

# Classroom Accommodations that Promote Inclusive Learning for Learners with Hearing Impairments at Oriang' Inclusive Primary School, Homa-Bay County, Kenya

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## ABSTRACT

Classroom accommodations are key to promoting inclusive learning in a class that includes a diversity of learners. This study purposed to determine the classroom accommodations that enable the inclusion of learners with hearing impairments in inclusive classrooms. The study was conducted at Oriang' Inclusive Primary School in Homa-bay County, Kenya and was guided by Ecological Systems Theory by Bronfenbrenner model (1989). The study targeted all the 17 teachers and 620 learners. Purposive sampling technique was used to draw a sample of 26 respondents comprising the Head Teacher, 13 inclusive classroom teachers and 12 learners. Data collection instruments comprised an observation checklist and an interview schedule. NVivo software was used for analysis that involved systematic coding and organisation of data to identify recurring themes. The findings established that all classes at the school were inclusive of learners with hearing impairments. Classroom accommodations included proper lighting, preferential seating, raised windows above the heads and painted doors to ensure conducive learning environment for learners with hearing impairments. The researcher recommends that the government, through the Ministry of Education, should allocate funds for purchasing cushioned seats, long curtains for the windows, chairs with legs fitted with rubber as mechanisms for noise reduction within the inclusive classrooms to promote the inclusion of learners with hearing impairments.

**Keywords:** Classroom Accommodations, Learners with Hearing Impairments, Inclusive Classrooms, Inclusive Learning

## BACKGROUND OF THE STUDY

Globally, there is an increase in the inclusion of learners with hearing impairments (LHIs) to be educated in inclusive classrooms (ICs) (Paatsch & Toe, 2020). Inclusion of LHIs requires that prior arrangement for supports systems are put in place. These arrangements include classroom accommodations that make the classroom environment accessible and welcoming to the LHIs thereby promoting access to teaching and learning methods and resources. Accommodations refer to the changes that enable a learner with a hearing impairment to overcome the disability (Center for Parent Information and Resources, 2020). Adequate accommodations within the classroom are key enablers of inclusion of LHIs.

In a UK-based study on inclusion of LHIs, Khan *et al.* (2023) reported findings that promoted the inclusion of LHIs to include appropriate accommodations, developing positive social interactions and individualised support as important aspects. A study by Priestley (2023) in Ghana determined that there

was very inadequate amount of resources (both technological and visual resources) that were used by the teachers to promote the inclusion and accessibility of the instructional content by the LHIs. This led to actually excluding these learners who were just physically included into the classrooms. Priestley noted that lack of resources was a major barrier to including LHIs into the inclusive classrooms.

A study by Wamae (2021) on evidence-based educational practices and efficacy of teachers of inclusive classes with LHIs in Kenya found that learners sat in rows while facing the front. Wamae noted that this arrangement was only allowed a single focal point to the teacher by the learners. Wamae also found that there were visual aids being used by the teachers that included posters, flash cards, charts, pictures, labels and objects.

### **The Problem Statement**

Classroom accommodations that ensure equal learning opportunities for LHIs in ICs are usually not made available to optimise their access to instruction or are usually basic (Leifler, 2020). According to Leifler (2020), the classroom should be prepared to promote the participation of LHIs through the removal of anything that may result into disturbance in order to promote the level of concentration of LHIs. This study sought to determine the classroom accommodations that enabled the inclusion of LHIs into ICs at Oriang' Inclusive Primary School, Homa-Bay County, Kenya. The study put into consideration that the classroom as a learning space must have reasonable accommodations in place to enable the inclusion of and equal access to learning by all the learners.

### **Objective of the Study**

The specific objective of this study was:

1. To determine the classroom accommodations that enable the inclusion of LHIs into ICs at Oriang' Inclusive Primary School, Homa-Bay County, Kenya.

### **The Theoretical Framework**

The study was guided by the ecological systems theory by Urie Bronfenbrenner (1989). The theory explains how the development of a child is affected by the interaction of complex processes with the environmental conditions around him or her.

