



## ENHANCING ACCESS TO BRAILLE MATERIALS FOR OPTIMAL LEARNING AT KIBOS PRIMARY SCHOOL FOR THE BLIND, KISUMU COUNTY, KENYA

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### **Abstract:**

The purpose of this study was to determine the approaches to enhancing access to Braille materials for optimal learning at Kibos Primary School for the Blind. The study was guided by the main objective which was to determine the causes of the shortage of Braille materials at Kibos Primary School for the Blind. The study employed a case study research design with a target population comprising 26 teachers, one transcriber, a librarian, and a resource person. Census was used to acquire the needed information from the target population since it was small, and the researcher had no control. Interview schedules and questionnaires were administered to different groups of respondents. A pilot study was conducted in one of the primary schools for learners with visual impairment within the study area. Data was analyzed qualitatively and quantitatively. Qualitative data was organized, reviewed and data coding system developed, data was assigned codes and recurring themes were identified and the results were presented in narratives, while quantitative data was analyzed using a Statistical Package for Social Sciences version 17. The findings revealed that school enrollment of both male and female pupils was on the rise. However, the enrollment of male pupils was higher. The results also indicated that mathematics and science subjects were most affected by the shortage of braille learning materials. Among the identified causes of the shortage of Braille learning materials were: inadequate funding, regular change of syllabus, delay caused by producers of the materials, lengthy procurement procedures and increased admission of new learners with visual impairment. This study

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recommended that to enhance access to Braille learning materials at the school; the government should give adequate funds and build the capacity of the braille transcribers. The study was necessary since the government policy on education for all did not seem to cater adequately for Braille learning materials for learners with visual impairment.

**Keywords:** access, Braille materials, enhance, learning and optimal

## **1. Introduction**

Learners with visual impairment are entitled to the acquisition of education just like their sighted peers. These rights are found in different domestic laws such as the constitution of Kenya 2010, special needs education sector policy 2018, and international laws such as United Nations Convention on the Rights of Persons with Disabilities (UNCRPD, 2014 & Stein, 2007). All these documents point to the need of availing information in accessible formats to learners with visual impairment in which Braille Materials is one of the formats.

The availability of adequate Braille materials promotes the acquisition of knowledge and skills in the educational endeavors of learners with visual impairment for a competitive academic-oriented society and career opportunities. Enhancing access to Braille learning materials is a key approach to realizing educational dreams for learners who are visually impaired.

## **2. Role of Braille Materials in the Education of Learners Who Are Blind**

Braille materials are a means of accessing and passing information for persons who are blind (Khayyam Jafri, 2021). Learners who are blind acquire information, knowledge, and skills in different subjects through Braille in their endeavor to acquire education at different levels of learning. Adequate availability of Braille materials enhances optimal learning for these learners resulting in good academic performance. This promotes competitiveness with their sighted peers in the job market (Khochen, Maha, 2011 and Schroader, 1998). However, research reveals there is an acute shortage of Braille materials for learners with visual impairment caused by different factors (Wamunyi, 2017 and Okumu, 2022)

## **3. Significance of Availing Adequate Braille Materials**

The availability of adequate Braille materials promotes reading and writing skills for learners who are blind at different stages of learning. It also promotes the independence of learners and academic performance. This intern translates into different skills which result in different career opportunities for self-reliance. Limited or unavailability of these materials denies learners with visual impairment access to information to be at parity with their sighted colleagues.

## 4. Methodology

This research made use of the case study design. According to Kombo and Tromp (2006), a case study design involves a detailed description of a situation under study or an investigation of the problem at hand to establish detailed information about the phenomenon. This research design was found to be suitable by the researcher in determining different approaches for enhancing access to Braille materials for optimal learning at Kibos Primary School for the Blind. This research was carried out at Kibos Primary School for the Blind, Kisumu County Kenya. The school was chosen because of its long existence in the Nyanza region and fewer no studies had been carried out on how to resolve the issue of inadequate Braille materials from the research findings from different researchers carried out in the school. The 29 participants in the school are: a headteacher, 25 teachers, resource personnel, a school transcriber, and a librarian were involved in this study. These participants were purposively chosen to participate in this study because the researcher assumed that they had relevant information on how to enhance access to learning materials at the school as a result of their daily engagement with the learners who are blind in the transmission of knowledge to the learners.

