



## Enhancing Engagement of Hearing-impaired Pupils in Inclusive Tanzanian Classrooms through Teaching and Learning Materials

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**Abstract:** Teaching and learning materials are essential tools for enhancing the engagement of hearing-impaired pupils in inclusive classrooms. This study investigated enhancing the engagement of hearing-impaired pupils in teaching and learning materials. The study employed a qualitative, phenomenological design to gain insights into the lived experiences of the participants. Forty-four participants were purposefully selected, including head teachers, teachers, hearing-impaired pupils, and hearing pupils. Data were collected through interviews and observations and analyzed thematically using Excel pivot tables. The findings indicate that hearing-impaired pupils are engaged with teaching and learning materials, such as textbooks, reference books, maps, and diagrams, through prioritizing, showing the materials, and hands-on activities. However, their engagement is hindered by limited time and communication barriers. Furthermore, most teachers reported having limited proficiency in sign language, which hinders their ability to support these pupils in the learning process. The study recommends reviewing inclusive education policies, establishing teacher training programs, and emphasizing the use of sign language as a medium of instruction for hearing-impaired pupils.

**Abstrak:** Materi pengajaran dan pembelajaran merupakan alat penting untuk meningkatkan keterlibatan siswa tuna rungu di kelas inklusif. Penelitian ini menyelidiki peningkatan keterlibatan siswa tunarungu dalam materi pengajaran dan pembelajaran. Penelitian ini menggunakan desain kualitatif dan fenomenologis untuk mendapatkan wawasan tentang pengalaman hidup para partisipan. Empat puluh empat peserta dipilih secara sengaja, termasuk kepala sekolah, guru, siswa tuna rungu, dan siswa tunarungu. Data dikumpulkan melalui wawancara dan observasi dan dianalisis secara tematis menggunakan tabel pivot Excel. Temuan menunjukkan bahwa siswa tunarungu terlibat dengan materi pengajaran dan pembelajaran, seperti buku teks, buku referensi, peta, dan diagram, melalui penentuan prioritas, menunjukkan materi, dan aktivitas langsung. Namun, keterlibatan mereka terhambat oleh keterbatasan waktu dan hambatan komunikasi. Selain itu, sebagian besar guru melaporkan memiliki keterbatasan dalam kemampuan bahasa isyarat, sehingga menghambat kemampuan mereka untuk mendukung siswa dalam

*proses pembelajaran. Studi ini merekomendasikan peninjauan kembali kebijakan pendidikan inklusif, menetapkan program pelatihan guru, dan menekankan penggunaan bahasa isyarat sebagai media pengajaran bagi siswa dengan gangguan pendengaran.*

**Keywords:** Engaging, Hearing impaired pupils, Inclusive classrooms, Teaching and Learning materials

## INTRODUCTION

Teaching and learning materials are essential tools for supporting the diverse learning needs of pupils in inclusive classrooms, particularly those with hearing impairments. When these materials are carefully prepared by teachers in the school environment, they can enhance the delivery and comprehension of lessons. The effective use of these materials is facilitated by the teacher's communication skills, positive attitude towards their pupils, and the creation of an inclusive learning environment. In inclusive classrooms, pupils have varying abilities, backgrounds, and learning styles. Teaching and learning materials, such as visual aids, manipulatives, and digital resources, can be tailored to address these diverse needs. When teachers invest time and effort into developing appropriate materials, they can better engage pupils, clarify concepts, and accommodate different learning preferences. Good skills, including clear explanations, active listening, and the use of accessible language, enable teachers to guide pupils to participate in teaching and learning materials. A positive, empathetic attitude towards all pupils, regardless of their abilities, fosters an inclusive and supportive learning environment. By carefully selecting and using these materials, teachers can create learning experiences that are accessible, engaging, and tailored to the diverse needs of their pupils.

Teaching and learning materials are understood variously around the world. For example, Nyavor (2020) explained that teaching and learning materials are educational resources used within the classroom to support learning objectives outlined in lesson plans.

