

## **Assessment of Reading Comprehension Functioning Level of Class Three Pre-Lingually Deaf Learners in Kenya**

**Ogutu Tobias Adera<sup>1</sup>, Kochung Edwards J.<sup>1</sup>, Adoyo Peter Oracha<sup>1</sup>, Matu Peter Maina<sup>2</sup>**

<sup>1</sup>Department of Special Needs Education, Maseno University, Kenya;

<sup>2</sup>Department of Language & Communication Studies, Technical University of Kenya, Nairobi, Kenya

### **\*Corresponding Author:**

Ogutu Tobias Adera

Email: [aderaogutu@gmail.com](mailto:aderaogutu@gmail.com)

---

**Abstract:** Learners in different countries are currently being taught language at their functioning level irrespective of their grade levels. District English Evaluation Tests in Kenya indicate that Class Three prelingually deaf learners are being taught English above their functioning level. However, the results did not show the learners' functioning level in reading comprehension. The purpose of the current study was to assess the learners' functioning level in reading comprehension. Theory of Syntax by Noam Chomsky which holds that learners acquire language by mastering the vocabulary and structure of the target language was adapted and used. The study employed evaluative and qualitative research designs. The population consisted of 337 Class Three prelingually deaf learners and 65 Class Three English teachers. Multi-Stage sampling technique was used to select 178 Class III prelingually deaf learners while purposive sampling technique was used to select 16 Class III English teachers. Data was collected using a questionnaire and a reading comprehension test. The instruments were verified for face and content validity by Class III English teachers of the deaf. The reliability of the instruments was established through test-retest using 34 (10%) learners and was determined using Pearson Product-moment correlation ( $r$ ) at 0.70 or above,  $p < 0.05$ . Data was analyzed using descriptive statistics and qualitative analysis. None (0.0%) of the 178 learners obtained the criterion pass mark of 50%. The learners' functioning level in reading comprehension was found to be at Class I level at the beginning of the school year and they were lagging behind the curriculum by three academic years. It was found that the learners' low functioning level in reading comprehension was due to lack of mastery of vocabulary, sentence patterns, cohesive ties and prior knowledge of the world around us to sustain reading for literal meaning, implied meaning and relationship of thought at sentence and short passage levels.. It was recommended that the teaching of English to Class III prelingually deaf learners in Kenya should begin at Class I level at the beginning of the school year. The findings may be used by schools to start teaching Class Three prelingually deaf learners English at their functioning level and by the Ministry of Education to inform policy.

**Keywords:** assessment, class, functioning level, reading comprehension, Kenya.

---

### **Background of Study**

Learners are, currently being taught language at their functioning levels with improved performance in several countries including USA, Britain, Cuba, Canada, India, Singapore and Zambia [1-3].

Prelingually deaf (PRE-LD) learners in Kenya are expected to master sufficient command of English by the end of Class III to enable them use the language as a compulsory medium of instruction and examination as from Class IV. Although the learners are currently being taught the language at Class III level, District Evaluation Tests indicate that they are not functioning at the level. During the period 2010-2012, the learners obtained mean scores of 19.1% to 29.9% in English with no learner getting the criterion pass mark of 50% compared to their hearing peers who had mean scores of 55.6% to 68.9% in the same tests [4-10]. However,

the results did not show the learners' functioning level in reading comprehension, a main component of language. Information that can be used to teach the learners reading comprehension at their functioning level and to inform policy is, therefore, currently lacking.

The reading comprehension functioning levels of PRE-LD learners have been established in several countries to facilitate teaching at suitable levels. The reading comprehension functioning level of Elementary school PRE-LD learners in USA is at Grade IV level or below which is equivalent to the reading level of a 9-year old hearing native speaker of English [11]. The level is also at Grade IV level or below in Britain [12]. However, the level is at Grade I or below in The Netherlands [13] and Spain [14]. The studies showed that although the learners' mastery of word recognition

and spelling was equivalent to that of their hearing peers, they lacked mastery of the expected vocabulary and language structure to sustain comprehension at sentence and passage levels. These findings concurred with Antia, Jones, Reed and Kreimeyer [15], Dyer, MacSweeney, Szezerbinski and Cambell [16], Jackson, Paul and Smith [17], Miller [18], Musslman [19], Wauters, van Bon, Tellings and van Leeuwe [20] which also showed that Elementary school PRE-LD learners were deficient in vocabulary, language grammar and prior knowledge of the world around us to sustain comprehension beyond the word level.

However, the findings related to prelingually deaf learners who had acquired Sign Language as a First Language (L1) during Critical Language Acquisition Period (CLAP) and who, therefore, had the opportunity to acquire prior knowledge of the world around them before school. Prior knowledge of the world around us is a prerequisite to the acquisition of reading comprehension [17, 21-25]. PRE-LD learners in Kenya join school at the age of 3-6 years without mastery of any language to facilitate acquisition of prior knowledge before school [26, 27].

Traxler [11], Montreal and Hernandez [14], Powers [12] and Wauters, van Bon and Tellings [13] used norm-referenced assessment to determine the functioning levels while criterion-referenced assessment was used in this study. The use of criterion-referenced assessment enabled the researcher to determine the learners functioning level in reading comprehension in relation to the expected learning outcomes as specified in the curriculum.