### 4.1 Research Instruments

The research made use of questionnaires and semi-structured interview guides. Written questionnaires were issued to the teachers and resource personnel. Semi-structured interview guides were administered to the headteacher, Braille transcriber, and librarian.

Questionnaires were administered to the teachers and the resource personnel; this is because they provided confidentiality giving room for more information to be obtained on their views regarding mechanisms to enhance access to Braille material. The questionnaires also sought to obtain views on subjects most affected due to limited access to Braille materials and suggestions on possible remedies.

Interviews were used to obtain information from the head teacher, Braille transcriber, and librarian. Information about the enrollment of learners who were blind using Braille materials at Kibos Primary School for the Blind was obtained from the head teacher. The Braille transcriber provided information on challenges experienced by learners who use Braille. The librarian was interviewed on the availability of Braille materials at the school library and factors influencing the production or supply of Braille reading materials.

The interview guide facilitated the eliciting of this information since it allowed the researcher to clarify issues by further probing to counter-check. The interview gave a chance for detailed answers hence; more in-depth information could be generated. Interview schedules were appropriate instruments that made it possible to obtain reliable and also relevant data for the purpose and the specific objectives of the study (Mugenda and Mugenda, 2003). The responses were captured in an interview collection tool which was later analyzed according to the themes.

During the data collection exercise, the researcher made use of the research assistant who was adequately trained before the exercise.

## **4.2 Data Collection**

The researcher obtained a letter of introduction from the Kenyatta University graduate school and then proceeded to National Commission for Science, Technology, and Innovation [NACOSTI] to obtain a research permit. Upon obtaining a research permit, the researcher presented it to the District Education Officer of Kisumu sub-county who wrote a cover letter requesting the school administration to allow the researcher to collect data from the institution. The researcher visited the school in advance to notify the school administration about the intended research study and to obtain permission to undertake the actual study.

## **4.3 Data Analysis**

The data obtained were analyzed using the Statistical Package for Social Sciences [SPSS] version 2017. The collected was cleaned, coded, and edited according to the themes which stemmed from the research objectives and questions. Coded quantitative and qualitative data were obtained from closed-ended questions and open-ended questions in the questionnaires, respectively. The coded data were subjected to econometric analysis using qualitative and quantitative techniques. The quantitative data were analyzed and presented using descriptive statistics such as charts, tables, frequency distribution, percentiles, and narrative form. Qualitative data was presented in narrative form.

This research sought to answer questions from the objective of the study which was to determine the causes of the shortage of Braille materials at Kibos Primary School for the Blind.

## **5. Findings and Discussions**

### **5.1 Demographic Information**

#### **5.1.1 Demographic Information of the Teachers**

The teachers' gender, ages, academic qualification, duration of service in the designation, and the highest levels of training in special needs education [SNE] was captured.

##### **a. Gender of Respondents**

The gender distribution of the response in this study is shown in the following Table 1.

Of the 27 respondents who participated in the study, 51.85% were male, whereas 48.15% were female. Ascertaining the distribution of gender was significant since the general perception is that females are more caring and empathetic compared to their male counterparts. This view is consistent with the findings by Curtis (1985), who highlighted the supportive nature of females regarding inclusive education. However, my findings did not match Curtis's view. The presence of more male participants in the school could

have led to insufficient Braille materials due to their alleged less caring and supportive nature.

**Table 1: Gender of Respondents**

	Male	Female	Total
Head Teacher	0	1	1
Teachers	11	12	23
Librarian	1	0	1
Transcriber	1	0	1
Resource personnel	1	0	1
Total	14	13	27

**b. Ages of Respondents**

Table 2 shows the ages of the head teacher, teachers, librarian, transcriber, and resource personnel at 5- year intervals.