**Microsystem:** This level consists of factors that exist in the immediate environment of a learner. The factors give the effectual, specific, first-hand experiences of a learner's academic setting of the classroom, teachers, parents, peer, and community relationships. In the school system, the factors that directly impact the learner in the inclusive classroom include: classroom organisation and accommodations, individualised educational programme, sign language interpretation, captioning services, amplification devices and social relationships with peers.

**Mesosystem:** This includes two or more interrelated settings in which the learner is actively participating in. These include: teacher-parent collaboration, collaboration by professionals and peer groups. Very well coordinated professional collaboration between the teachers and fellow teachers and between teachers and other professionals, who are working together in the interest of the learners lead to very good results in inclusive education. Teacher-parent collaboration allows for joined efforts in the support of learning, transition and academic advancement. The relationship between LHIs and their peers without hearing impairments within the classroom setting may affect how they interact inside and out of the classroom and in turn affect learning.

**Exosystem:** This level comprises settings in which the learner is not an active participant, but whose events

occurrences affect the learner, or are affected by the occurrences in the environment of the learner (Ettekal & Mahoney, 2017). It includes influences from those in administrative positions like policy creators and implementers and business entities (Horton, 2016).

**Macrosystem:** The macrosystem is defined as the “consistencies in the form and content of lower-order systems that exist at the level of the subculture or the culture as a whole, along with any belief system or ideology underlying such consistencies” (Bronfenbrenner, 1979). Schools and classrooms should be designed to eradicate barriers that prevent the LHIs from realising their full potential, by making education and learning spaces accessible to all, thus ensuring equal learning chances in ICs.

## REVIEW OF RELATED LITERATURE

A classroom is the most immediate space in which a learner belongs in order to learn within a school set up. The classroom as the learning environment plays a key role in shaping the learning outcomes, attitudes and behaviours of LHIs (Amali et al., 2023). Classrooms, which are the LHIs microsystem, should be universally designed to eradicate any barriers that may hinder the realisation of their full potential. Classroom accommodations that promote the inclusion of LHIs into ICs include: classroom arrangement and organisation, amplification devices, visual aids availability, captioning services, note takers, sign language interpretation, and assistive listening systems (Gupta, 2022).

Sensory challenges that the learners may have should be considered during the design of an inclusive classroom in order to cater for the areas of need of the diverse learners in the IC. An inclusive classroom that includes LHIs should have accommodations such as increased accessibility for visual input. This may include visual input for classroom content and clear sightlines (Allman, Wolters Boser & Murphy, 2019). Coloured classrooms are aesthetic and enhance learning, comfort levels and health of all the learners, thus, posters, pictures, effective furnishings and displays of learning equipment and resources can enhance the visual appeal of ICs and the engagement of all learners (Ackah-Jnr & Danso, 2019).

Classroom carpeting is crucial and the walls should be made of sound-proof material to help with noise control. The classrooms should be designed to have doors and windows facing away from the school gates and areas that would cause visual distractions like dining halls, for instance, school gates or meeting halls and dining halls. Windows should be raised above the heads of learners when they are seated in class or painting them if they are quite low. Cushioning the seats also helps with noise reduction and long curtains on the windows help to control echo (Morin, 2023). The chair legs should be fitted with rubber and there should be adequate ventilation for air circulation and proper lighting to illuminate the learning spaces and prevent shadows. Writing materials should be of different colours to break single colour monotony for the LHIs.

The classroom resources that are helpful for LHIs include interactive whiteboards, sign language applications, computer games, and other accessibility features such as speech-to-text software. Integrating audio-visuals and tactile learning resources into classroom instruction ensures the accommodation and achievement of every learner in the classroom (Silvestri & Hartman, 2022). The physical environment accommodations should also include captioning services, digital note takers or personal note takers, sign language interpreters and amplification systems that include personal hearing devices like hearing aids, tactile devices and cochlear implants. LHIs can learn well through technological support which enables their access to learning.