In Africa, studies focusing on functioning levels of prelingually deaf learners in reading comprehension are limited. However, available findings show that prelingually deaf learners lack the expected skills in reading comprehension at both Primary and Secondary school levels. Inkonta & Mudduekwe [28] and Ademokoya [29] found that Primary and High school prelingually learners in Nigeria were unable to read for comprehension at sentence and passage levels due to lack of mastery of vocabulary and sentence structure. In Kenya, Makumi [27] found that Primary school PRE-LD learners were graduating from school illiterate or semi-illiterate. In another study, Maina [30] found that Form IV learners in Kenya lacked the necessary English skills to sustain comprehension at sentence level. However, the studies did not show the learners' functioning levels in reading comprehension.

Several factors have been advanced as main contributors to PRE-LD learners' low functioning levels in reading comprehension. Metacognitive knowledge which is the awareness of the cognitive process readers can use as copying mechanisms that enable them to

plan, strategize, control, monitor and evaluate own reading comprehension as a skilled reader is one such factor. A reader with mastery of the necessary metacognitive knowledge is able to identify gaps during the reading and determine whether the gaps are critical to the overall understanding of the text and can read independently with little or no support [31]. Deaf learners especially those taught reading by hearing teachers lack the necessary metacognitive skills to be able to read independently [21, 32, 31]. Hennenam-Gosschalk [33] attributed these deficits to teachers who use high control mechanisms resulting in limited interaction between the teacher, the reader and the text. In contrast teachers who are deaf tend to use low control mechanisms which give learners who are deaf a wider latitude for engagement enabling the learners to acquire the necessary metacognitive knowledge [34].

Studies have also shown that lack of prior knowledge of the world around us which form language content is a contributing factor to PRE-LD learners' low functioning level in reading comprehension. Learners with mastery of prior knowledge of the world in a given knowledge area can make inferences and predictions to get meaning of content using knowledge outside the text [17, 23-25]. Due to communication barriers, prelingually deaf children have limited or no opportunity to acquire knowledge of the world around us through interaction with their parents, siblings, peers, caretakers and the people in their immediate environment. They, therefore, lack prior knowledge of the world around us which is a prerequisite to mastery of reading comprehension [17, 35, 36].

PRE-LD learners in Kenya join school at the age of 3-6 years or even later without mastery of any language as L1. This means that they had limited or no opportunity to acquire knowledge of the word around us through interaction with parents, siblings, peers, caregivers and others in the family due language deficit. They, therefore, approach reading comprehension little or no knowledge of the world around them compared to hearing who acquire or any other First Language (L1) between 0-3 years of age.

Limited or lack of phonological knowledge has been advanced as one of the explanations of reading failure among prelingually deaf learners. Such knowledge includes mastery of the phoneme inventory of the target language, sequencing of phonemes and graphemes, phoneme-grapheme and grapheme-morpheme representations [37-40]. However, other studies show that phonological knowledge is not necessary to become a skilled PRE-LD reader [41-44].

Limited or no mastery of morphological and syntactic structures for interpretation of meaning in written texts have also been found to be a principal

contributing factor to PRE-LD learners' low functioning level in reading comprehension. PRE-LD learners with structural knowledge deficit tend to ignore structural information for interpreting meaning in a text. At the morphological level, the deficit relates to mastery of plural, tense and possessive markers. At the syntactic level they include lack of mastery of word-order in sentences and sentence types [18, 45, 46, 34,20]. However, the findings were related to studies involving learners who had been exposed to language during CLAP and who, therefore, had the opportunity to acquire prior knowledge of the world before starting learning how to read. PRE-LD learners in the current study were not exposed to any language during CLAP.

## **METHODOLOGY**

### **RESEARCH DESIGN**

Qualitative and evaluative research designs were used. Qualitative research design enabled the researcher to analyze Class III PRE-LD learners' mastery of comprehension of literal meaning, implied meaning and relationship of thought at word, sentence and short passage levels as reflected in their responses in the sub-tests.

Model II Evaluation design was used to determine the learners' functioning level in reading comprehension. The design relates to evaluation of performance of users or learners as per the expected outcomes [47].

### **Study Area**

The study was conducted in thirteen Primary Schools for the Deaf in Kenya. Three other schools were used during the pilot study but were not included in the main study to avoid any bias.

Kenya is in East Africa situated latitude 4.5°N and 4.5°S, and latitude 34.5°E and 42°E occupying an area of 590,000 km<sup>2</sup> with a population of 38,610,097. Administratively, the country is divided into 47 counties with a school for the deaf in nearly every county (KNBS, 2010). The country is a multilingual society with 43 ethnic languages. English is the official language and the medium of instruction in school as from Class IV while Kiswahili is the national language. Kenyan Sign Language (KSL) is the language of the deaf community in the country.

### **Study Population**

The population consisted of 337 Class Prelingually Deaf (PRE-LD) learners and 65 Class III English teachers from the 49 Primary Schools for the Deaf in Kenya.

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

Fischer' formula for determining sample size for populations of less than 10,000 [47] was used. The

sample size was 179. However, one learner did not participate in the study due to sickness reducing the actual sample to 178.