**Table 2: Ages of Respondents**

Age	Teachers	Head teacher	Librarian	Transcriber	Resource personnel	Percentage
21-25	1	-	-	-	-	3.70%
26-30	-	-	-	-	-	0.00%
31-35	1	-	1	-	-	7.41%
36-40	4	-	-	-	-	14.81%
41-45	1	-	-	-	-	3.70%
46-50	6	1	-	-	1	3.70%
51-55	6	-	-	-	-	22.22%
56-60	2	-	-	-	-	7.41%
61-65	-	-	-	1	-	3.85%
65>	1	-	-	-	-	3.70%
Never indicated age	1	-	-	-	-	3.70%
Total	23	1	1	1	1	100%

The majority of the respondents were 36 years and above at 88.89 percent, while only 11.11 percent were below 35 years old. In this research, the age factor was important because the research assumed that advanced age is tied to more knowledge and experience in the subject matter under study. However past research revealed that there is no direct correlation between age and

**c. Level of Education of the Headteacher and Teachers**

The following Table 3 shows the academic qualification of the head teacher and the teachers. It subsequently shows the level of training in SNE.

**Table 3: Level of Education of the Headteacher and Teachers**

	Academic qualification (Frequency)	Percentage	Level of training in SNE (Frequency)	Percentage
ATS1	3	12.5%	-	-
ATS2	1	4.35%	-	-
ATS3	0	0.00%	-	-
ATS4	0	0.00%	-	-
P1	2	8.70%	-	-
Certificate	-	-	2	8.70%
Diploma	7	30.43%	9	39.13%
Bachelors	7	30.43%	6	26.09%
Masters	4	13.04%	5	17.39%
PhD	0	0.00%	0	0.00%
None	-	-	1	4.35%
No Response	-	-	1	4.35%
Total	24	100%	24	100%

Most of the teachers were diploma holders at 29.17 percent, while a similar proportion were bachelor degree holders. A few, 16.67 percent of the teachers were master’s degree holders and none of the teachers had a PhD. Concerning the highest level of training in SNE, 37.5 percent had a Diploma while 25 percent were Bachelor’s degree holders. 20.83 percent of the teachers indicated that they had a Master’s degree, while 8.33 percent of the teachers indicated that they had a certificate in SNE. Further, one teacher (4.17 percent of the teachers) indicated that he had no training in SNE and one teacher declined to indicate the level of training in SNE. It was also noted that none of the teachers had a PhD in SNE.

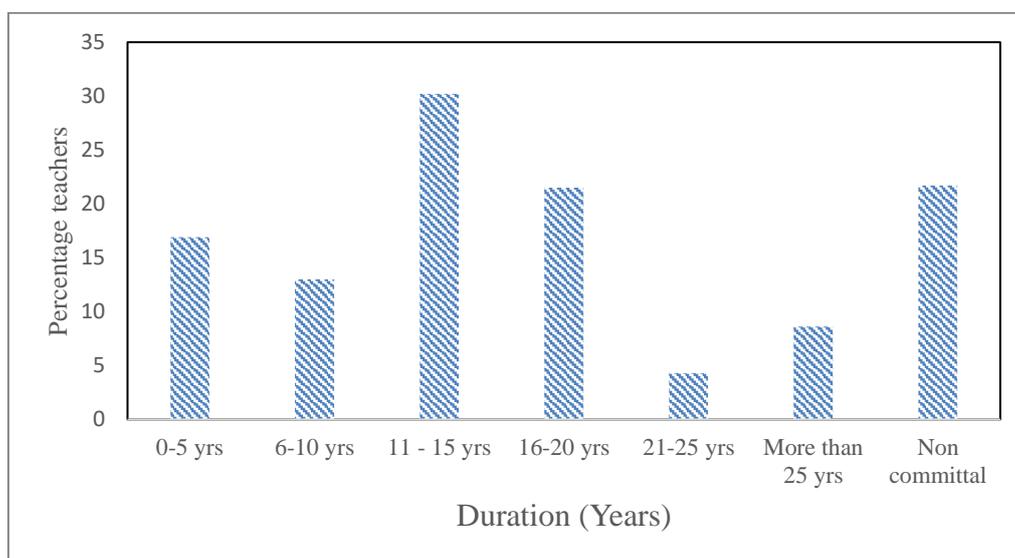
Education level was key in determining the teachers’ competence in education for learners with visual impairment. The more trained the personnel, the more likely to be conversant with the needs of the learners with special needs, hence the knowledge on how to enhance access to Braille learning materials. From the research findings, participants had training ranging from certificate to master’s level meaning they might have been knowledgeable in the subject matter but the reason for the scarcity of resources in the institution was beyond their control.