It is crucial to properly arrange the seats in an IC to take care of the needs of all learners. Horse-shoe seating arrangement with preferential seating for those who can perceive some sound and lip-read is the best seating arrangement in an IC that includes LHIs (The Ava Team, 2023). Teachers should be mindful of their

positions while in class or during lessons with reference to locations of LHIs. They should never turn their backs to the LHIs and at all times must ensure that their faces are seen by the LHIs. Their hands, for instance, they should not cover their faces when talking or giving instructions to the class and applies to the sign language interpreter, if available in class to avoid having the LHIs guessing and switching off from the on-going lesson. It is important to be presentable and neat to avoid being the centre of attraction during the lesson instead of learners benefiting from it and therefore, mustaches should be neatly trimmed and proper hair styles and dress codes.

## **METHODOLOGY**

### **Research Design**

This research was based on case study design. This design enabled the researcher to collect detailed, contextual, concrete, in-depth meaningful insights on the classroom accommodations that enabled including LHIs into ICs at Oriang' Inclusive Primary School, Homa-Bay County, Kenya.

### **Target Population and Sample**

The researcher purposively targeted all the 17 teachers and all the 620 LHIs at Oriang' Inclusive Primary School, totaling to 637 respondents. The sample size comprised 26 respondents. This included the Head Teacher, 13 teachers who had been teaching in ICs for at least one year to give their views and experiences about inclusive learning and 12 LHIs who had been learning in ICs for at least one year. The LHIs were drawn from grades 4-8; who could effectively describe their lived academic experiences on inclusive learning to understand their personal meaning and perspectives, thus leaving out learners without hearing impairments. The school was selected for the study because had been including learners with hearing impairments into the regular classrooms.

### **Methods of Data Analysis and Presentation**

The analysis and presentation of the data focused on an objective-oriented approach and scope of the study. NVivo software was used for analysis that involved systematic coding and organisation to identify recurring themes. Data was imported, coded and grouped into broader themes and subthemes to enable a comprehensive exploration, revealing connections and relationships. The iterative process yielded valuable insights and informed research findings. Where there were direct quotations from the respondents, verbatim was used to present the data.

## **FINDINGS AND DISCUSSIONS**

Accessible classroom environment and physical arrangement were highlighted as key factors that enabled inclusion of LHIs. Physical provisions such as well-lit and adequately ventilated rooms, appropriate design of doors and windows to prevent or minimise distractions, tiled floors, cemented walls and overall conducive surroundings positively impacted the ability of LHIs to engage in the learning process. The Head Teacher, during his interview schedule, described classroom modifications and accommodations in place to enable the inclusion of LHIs, citing the provision of preferential seating, proper lighting and minimised distractions, as was indicated by his response below:

*“Classrooms are arranged to allow for preferential seating of LHIs, they are well-lit and adequately ventilated. Windows are raised above the heads of learners and doors have glass above the heads when learners are seated. These are to prevent distractions and disruptions during lessons. The walls and floors are well done.”*

This demonstrated the efforts put by the school to ensure that the learning environment conductively supported the needs of LHIs. These accommodations were also noted during the classroom observations conducted in Grades 5 and 7 and 8 as shown on Figure 1 below.