Multi-stage and saturated sampling techniques were used in the study. A three stage multi-stage sampling technique was used to group the 337 Class III learners in Kenya into three regions: Western Kenya, Central Kenya and Eastern Kenya. The distribution of the learners was as follows: Western Kenya; 218(64.7%) learners; Central Kenya; 79 (23.5%) learners and Eastern Kenya; 40(11.8%) learners.

The Schools for the Deaf in each region were randomly selected and all the Class III PRE-LD learners in each selected school were included in the sample depending on the sample size for the region. The sample for each region was calculated as follows: Western Kenya:  $218/337 \times 179 \times 100 = 116$ ; Central Kenya:  $79/337 \times 179 \times 100 = 42$ ; Eastern Kenya:  $40/337 \times 179 \times 100 = 21$

Purposive sampling technique was used to select 16 teachers who were the Class III English teachers in the thirteen schools.

### **Instruments for Data Collection**

Data was collected using a researcher-made reading comprehension test for Class III PRE-LD learners and a questionnaire for Class III English teachers.

### **The Researcher-made Reading Comprehension Test for Class III PRE-LD Learners.**

The test which was based on the Primary School English Curriculum objectives (KIE, 2004) consisted of the following three sub-tests; Class I Reading Comprehension Sub-test, Class II Reading Comprehension Sub-test and Class III Reading Comprehension Sub-test. The criterion pass mark was 50% as determined by the curriculum developer, Kenya Institute of Curriculum (KIE, 2006).

Class I Reading Comprehension Sub-test was used to collect data relating to the learners' mastery of Class I level reading comprehension as specified in Class I English syllabus; Class II Level Reading Comprehension Sub-test was used to collect data relating to the learners' mastery of Class II level Reading Comprehension Sub-test as specified in Class II English syllabus and Class III Level Reading Comprehension Sub-Test was used to collect data relating to the learners' mastery of Class III level reading comprehension as per Class III English syllabus.

**Questionnaire for Class III English Teachers**

The questionnaire was used to collect data relating to the learners’ demographic background information including age, time of joining school, class joined, mode of communication known at the time of joining school, class joined upon first admission in school, age at the time of the study, languages known at the time of the study, language used as First Language (L1), parents’ knowledge of English and KSL.

**Validity and Reliability of the Research Instruments**  
**Validity of the Instruments**

Face and content validity was verified by Class I-III English teachers of the deaf. The teachers were to verify whether or not each sub-test covered 80% of the curriculum content and whether the proportion of the test items devoted to each skill was proportionate to the coverage of the skill in the syllabus. They were also to verify the suitability of language used and the duration of each sub-test. The teachers were provided with copies of Class I, II and III English syllabi and content verification guides for this purpose. Comments received were used to improve the instruments.

**Reliability of the Instruments**

The reliability of each sub-test was established using test-retest reliability. The reliability coefficient of each sub-test was accepted at 0.70 or above and was determined using Pearson’s correlation coefficient (r) at  $p < 0.05$ . The correlation coefficient for Class I Reading Comprehension Sub-test was 0, 86; Class II Reading

Comprehension Sub-test, 0.76 and Class III Reading Comprehension Sub-test, 0.93.

**METHODS OF DATA ANALYSIS**

Data relating to the learners functioning level in reading comprehension was analyzed using a language rating scale with a criterion pass mark set at 50%, frequency counts and means.

Error analysis was used to qualitatively analyze data relating to the learners' mastery of reading for comprehension for literal meaning, implied meaning and relationship of thought at word, sentence and short passage levels. The learners were considered to have mastery of a given skill when at least 50% of the learners (89) had the skill.

**RESULTS AND DISCUSSION**

**Functioning Level in Reading Comprehension**

Data was analyzed using a language rating scale with the criterion pass mark set at 50%. The scale was used as follows: 0-24%: Very Weak; 25-49%: Weak; 50% or above: Grade Functioning Level Attained. The learners' functioning level in English reading comprehension was considered to be at Class III level when at least 50% (89) of them got the criterion pass mark. The learners' functioning level was taken to be at Class I level when they failed to attain Class II level reading comprehension. The results are presented in Table 1

**Table-1: Class III PRE-LD Learners' Functioning Level in Reading Comprehension (n=178)**

GRADE LEVEL	Scores (x/100) with criterion pass mark set at 50%		
	0-24% f (%)	25-49% f (%)	50% or above f (%)
CLASS III	164 (92.1)	14 (7.9)	0 (0.0)
CLASS II	156 (87.6)	22 (12.4)	0 (0.0)
CLASS I	120 (67.4)	58 (32.6)	0 (0.0)

**Key:** 0-24%: Very Weak, 25-49%: Weak, 50% or above: Grade Functioning Level Attained

From Table 1, 164(92.1%) learners were very weak obtaining between 0–24 marks at Class III level. The remaining 14 (7.9%) were weak recording 25-49%. None (0.0%) of the learners obtained the criterion pass mark of 50%. From the results, the learners’ functioning level in reading comprehension was below Class III level.

At Class II level, 156(87.6%) were very weak recording 0-24% marks. The rest 22 (12.2%) were weak getting 25-49%. None (0.0%) of the learners obtained the criterion pass mark. From the results the learners’ functioning level in reading comprehension was below Class II level.