#### **d. Duration of Service for Teachers, Librarians, and Transcribers in Their Job Designation**

The duration of service for the participants in their various job designations was pivotal in this study since it captured their job experience in the locale of the study. Their job experience was vital in providing the required information regarding access to Braille learning materials. This follows from the assumption that respondents with a shorter duration of service could have less historical knowledge on access to Braille learning materials than those with a longer duration of service who could have more understanding of the subject matter.

### e. Duration of Service for Teachers in Their Job Designation

In their positions at the time of this study, the teachers had served for an average of 13.78 years. The longest-serving teacher had served for 30 years in the present position while the shortest-serving teacher had served for 3 years. It was thought and believed that teachers with a longer duration of service had more experience and knowledge in the subject matter under investigation. It was established that most participants in this research had served in their job designation between 11 and 20 years which equipped them with adequate knowledge of the subject matter hence providing appropriate responses to the study. The following table presents the duration of service for teachers in their current designation.



**Figure 1:** Duration Teachers Had Served in Their Job Designation

### f. Duration of Service for the Librarian in the Job Designation

In Kibos Primary School for the Blind, the librarian was between 61 years and 65 years old. He had served as a librarian for 22 years with academic qualification of Kenya Junior Secondary Education [KJSE] certificate level. The librarian had no form of training in Special Needs Education [SNE].

### g. Duration of Service for the Transcriber in the Job Designation

The transcriber was a male participant in the age bracket of between 31 and 35 years old at the school. Regarding academic qualifications, he had an O-level certificate with no training in special needs.

### h. Resource Personnel Information

The resource person for the sampled school (Kibos Primary School for the Blind) was a male who was between 46 – 50 years. He had attained a Certificate level of education and had no training in SNE although he had served in this designation for 14 years.

### **i. Determine the Causes of the Shortage of Braille Learning Materials at Kibos Primary School for the Blind**

The causes of the shortage of Braille learning materials in Kibos Primary School for the Blind were:

- Inadequate funding;
- Regular change of syllabus;
- Delay by producers of the Braille learning materials;
- Lengthy procurement procedures.

The books were ordered, but their delivery was delayed due to unknown reasons. *“This was tricky since the issuing of soft copies was in the offing but lately, it is not clear on why they delayed”*, said the head teacher. She also agreed that the complexity of tactile diagrams and various processes involved in producing Braille books were also factors affecting access to Braille learning materials. The headteacher did not have a feel that the emergence of speech technology, shortage of Braille transcribers, and development of new Braille codes affected access to Braille learning materials. *“Speech technology was intended to complement Braille rather than replacing or displacing it”*, said the head teacher. Kinuthia (2009) also supported this, who concluded that information and communication technology plays a significant role in enhancing inclusive education. *“However, speech technology has become so cumbersome because it is difficult for learners with VI to keep in pace with the technology”*, she added. This assertion is true in Nigeria, where assistive technology was adopted at a very slow rate due to its complexity (Edyburn, 2000).