These materials are essential tools that teachers use to convey subject matter effectively,

enhancing learners' understanding and motivation to learn (UNICEF, 2021). These materials should be aligned with the particular curriculum, age-appropriate for the pupils, relevant, and engaging. They play a vital role in supporting the instructional process, promoting active learning, and helping pupils, including those with hearing impairments, develop a deeper understanding of lesson content (Braun, 2020). In the current study, teaching and learning materials in an inclusive setting for hearing-impaired pupils are resources designed to support their unique needs and facilitate effective communication and learning engagement. These materials include visual aids such as charts, graphs, assistive hearing aids, diagrams, pictures, and captioned videos, which enhance comprehension and provide additional context to lessons. Additionally, resources like sign language dictionaries, instructional videos, and printed signs are utilized to facilitate understanding and promote interaction and engagement (McKenzie et al., 2021; United Nations Children's Fund (UNICEF), 2021).

Moreover, the provision of assistive listening devices, such as hearing aids or cochlear implants, is crucial for helping hearing-impaired pupils amplify sound during learning activities (Kisanga, 2019). Therefore, inclusive classrooms should be equipped with appropriate educational materials that support the learning engagement of hearing-impaired pupils. Similarly, teachers in inclusive classrooms should be trained to work effectively with hearing-impaired pupils and maintain positive attitudes towards their pupils (Fultang & Kiwia, 2023). This training can include understanding the nature of the hearing impairment, learning sign language or other communication methods, and acquiring knowledge about technological assistive devices

such as hearing aids, cochlear implants, frequency modulation systems, and captioning. Teachers can employ effective communication strategies to facilitate learning; these strategies may include speaking clearly and facing the class, using visual cues and gestures, providing written instructions, and offering sign language interpretations. Catalano (2021).

Creating an optimal teaching and learning environment also involves ensuring good lighting, minimizing background noise, and arranging seating to optimize communication and visual access for hearing-impaired pupils (Braun, 2020; Alias, Harun & Kamaruddin, 2021). Visual aids, such as charts, diagrams, and captions, can significantly enhance understanding and engagement, promoting inclusivity and equal learning opportunities for all pupils, particularly those with hearing impairments. According to Todorov, Galvin, and Klieve (2021), engagement is defined as the total involvement of learners in the teaching and learning process. The study further highlighted that engagement can range from deep to minimal, according to the planned activities by the respective teachers. For this study, hearing-impaired pupils' engagement in learning materials refers to how teachers enhance participation in utilizing the prepared materials within inclusive classroom activities, such as reading, drawing, asking questions, and answering questions.

Hearing-impaired pupils face challenges in receiving clear sounds, which can vary in severity (Fultang & Kiwia, 2023). Furthermore, hearing loss is categorized into four levels: mild (40 decibels), moderate (41 to 70 decibels), severe (71 to 95 decibels), and profound (above 95 decibels). These varying degrees of hearing impairments cause difficulties in communication, literacy skills, and emotional development, hindering academic progress in an inclusive setting (Ertzgaard et al., 2020). As a result, these pupils rely more on visual learning aids, such as illustrations, text, reference books, sign language dictionaries, technological assistive devices, and

real objects (Braun, 2020). Hearing impairment limits their communication and interaction with teachers and peers, making visual learning tools essential for their education (Mwatsaka, 2020).

The availability and effective use of graphics, diagrams, and books as part of teaching and learning materials significantly support the learning engagement and understanding of all pupils, particularly those with hearing impairments, during the educational process

Many countries worldwide have ratified plans, strategies, and legislation to accommodate children with disabilities, including those with hearing impairments, in inclusive primary schools (United Nations Educational, Scientific, and Cultural Organization (UNESCO), 1994a, 2005, 2008). For instance, the Jomtien Education for All initiative of 1990 emphasized the importance of providing teaching and learning materials, trained teachers, and conducive classrooms to support the education of pupils with disabilities and those with hearing impairments (Afoh, 2022; Possi & Milinga, 2017; Agyire-tettey & Cobbina, 2020). Moreover, pupils with disabilities need to be educated alongside their non-disabled peers in nearby schools within unsegregated, inclusive settings (United Republic of Tanzania [URT], 2019).