At Class I level, 120(67.4) learners were very weak obtaining 0-24% marks. The remaining 58(32.6) learners were weak obtaining 25-49% marks. None (0.0%) of the learners obtained the criterion pass mark. The result showed that the learners’ functioning level in reading comprehension was at Class I level which is the beginning class in Primary School. The learners were, therefore, lagging behind the curriculum by three academic years.

The finding was consistent with Montreal and Hernandez [14] and Wauters, van Bon and Tellings [13] who also found that the functioning level of Elementary PRE- LD learners in reading comprehension in Spain and the Netherlands was at Grade I level respectively. The finding also concurred with Traxler [11] who found

the reading level of Elementary and High school PRE-LD learners in USA to be at Grade IV level or below and Powers [12] who also found the level at Grade IV in Britain. However, the findings were related to PRE-LD learners who had been exposed to language during CLAP and who, therefore, began to learn how to read with some mastery of prior knowledge of the world. Prior knowledge of the world which form language content is a principal contributor to prelingually deaf learners' low functioning levels in reading comprehension [17,35,24,48]. The current study related to Class III PRE-LD learners who began to learn how to read at the age 3-6 years without exposure to language during CLAP and who, therefore, had limited or knowledge of the world around them due the subsequent communication barrier between them and the parents.

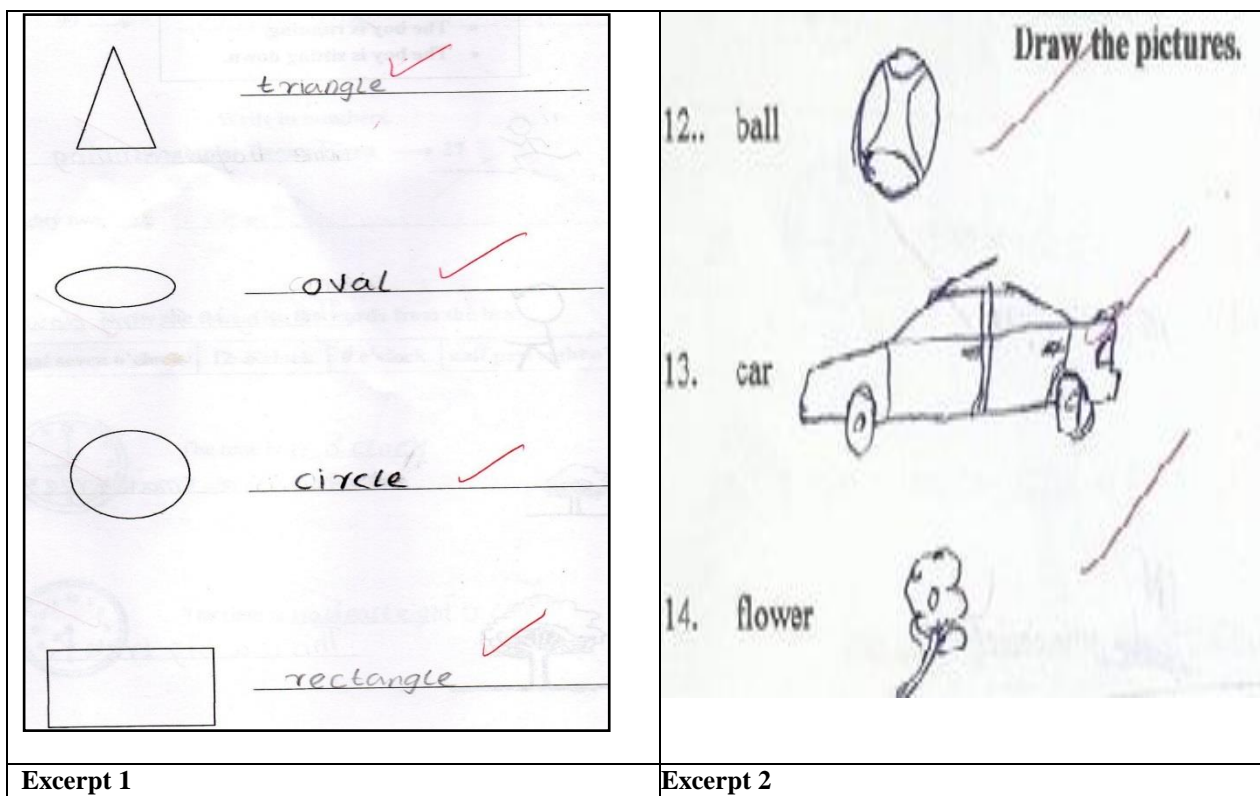
**Mastery of Reading Comprehension Skills**

Mastery of the following comprehension skills was tested: reading for comprehension at one-word,

sentence and short passage levels. The skills mastered by the learners were then compared with those they were expected to master at Class I, II and III to determine mastery level.

**Mastery of Reading Comprehension at One-word Level**

The following skills were tested: reading for comprehension vocabulary relating to everyday life at home and school, and reading for comprehension names of the following common geometrical shapes: circle, oval, rectangle and triangle. Mastery of reading for comprehension vocabulary relating to everyday life was tested by asking the learners to read given words then sketch their drawings. Mastery of reading for comprehension names of geometrical shapes was tested by asking the learners to match given words to pictures. Excerpts of the learners' responses are presented in Fig.1.