While the shortage of Braille learning materials has been a problem since the beginning of Kibos Primary School for the Blind, the head teacher alluded to this shortage to lack of funds as the main factor. To deal with the challenge, the head teacher pointed to the need to dictate print notes to learners, describe diagrams and figures to learners, and improvise or ignore cases where learners could not manipulate diagrams. Besides the alternative posed by Thurlow (1988), these alternatives would help in addressing the inadequacy of Braille learning materials in the country. This finding agrees with Wamunyi (2017) who cites funding as a cause of the shortage of Braille learning resources and recommends that the Ministry of Education increases funding for schools for learners with VI and the funds released on time to acquire learning resources to facilitate effective teaching and learning. Among other studies that cite funding as an inhibitor to Braille learning are Rex (1989), Khoa (2006), KIEP (2003), and Opini (2012).

According to the transcriber, the causes of the shortage of Braille learning materials were: Costly books that could not be acquired due to lack of finances, withdrawal of donor funding, and the cost of maintenance of Braille materials. The issue of cost was supported by Khoa (2006) who attempted to find out how to contain the Braille book production system expenses in Vietnam. The need for capacity building or training in regard to the use and maintenance of Braille materials like the embosser was also critical in the availability of Braille learning materials. This was in agreement with Corn and Wall (2002) who suggested that training and availability of Braille transcribers were necessary for the United States.

The shortages in Braille learning materials may also be attributed to poor quality binders, which are weak (Herzberg, 2006), flawed storage systems in the library shelves and lockers, fluctuating enrollment of learners, and delays in the replacement of Braille learning materials. This is supported by Kimeto (2006), who concluded that learning English Braille for pupils with visual impairment was inhibited by the increasing number of enrolled pupils and the inadequacy of educational resources due to factors like delays in production and poor storage systems among others. Furthermore, the failure to involve the librarian in the planning process is also a key factor because he should advise the administration on the inventory of books in the library. Participation of non-teaching staff in availing instruction materials was championed by MOEST (2003) as one of the management guidelines for delivering knowledge to all learners in an inclusive manner. Similar sentiments are shared by Walther-Thomas, Korinek, McLaughlin & Williams (2000), Kipkosgei (2013), and Katsafanas (2007).

The librarian noted some of the factors that led to a shortage of Braille learning materials were: High cost of materials which were well beyond the roof; materials were not readily available; and delays in restocking Brailors and Braille papers since orders were made and not delivered on time (Kimeto, 2011). Brailors used for the transcription of diagrams were expensive and insufficient. These concerns are similar to those raised by Khoa (2006), Corn and Wall (2002), Herzberg (2006), and Mwangi (2011). They each touched on the high cost of Braille instructional and learning materials besides the delays in production and delivery.

It is worth noting that at the time of conducting this research towards the end of June 2018, six months down the line after the commission of the new curriculum, the school had not received a single Braille book of the new curriculum for the learners. Therefore, the shortage of Braille learning materials is a matter of great concern that can cripple education for the visually impaired if not addressed.

## **6. Conclusions and Recommendations**

Based on the research findings, the study concluded that though the government endeavors to offer quality education to learners with visual impairment, the lack of adequate Braille learning materials in mathematics and science was still prevalent. In addition, the teachers of early childhood education in the school had no training in special needs education.

The following recommendations are important in light of the research findings. Through the ministry of treasury and ministry of education, the government should allocate adequate funds for the purchase of Braille learning materials for learners with visual impairment at Kibos Primary School for the Blind. This should be done urgently in view of the high cost of the Braille learning materials. The ministry of education should include Braille learning materials in the ministry of education orange book. The government, through the ministry of education, should equip the schools for the blind with the relevant Braille production equipment and materials. Besides building the

capacity of transcribers in modern equipment Braille production, the government should train teachers of early childhood education in special needs education. In addition, sensitization of stakeholders on Braille equipment and learning materials and proper maintenance of the same materials were found to be another means of promoting access to Braille learning materials.

### **Conflict of Interest Statement**

The authors declare no conflicts of interest.

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