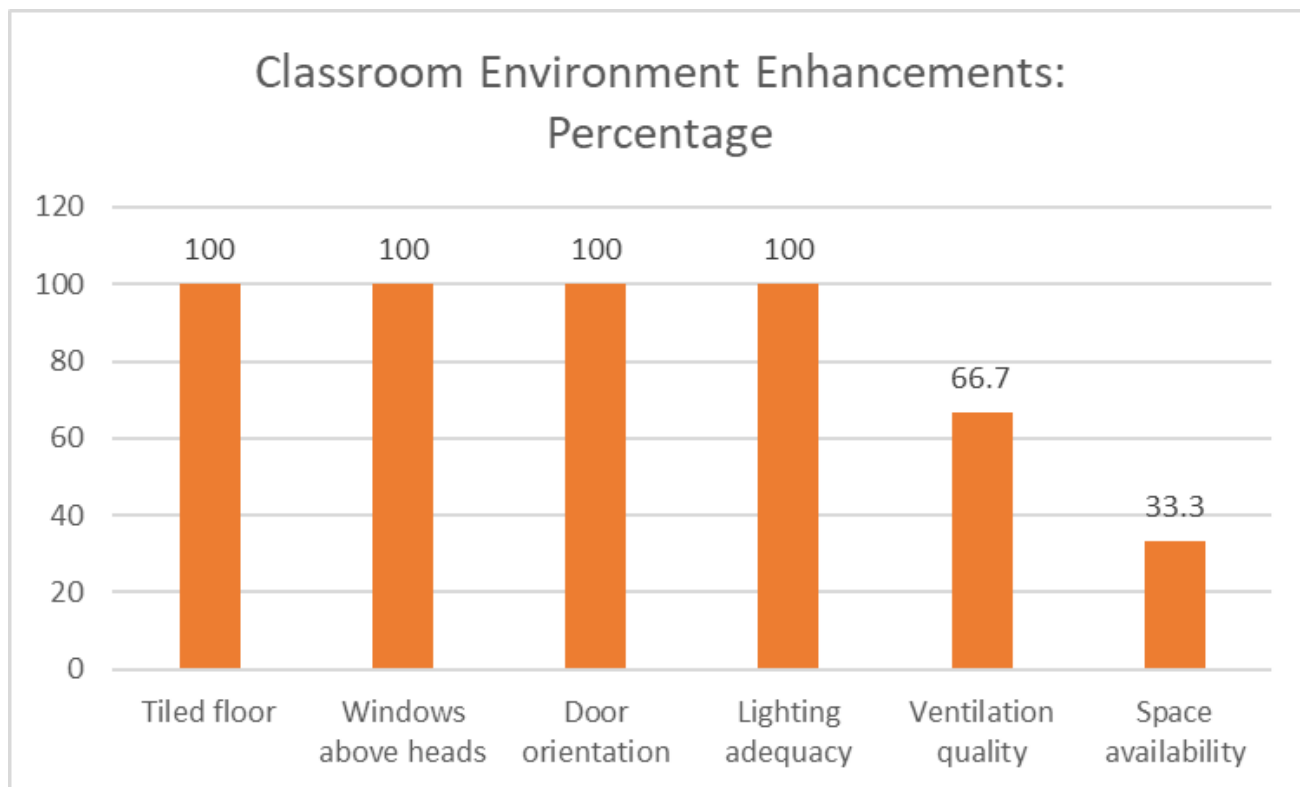


Figure 1: Classroom Environment Enhancements

The classroom observations conducted provided insights into the classroom accommodations in place to facilitate the inclusion of LHIs. In each class observed, distinct accommodations were noted to create an environment conducive to all learners. All the classroom floors were tiled. The doors and windows were designed according to the principles of universal designs to minimise distractions, fostering an environment that was conducive to all learners. The glass windows allowed passage of adequate amount of light into all the classrooms. This was crucial to ensure that there were no shadows forming within the classrooms that could lead to the LHIs being distracted from learning. Also, the windows served as ventilation to the classrooms. The classroom spaces were however quite small due to the bigger class sizes. This was the case observed in all the classrooms.

The seating arrangement in each class was varied, accommodating the preferences of both teachers and learners. Age-appropriate desks that were arranged in threes or in groups supported interactive discussions and peer teaching, thus, promoting collaborative learning. This flexible arrangement allowed the LHIs to engage effectively with their peers promoting better academic experiences (Gupta, 2022). Preferential seating as a classroom accommodation was found to benefit LHIs by reducing distractions and enhancing their engagement through perceiving sound by those who were hard of hearing and lip-reading by those who were post-lingually deaf (The Ava Team, 2023). Classroom observations found that all the LHIs were placed in front of the class. These findings were consistent with those of Noh and Park (2012), who pointed that there is a decrease in speech signals in overall intensity when distance increases, resulting into reduced

speech perception. They added that accessing critical speech information gets negatively affected, even when the distance is small. This is usually the case in a learning environment. Strategic placing of LHIs in optimal positions within the classroom ensured that they had better focus on the teacher to perceive the facial cues and the instructional materials (Sanford, 2022).