**Fig-1: Excerpts Showing Mastery of Reading for Comprehension at One-word Level by Class III PRE-LD Learners**

From Excerpt 1 in Fig 1, the learner read the words 'ball', 'car' and 'flower' and drew correct corresponding sketches. The result showed that the learner understood the words. A total of 169 (94.9% learners read 'ball' and drew the correct sketches', 166 (93.3%) drew the correct sketches for 'car' and 142 & (79.8%) drew the correct sketches for 'flower'. The

results showed that the learners had mastery of reading for comprehension names of objects found in everyday life at home and school.

In Excerpt 2, the learner matched the words 'triangle', 'oval', 'circle' and 'rectangle' correctly to the shapes. A total of 128 (71.9%) learners matched

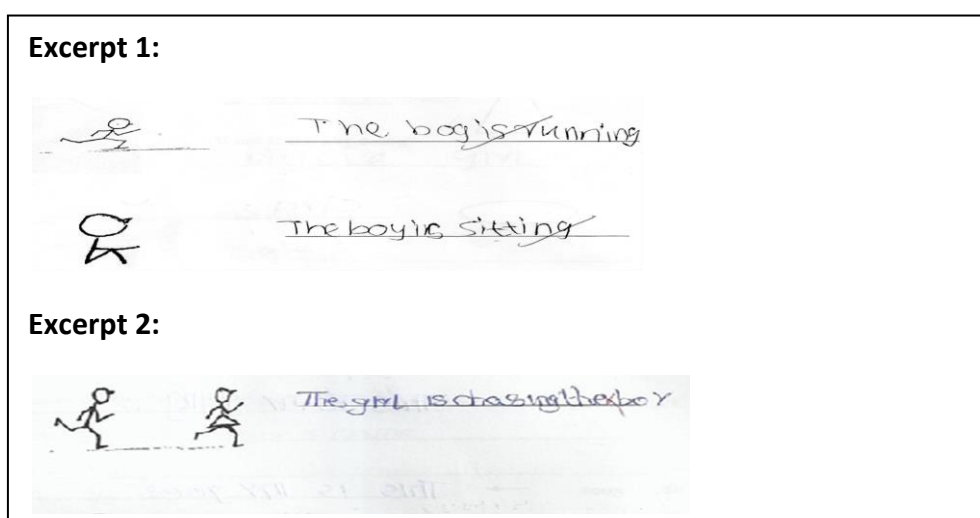
'triangle' to the correct picture, 130 (73.0%) learners matched 'oval' to its picture correctly, 111 (62.4%) learners matched 'circle' to its picture correctly and 132 (74.2%) learners matched 'rectangle' to its picture correctly. The results showed that the learners read and understood names of geometrical shapes.

From the results in Fig.1, the learners had mastery of reading for comprehension at one-word level. The finding concurred with Merrills, Underwood and Wood [49], Wauters, van Bon, Tellings and

Leeuwe [13] and William [50] who also found that Elementary school PRE-LD learners had mastery of vocabulary relating to home and school.

### Comprehension at Sentence Level

To test mastery of reading for comprehension at sentence level, the learners were asked to match simple sentence describing activities in everyday life with the pictures they describe. The results are presented in Fig. 2.



**Fig-2: Excerpts Showing Mastery of Reading for Comprehension at Simple Sentence Level by Class III Prelingually Deaf Learners (n=178)**