This approach emphasizes the right of these pupils to access quality education in a supportive and inclusive environment. Inclusive education is particularly crucial for integrating hearing-impaired pupils with their peers (Alasim, 2018). To reinforce the importance of inclusiveness, various frameworks, such as the Salamanca Statement of 1994 (UNESCO, 1994b), have emphasized the need to support learning and respond to individual needs, including engaging hearing-impaired pupils in teaching and learning materials within inclusive classrooms.

The implementation of inclusive education in Tanzania was more important to allow all children with physical disabilities to have equal rights to acquire quality education in a friendly environment (Revelian & Tibategeza, 2022).

Inclusive education is further aimed at increasing enrolment and preventing dropouts of children from school, teacher capacity building on inclusiveness standards, and teacher training. Responding to the diverse needs of these children, the government of Tanzania established the Tanzania National Strategy for Inclusive Education of 2018–2021. This emphasized educational services for pupils with special needs, accessibility of teaching and learning materials to all children by providing pedagogical support, teachers, teaching and learning materials, and the accessibility of use of communication such as sign language. Inclusive pedagogy in Tanzania emphasizes that teachers should use teaching and learning materials that correspond to the specific disabilities of their pupils (URT, 2019).

Thus, the use of sign language dictionaries, diagrams, and text and reference books is essential for the learning engagement of hearing-impaired pupils. Since sign language is regarded as the primary language of instruction for these hearing-impaired pupils, not using it hinders their access to teaching and learning materials and curriculum content (UNICEF, 2021). This lack of access can result in delays in the development of reading, writing, and speaking skills, which hinders their interaction with peers and teachers during the use of teaching and learning materials (Frimpong, 2021). Therefore, the ability of both teachers and pupils to use sign language during the engagement with teaching and learning materials is crucial for facilitating interaction and engagement in the learning process.

Despite the reported benefits and strategies for using teaching and learning materials for hearing-impaired pupils, several challenges continue in inclusive classrooms. Hearing-impaired pupils face issues such as inadequate materials, including sign language materials, and communication barriers (Kisanga et al., 2020; UNICEF, 2021; URT, 2017a, 2017b, 2019). Additionally, Chizingwa (2018) noted that many teachers in inclusive classrooms lack knowledge of sign language, which is essential for effectively

delivering lessons using teaching and learning materials. Further, Migeoha (2015) and UNESCO (2022) found that inclusive schools face a shortage of teaching and learning materials, with textbooks often having a ratio of 1:3 or more. In Tanzania, it has been identified that there are only 2,179 teachers qualified to support hearing-impaired pupils across the entire country (Disability Inclusive Development (DID), 2020). Consequently, these pupils often lag behind their peers, leading to higher rates of grade repetition and dropout (Kaindu et al., 2021; Possi & Milinga, 2017; Shayo, 2022; URT, 2019). According to the situational analysis of 2021 in Tanzania, the completion rate for hearing-impaired pupils is less than 49%, compared to 83% for pupils with normal hearing (United Nations Partnership on the Rights of Persons with Disabilities (UNPRPD), 2021). One of the main reasons cited in the report is the lack of essential support, such as teaching and learning materials and skilled teachers who can meet the unique learning needs of these pupils. This situation is against the expectations of the Legal and Human Rights Center of 2019 in Tanzania Mainland, which emphasized that the availability and accessibility of these materials and resources in inclusive classrooms are crucial for supporting hearing-impaired pupils to follow lessons and participate in suggested learning activities (Wazambi & Komanya, 2019; Unesco, 2022; Shayo, 2022). Regardless of the challenges that hearing-impaired pupils encounter, they have the right to receive quality education in an inclusive and conducive setting (Hunt, 2020; Robert & Mkulu, 2023; UNESCO, 1994b).