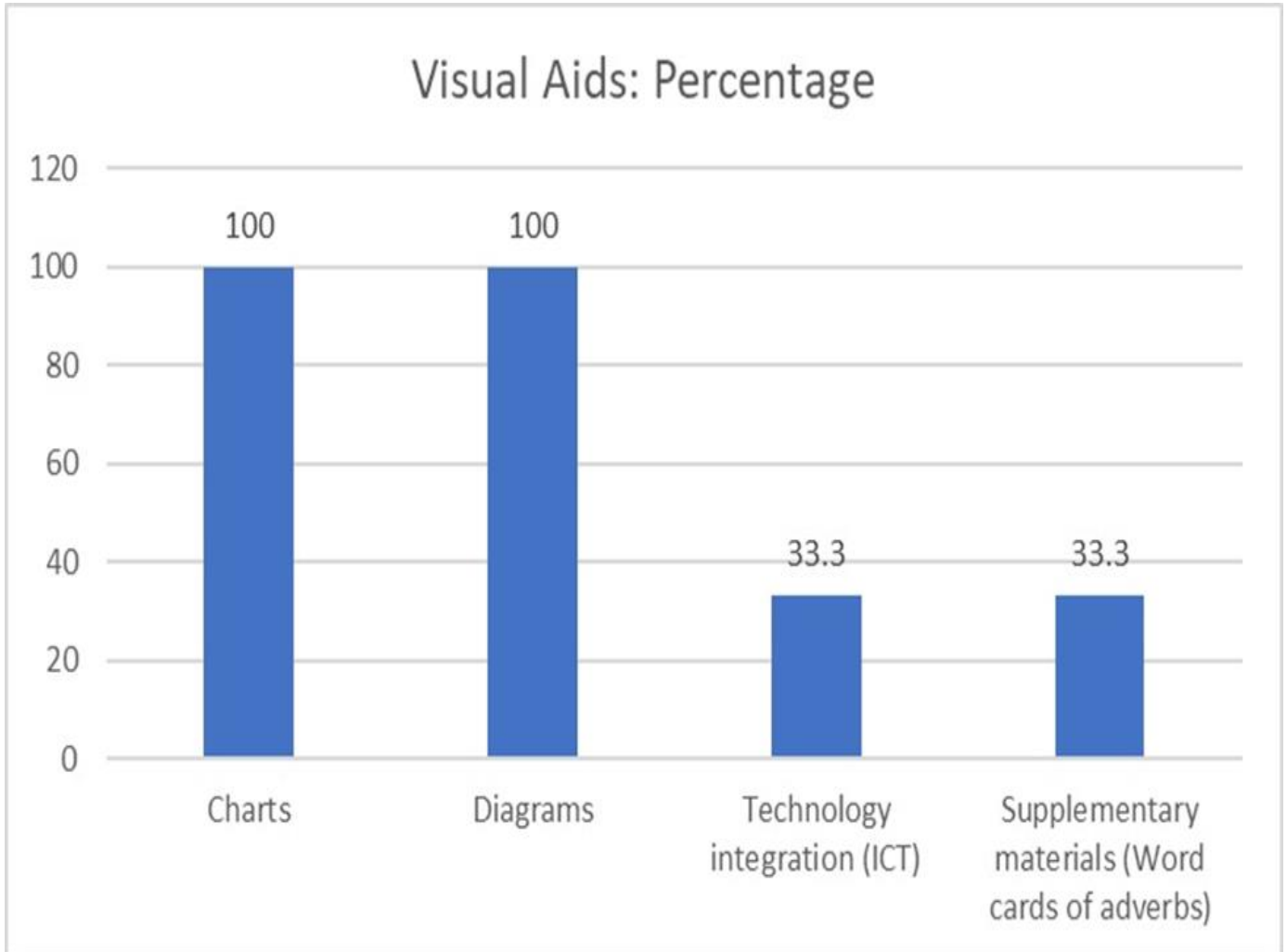


Figure 2: Visual Aids

The classroom observations also revealed the types of visual aids that were available to the learners as shown in Figure 2. The availability of visual aids like charts and diagrams within the classrooms added the value of engaging visual senses of the LHIs as a practical way to enhance their comprehension (Inverso, 2021). These findings aligned with those of Şilbır *et al.* (2021), who noted that using enriched learning spaces while providing texts, diagrams and pictures supports learning and promotes comprehension by LHIs. The visual aids were however not very adequate and did not include videos.

The classroom observations also established that the learners were also provided with lesson notes. Sign language interpretation was however not available in all the classrooms observed. The teachers did not teach using sign language either but used other forms total communication like use of speech, drawings, body language and gestures, real objects and models. These methods helped to concretise the content information for the LHIs. In all the classrooms observed, technology integration was evidently very poor, for instance,

there was the use of a laptop and a projector in only one class. There were no assistive devices like digital note takers, sound amplification systems, caption services and lessons were not recorded to process lesson transcripts for the LHIs. Again, out of the three observed classes, only one teacher used word cards during his lesson.

The classroom observations however found the absence of cushioned seats with rubber-fitted legs to reduce noise. There were no long curtains on the windows to act against echo and the classrooms were a bit congested. The classes were also not carpeted and the walls were not made of sound proof material.

## CONCLUSION

The lack of cushioned seats, long curtains on the windows to act against echo, chairs with legs fitted with rubber as mechanisms for noise reduction affected the LHIs concentration because there was noise that was experienced during all the observations and this caused distraction from learning by the LHIs.

The classroom modifications such as preferential seating, proper lighting, raised windows above the heads when seated and painted doors and accessible physical arrangements created a conducive learning environment for LHIs. It was however apparent that even though the LHIs were preferentially placed at the front of the classrooms, the seating arrangements were not in the research-informed