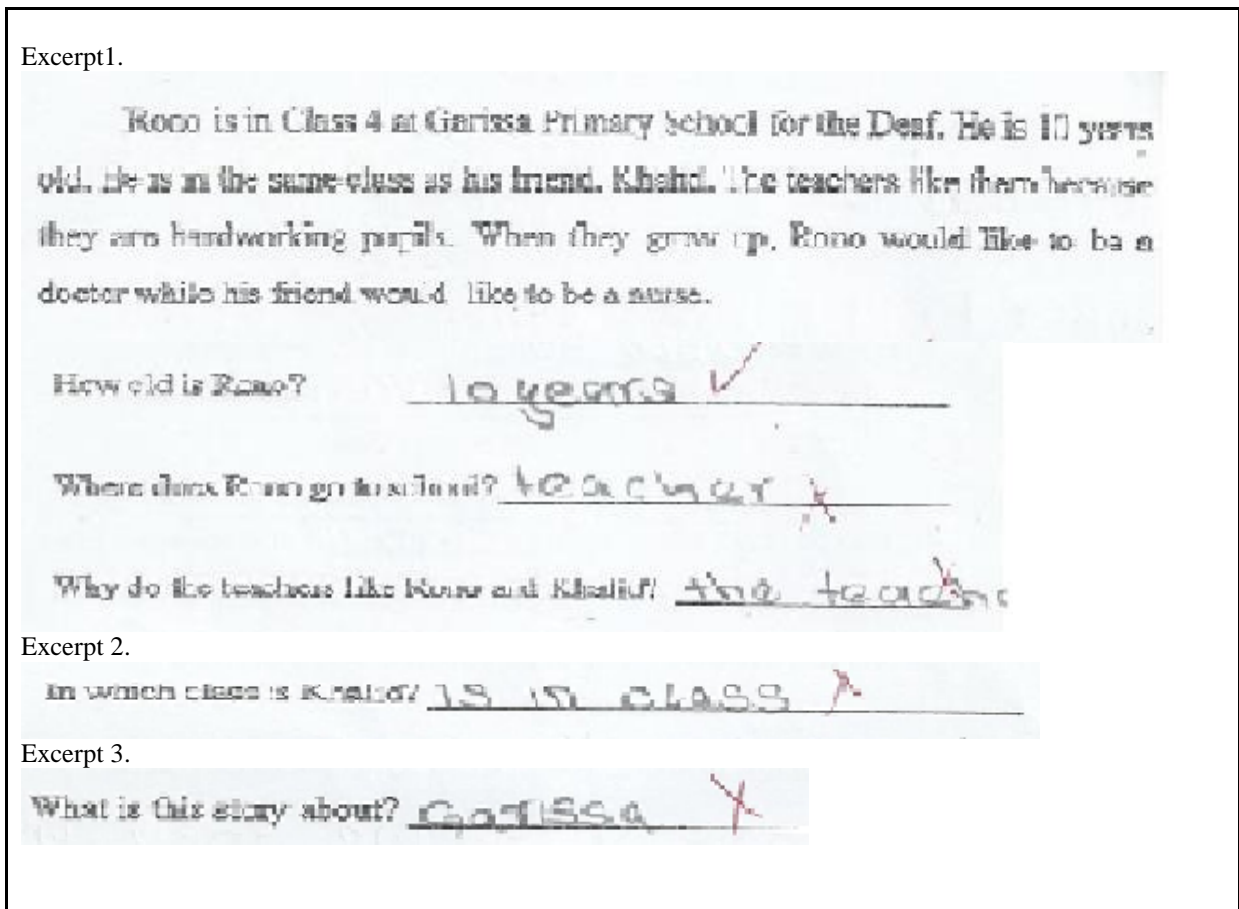
From Excerpt 1 in Fig. 2, the learner matched correctly the sentences with the drawings describing them. A total of 168 (94.4%) learners correctly matched the drawing of the boy running with the sentence describing it; 172 (96.6%) learners matched correctly the drawing of the boy sitting down with its sentence. The results showed that the learners read and understand simple sentences taking the grammatical structure 'noun phrase+ auxiliary verb + main verb'.

From Excerpt 2, the learner matched wrongly the pictures to the sentences describing them. A total of 148 (83.1%) learners matched wrongly the drawing of the boy chasing the girl with sentence describing it and 167 (93.8%) learners matched wrongly the drawing of the girl chasing the boy with sentence describing it. The results showed that the learners lacked mastery of reading for comprehension a simple sentence with the sentence patterns 'Noun/Noun Phrase + auxiliary verb + verb/verb phrase'.

The finding is consistent with that of Berent (1993) who found that prelingually deaf learners experience difficulties comprehending English simple sentences where interpretation of meaning depends on mastery of the order of words in the target sentence. However, the finding related to learners who had been exposed to language during CLAP. The current finding relate to learners who had no exposure to language until they joined school at the age of 3-6 years or later.

### Comprehension at Passage Level

To test mastery of reading for comprehension at the passage level, the learners were asked to answer written comprehension questions from a short passage of 56 words relating to life in school. The questions tested comprehension of literal meaning, implied meaning and relationship of thought. Excerpts showing the learners' responses are presented in Fig 3.



**Fig-3: Mastery of Reading for Comprehension at Short Passage Level by Class III Prelingually Deaf Learners**

From Excerpt 1 in Fig.3, the learner stated the age of the character in the story correctly. A total of 143 (80.3%) learners answered this question correctly by either copying the sentence directly or the stated age. The result showed that the learners understood the simple sentence whose meanings is explicitly stated in the short passage. However, the learner answered incorrectly the question that required the learner state to where Rono was going to school. Since the school was explicitly stated in the sentence, the response showed that the learner did not understand the question. The learner also failed to answer correctly the question that required an explanation why the two boys were liked by their teachers. The response required mastery of cohesive ties in form of personal pronouns and knowledge that those who work hard are appreciated. Only 3 (1.7%) learners stated correctly the school being attended by Khalid while none of the 178 (0.0%) stated correctly why the two learners were liked by their teachers. From the results, the learners lacked mastery of relevant sentences, cohesive ties and prior knowledge of the world to be able to read for literal meaning, implied meaning and relationship of thought at short passage level.

In Excerpt 2, the learner wrote the wrong answer to the question which demanded comprehension of a sentence whose meaning was implied by a previous sentence in the passage. None of the 178 (0.0%) learners answered this question correctly. The result showed that the learners lacked mastery implied meaning to be able to comprehend a short passage. In Excerpt 3, the learner also answered wrongly the question that required the learner to give a suitable title to the passage. The question demanded mastery of relationship of thought in the whole passage and prior knowledge of world around us. None (0.0%) of the learners answered this question correctly. The result showed that the learners had no mastery of relationship of thought as contained in a passage to be able to comprehend a short passage.