Therefore, this study aimed to investigate how hearing-impaired pupils are engaged in teaching and learning materials in inclusive classrooms. Specifically, it sought to answer the following question: How do teachers engage hearing-impaired pupils in the available teaching and learning materials in inclusive classrooms? Answering this research question allows for improving education policy, particularly for

hearing-impaired pupils, by assessing the current curriculum and teachers' preparedness and training to meet the needs of these pupils.

## METHOD

The study was conducted by the author's team. None of these authors have personal, financial, or any other conflict of interest. The qualitative approach guided the current study. The approach provided opportunities for participants to share their views, experiences, understandings, and opinions about teachers' use of teaching and learning materials to engage hearing-impaired pupils in learning.

The study used a phenomenology research design to allow for in-depth insights and lived experiences of the participants about a particular group of hearing-impaired pupils. The design allowed the researcher to collect data from head teachers, teachers, hearing-impaired pupils, and hearing pupils (pupils without hearing impairment) on how this special group of pupils is engaged in teaching and learning materials in an inclusive setting. The Mwanza and Shinyanga regions were used to collect data concerning teaching and learning materials. The selection of these regions was based on having a larger number of pupils with hearing impairments in inclusive primary schools compared to other regions. The two studied regions had a total of 6.1 percent, and other regions had below 0.1 percent of hearing-impaired pupils (URT, 2020).

The criterion purposeful sampling technique was used to select the first, inclusive primary schools based on their inclusive classes to accommodate pupils with hearing impairment to learn together with pupils without hearing impairment. This means that there were no special units in these schools. Second, head teachers and teachers were selected based on their positions in managing educational issues and teaching activities and, therefore, were considered to have needed information. Headteachers were included in the study, as they hold a unique perspective and decision-making authority within the school

system. Teachers with specialized training in educating hearing-impaired pupils and those without such specialization were selected to participate.

This allowed for a comprehensive understanding of the teaching practices and experiences across different levels of expertise. Hearing-impaired pupils were purposefully included, as they were expected to have valuable insights into how they are engaged in the teaching and learning process. These pupils were selected based on their age and gender to ensure a diverse range of lively experiences. Hearing pupils were also included in the study; their understanding was sought to provide a more holistic understanding of how teachers engage all pupils, including those with and without hearing impairments, in the learning materials and activities. These pupils were likewise selected based on their age and gender. Thus, with the selected participants with diverse ages, genders, roles, backgrounds, and experiences, the researchers aimed to gather rich data that would enhance the credibility and depth of the study's findings. This allowed for a more comprehensive exploration of the experiences of both educators and pupils within inclusive settings.

The selected inclusive primary schools are located in district and town councils. The study involved a total sample of 44 participants (24 females and 20 males), of whom two (2) were head teachers (male and female), 14 teachers, 14 hearing-impaired pupils, and 14 hearing pupils. The selection of the sample balanced the age range of 14–58 of the participants to capture their diverse opinions, understandings, and experiences. The saturation of the data determined the sample size from the two inclusive primary schools. Purposeful sampling is used to obtain rich, diverse information, experiences, and ideas from the participants based on the use of teaching and learning materials for hearing-impaired pupils.

Interviews and observation were the main data collection methods for the current study as

explained here below; interview tool was a semi-structured interview guide that included four parts: an introduction; the researchers introduced the participants and the aim of conducting the research; demographic questions; the participants were requested to provide information about their ages, sex, levels of education, and work experiences; core interview questions that were open-ended in nature; and a closing section. The tool is appended at the end of the references section. The interview tool was developed through a literature review, expert consultation, and pilot testing that informed the various adjustments to improve the given questions for the respondents.

This tool was administered to head teachers, teachers, and hearing-impaired pupils and hearing pupils to get their views, insights, understandings, and experiences on the engagement in teaching and learning materials for hearing-impaired pupils in the selected inclusive primary schools. There was a need to hire a sign language professional or expert as an assistant researcher to administer the interview tool to hearing-impaired pupils because the researcher is not an expert in sign language. The sign language interpreter played a crucial role in facilitating communication during the data collection process.