horse shoe pattern or U-shape that expose all the learners and teachers to the whole class. Obstruction was still observed where learners who sat in joined desks still turned their backs and the faces of some of them could not be accessed by the LHIs when they were responding to the teacher during class participatory learning time. The teachers too turned away from the LHIs when they joined the various groups within the class. The LHIs were observed craning their necks in the bid to see what could be going on around them. The comprehensive view of the classrooms displayed accommodations that were deliberately made to ensure that the LHIs were included, aligning with the research objective and highlighting commitment of the school to inclusive learning. The large inclusive class sizes and limited teaching visual aids posed great challenges for inclusive learning since one to one contact time between the teachers and learners was by far reduced and this majorly affected the LHIs who require more time for content uptake.

Sign language interpretation was completely not provided. The teachers were not signing either. All the classes observed did not have a learner who was deaf but only those who were hard of hearing, who did not use any hearing aids. These LHIs relied basically on the limited sound they could perceive and lip-reading and therefore, once the teachers and their fellow learners faced away from them, they could not read the speakers' lips or even perceive whatever was spoken because of the distance from them. This could explain why they lagged behind in understanding and completing the assigned tasks effectively, hence their general performance. The absence of assistive devices to support the inclusion of the LHIs and their access to learning content contributed to the challenges that reflected the reasons why the LHIs struggled to understand the taught content and why they performed lower compared to their hearing peers.

## RECOMMENDATIONS

The study recommends that:

1. The school should arrange the seats in horse-shoe pattern or U-shape that allows every learner and teachers to see the faces of everyone within the classroom.
2. The school management should ensure that the all the class seats are fitted with rubber and the windows have long curtains to minimise noise during lessons.

## Recommendation for further Research

The is need to conduct research on the role played by the parents to promote the inclusion of LHIs at schools within their communities.

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