From Fig.3, the learners lacked mastery of comprehension of sentences, use of cohesive ties and relevant prior knowledge to be able to read for literal meaning, implied meaning and relationship of thought. The finding concurred with Maina (2009) who found that Form IV PRE-LD learners lacked mastery of vocabulary and sentence patterns to be able to comprehend a passage meant for Form IV learners. However, Maina (2015) asked the learners to underline

vocabulary and sentences not understood in a passage. The findings showed words and the sentences the learners did not understand. However, it did not show the category of words and sentences not understood, mastery of cohesive ties and prior knowledge of the world. In the current study, the learners were asked to answer comprehension questions. The approach enabled the researcher to determine the learners' mastery of vocabulary and sentence types, use of cohesive ties and prior knowledge of the world for literal meaning, implied meaning and relationship of thought. The finding is also consistent with other studies which also showed that PRE-LD learners lacked mastery of sentences, cohesion and prior knowledge of the world to be able to read at sentence and passage levels [16, 17, 46, 25] The finding may be used by teachers to improve teaching of reading.

### CONCLUSIONS

It was concluded that the reading comprehension functioning level of Class III PRE-LD learners in Kenya is at Class I level at the beginning of the school year. The learners were, therefore, lagging behind the curriculum by three academic years. The learners lacked mastery of necessary vocabulary, sentence structure, cohesive ties and prior knowledge of the world to sustain reading for comprehension for literal meaning, implied meaning and relationship of thought.

### Recommendations

It was recommended that schools should start teaching Class III PRE-LD learners in Kenya reading comprehension as from Class I level with focus on reading for literal meaning, implied meaning, and relationship of thought comprehension at word, sentence and short passage levels. Focus should also be on acquisition of prior knowledge of the world around us which form language content.

### REFERENCES

1. Force L. M. T; Toward universal learning: A global framework for measuring learning, 2013.
2. Migaard K, Mingat A; Education in Sub-Saharan Africa: A comparative analysis. Washington DC: World Bank, 2012.
3. UNESCO; Teachers and Educational Quality: Monitoring Global needs for 2015. Montreal: Montreal Institute of Statistics. (2015). Education for All Global Monitoring Report 2023/2014. Paris: UNESCO, 2006.
4. DEO, Bungoma; District Evaluation Tests Results: 2010-2012. DEO, Bungoma, 2013.
5. DEO, Kericho; District Evaluation Tests Results: 2010-2012. DEO, Kericho, 2013.
6. DEO, Kilifi; District Evaluation Tests Results: 2010-2012. DEO, Kilifi, 2013.
7. DEO, Machakos; District Evaluation Tests Results: 2010-2012. DEO, Machakos, 2013.
8. DEO, Muranga; District Evaluation Tests Results: 2010-2012. DEO, Muranga, 2013.
9. DEO, Nakuru; District Evaluation Tests Results: 2010-2012. DEO, Nakuru, 2013.
10. DEO, Nandi; District Evaluation Tests Results: 2010-2012. DEO, Nandi, 2013.
11. Traxler CB; The Stanford Achievement Tests, 9<sup>th</sup> Edition; National Monitoring and performance Standards for deaf and Hard of Hearing students. Journal of Deaf Studies and Deaf Education, 2000; 5: 337-348.
12. Powers S; The educational achievements of deaf school learners. Birmingham: University of Birmingham, 2002.
13. Wauters LN, Van Bon WHJ, Tellings AEJM; Reading Comprehension of Dutch deaf children. Reading and Writing, 2006; 19: 49-76.
14. Monreal ST, Hernandez RS; Reading levels of Spanish deaf students. American Annals of the Deaf, 2005; 150: 379-387.
15. Antia S, Jones P, Reed S, Kreimeyer K; Academic status and progress of deaf and hard-of-hearing students in general education classrooms. Journal of Deaf Studies and Deaf Education, 2009; 14: 293-311
16. Dyer A, Mac Sweeney M, Szezerbinski M, Campbell R; Predictors of reading delay in deaf adolescents: The relative contributions of rapid automatized naming speed and phonemic awareness and decoding, 2003.
17. Jackson DW, Paul PV, Smith JC; Prior knowledge and reading comprehension ability of deaf adolescents. Journal of Deaf Studies and Deaf Education, 1997; 2: 172-184.
18. Miller P; Syntactic and semantic processing in Hebrew readers with pre-lingual deafness. American Annals of the Deaf, 2000; 145: 436-451.
19. Musselman C; How do children who can't hear learn to read an alphabetical script? A review of the literature on reading and deafness. Journal of Deaf Studies and Deaf Education, 2000; 5: 9-31
20. Wauters NL, Van Bon WHJ, Tellings AEJM, Van Leeuwe JFJ; In search of factors in deaf and hearing children' comprehension. American Annals of the deaf, 2006; 153(3): 234-233.
21. Kelly V; Processing of bottom-up and top-down information by skilled and average deaf readers and implication for whole language instruction. Exceptional Children, 1995; 61(4): 318-334.
22. Miller P; Similarities and differences in the processing of written text by skilled and less skilled readers with prelingual deafness. The Journal of Special Education, 2013; 46(4): 233-244.
23. Kargin T, Guldenoglu IB, Miller P, Houser P, Rathmann C, Kubus O, Superegon E; Differences in word processing skills of deaf and hearing individuals reading in different orthographies.



