitney test and the Wilcoxon sum of rank test at a significant level of .05.
The results revealed that there is a high statistical significant difference between pupils taught with embossed picture technique and those taught with the “look and say” method. Thus, the null hypothesis was rejected.

Hypothesis two stated that there is no significant age effect on reading performance of pupils with hearing impairment of different ages when taught with embossed picture technique and those taught with "look and say" method. Based on this hypothesis the study revealed that pupils in the control group of age 8-9 obtained higher scores of (20) than pupils of age 10-11 who scored (9) in the post-test and pupils in the experimental group of age 8-9 obtained higher scores of (60) than pupils of age 10-11 who scored (50) post-test. From the findings, pupils of age 8-9 performed better than those of age 10-11 in both the control group and experimental group. The results were tested for significance using the Kruskal -Wallis one way Analysis of Variance (ANOVA) at a significance level of 0.05. The findings revealed that the p-value is > 0.10. Therefore, the study did not reject the null hypothesis at 0.10 level of significance. Further, the findings in Table 1.6 revealed that p- value is > 0.01, the study accepted the null hypothesis at $\alpha = 20.00$ according to Table A7 p.508 (Daniel, 1990). The findings of the study showed that there was no age effect on reading performance of pupils with hearing impairment when taught with embossed picture technique. The null hypothesis was accepted.

Hypothesis three which stated that there is no significant difference in performance in reading at different degrees of hearing loss of pupils with hearing impairment when taught with embossed picture technique and those taught with the "look and say" method. In line with this hypothesis this research findings revealed that in the control group, the rank sum of the group of pupils with profound hearing loss was higher (15.5) than moderately severe hearing loss (11.5), moderate hearing loss (13) and severe hearing loss (5) respectively. The study further revealed that in the experimental group, the rank sum of the group of pupils with profound hearing loss was higher (16) than that of moderate hearing loss (12), severe hearing loss (11), and moderately severe hearing loss (6). To find out if the results were statistically significant, the results were tested using Kruskal-Wallis (ANOVA) test which showed that p- value is >0.05. Null hypothesis was not rejected at 0.05 level of significance according to Table A.11 P.554 (Daniel, 1990). There is no significant performance difference in reading of pupils with hearing impairment of different degrees of hearing loss in the control group when taught with the "the look and say" method. The study accepted the null hypothesis.

Pupils with moderate hearing loss in the control group obtained smaller mean scores than pupils in the experimental group for instance 6.33 against 40 respectively. Further, pupils with moderately severe hearing loss in the control group obtained smaller mean scores than pupils in the experimental group for instance 5.67 against 40 respectively. The group with severe hearing loss in the control group obtained smaller mean scores than pupils in the experimental group for instance 10 against 24.67 respectively. The study revealed that pupils with profound hearing loss in the control group obtained smaller mean scores than pupils in the experimental group for instance 16 against 37.33 respectively. To find out if the mean was statistically significant, the results were tested using Kruskal- Wallis (ANOVA) test which showed that p-value is >0.05. We did not reject null hypothesis at $\alpha = 0.05$ level of significance. Thus, the null hypothesis which stated that there is no significant performance difference in reading of pupils at different degrees of hearing loss when taught with embossed picture technique was accepted.

Conclusions

- There is significant difference in performance in reading of pupils with hearing impairment taught with embossed picture technique and those taught with the "look and say" method.
- There is no age effect on reading performance of pupils with hearing impairment of different ages when taught with embossed picture technique.
- There is no significant difference in performance in reading at different degrees of hearing loss of pupils with hearing impairment when taught with embossed picture technique.

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