- Journal of Development and Physical Disabilities, 2012; 24: 65-83.
24. Pressley M, Wood E, Woloshyn VE, martin V, King A, Menke D; Encouraging mindful use of prior knowledge: Attempting to construct explanatory answers facilitates learning. *Educational Psychologist*, 1992; 27: 91-110.
  25. Spires HA, Donley J; Prior knowledge activation: Inducing engagement with informal texts. *Journal of Educational Psychology*, 1998; 90: 249-260.
  26. KIE; Primary Education Syllabus: English. Nairobi: KIE, 2004a.
  27. Makumi ECN; A Study of Special Education Program in Kenya with special emphasis on the hearing impaired and causes of their semi-illiteracy. Unpublished MEd. Thesis, Kenyatta University, 1995.
  28. Ikonta NR, Madduekwe AN; A study of hearing-impaired students (in English) in a conventional Secondary school in Lagos State, Nigeria. *African Journal of Special Educational needs*, 2005; 4(1): 28-29.
  29. Ademokoya J; Onset of Hearing Loss, Gender and Self Concept as Determinants of Academic Achievements in English Language of Students with Hearing Disability in Oyo State, Ibadan, University of Ibadan, 2007.
  30. Maina EN; Factors influencing performance of deaf students in mathematics in Kenya Certificate of Secondary Education, Kenya. Unpublished Med. Special undertaken with students who are deaf and hard of hearing, 2009.
  31. Al-Hilawani Y; Measuring students' metacognition in real-life situations. *American Annals of the Deaf*, 2003; 148: 233-242.
  32. Kyle FE, Harris M; Predictors of reading development in deaf children: A 3 year Longitudinal study. *Journal of Experimental child Psychology*, 2010b; 107: 229-243.
  33. Heinneman -Gosschalk R; The role of Teachers, Parents and Deaf Adults in Promoting reading in deaf children. Unpublished PhD Thesis, University of Bristol, 1999.
  34. Schirmer BR; Using Verbal Protocols to Identify the Reading Strategies of students who are Deaf. *Journal Deaf Studies and Deaf Education*, 2003; 8(2): 157-170
  35. Marschark M, Knoors H; Educating deaf children: Language, cognition and learning. *Deafness and Education International*, 2012;14: 137-161.
  36. Luckner LJ, Handley C; A summary of the reading comprehension research. *American annals of the deaf*, 2008; 153(1): 6-36
  37. Hulme C, Snowling M, Caravolas M, Carroll J; Phonological skills are (probably) One cause of success in learning to read: A comment on Castles and Coltheart. *Scientific Studies of Reading*, 2005; 9: 351-365.
  38. Harris M, Moreno C; Deaf children's use of phonological coding: Evidence from reading, spelling, and working memory. *Journal of Deaf Studies and Deaf Education*, 2004; 9, 253-268.
  39. Izzo A; Phonemic awareness and reading ability: An investigation with young readers who are deaf. *American Annals of the Deaf*, 2002; 147:18-29.
  40. Nielsen DC, Leutke-Stahlman B; Phonological awareness: One key to the reading Proficiency of deaf children. *American Annals of the Deaf*, 2002; 147: 11-19.
  41. Miller P; Processing of written words by individuals with prelingual deafness. *Journal of Speech, Language, and Hearing Research*, 2004; 47(5): 979-989.
  42. Miller P; What the visual word recognition skills of prelingually deafened readers tell about their reading comprehension problems. *Journal of Developmental and Physical Disabilities*, 2004; 18(2): 91-121.
  43. Miller P, Clark MD; Phonological awareness is not necessary to become a skilled deaf reader (review). *Journal of Development and Physical Disabilities*, 2011; 23: 459-479.
  44. Paul PV, Wang Y, Trezek BJ, Luckner JL; Phonology is necessary, but not Sufficient: A rejoinder. *American Annals of the Deaf*, 2009;154: 346-356.
  45. Ivimey GP; The written syntax of an English deaf child: An exploration in method. *International Journal of Language & Communication Disorders*, 1976; 11(2): 103-120.
  46. Lillo-Martin DC, Hanson VI, Smith ST; Deaf readers' comprehension of relative clause structures. *Applied Linguistics*, 1992; 13(1): 13-30
  47. Mugenda ON, Mugenda AG ; *Research Methods: Quantitative and Qualitative Approaches*. Nairobi: African Centre for Technology Studies Press, 2003.
  48. Miller P, Kargin T, Guldenoglu B, Rathmann C; Kubus O, Hauser P, Spurgeon E; Factors Distinguishing Skilled and Less Skilled Deaf Readers: Evidence from Four Orthographies. *Journals of Deaf and Education Advanced Access* published September 16, 2012.
  49. Merrills JD, Underwood G, Wood DJ; The word recognition skills of profound prelingually deaf children. *Journal of Psychology*, 1992; 12: 365-384.
  50. William C; Promoting vocabulary development in young children who are deaf and hard-of-hearing: Translating research into practice. *American Annals of the deaf*, Winter, 2012.