The interpreter was responsible for translating between spoken Kiswahili and Tanzanian sign language, ensuring clear and accurate exchanges between the researchers and the hearing-impaired pupils. To minimize the potential biases and distortions of the data, the sign language expert was familiarized, trained, and oriented to the interview tools before the data collection exercise. The interview sessions were conducted in a cool, quiet place during class hours in an inclusive setting, and each participant was interviewed individually. To avoid bias, the researcher was neutral and allowed participants to share their knowledge about the study. Hence, participants were given the freedom to talk about the engagement of hearing-impaired pupils in teaching materials in an inclusive classroom, and

the time for each interview varied according to the number of questions provided and explanations given. Thus, each interview session took place between fifty minutes and one hour.

The semi-structured interview was used to allow the flexibility of participants to give their views, experiences, and understanding about the use of teaching and learning materials to support the learning engagement of hearing-impaired pupils. The researcher recorded the interview session using a tape recorder after seeking the consent of the participants to allow them to listen and re-listen to the interview responses for thematic analysis procedures.

The observation guide directed the classroom observations, which were adapted and modified from the previous study (Erbas, 2017) and focused on the specific classroom activities and interactions that implied the engagement of hearing-impaired pupils in learning materials. Classroom observations were done by the observers (researchers), who noted detailed field notes for each specific session.

The researchers prepared the observation checklist (structured). The observation settings were identified in which the normal inclusive classes were used. The researchers elaborated on the purpose of the observation for teachers and pupils to make them aware that they were being observed, and the role of the non-participant observer was considered by the researchers.

This provided an opportunity to know how hearing-impaired pupils are involved in the teaching and learning materials brought into the class by their teachers in six subjects: Kiswahili, English, Mathematics, Science, Social Studies, and Vocational Skills. There were two observations per class, which were conducted for 40 minutes as scheduled in the general school timetable. The observed components were noted in the researcher's journal to obtain a whole picture of the engagement the hearing-impaired pupils get in the use of materials in the class. Privacy and confidentiality were observed by ensuring the physical and psychological safety of

all participants. Finally, the data obtained through observation was interpreted and analyzed based on any limitations or potential biases.

The data were analyzed thematically, following the six steps suggested by Braun and Clarke (2006), supported by an Excel pivot table. Following thematic procedures after data collection, the first step was data familiarization. The researchers had the opportunity to listen and re-listen to the audio-taped voices to gain a better understanding of the recorded data from various participants. The second step was data transcription, which was done by turning voices into texts in the Microsoft Word program. The text of Kiswahili was translated into English. The third step was coding; the researchers coded the texts into words, phrases, and sentences.

The fourth step was followed by the process of creating and reviewing themes by linking and revising potential and major ideas that emerged from participants during the interview. Fifth, themes and sub-themes were defined and named based on the informant's experiences, views, opinions, and understanding of the use of teaching and learning materials for hearing-impaired pupils learning engagement. Sixth, the researchers were able to produce the report based on the collected and analyzed data. Verbatim transcriptions allowed the data to remain adjacent to its original form.

Consequently, the data were organized after checking their relevance and similarities and were supported by the voices from interviews. Further, the Excel pivot table was used to reduce the codes to get a clean code, category, and count/frequency of sub-themes.

This study adhered to all research ethical issues by obtaining a research clearance letter from the University of Dodoma. The researcher obtained research permits from the Shinyanga and Mwanza regional administrative secretaries and the Misungwi and Shinyanga district administrative secretaries. Likewise, the researcher consulted the inclusive primary school

administration to get parents' consent to include their children under the age of 18 in the study.

The researcher also observed confidentiality and privacy by giving participants fictitious names, hence, no access to the information was allowed to anyone other than the research team. It was important to include the two regions in the study because of their specific characteristics of inclusive primary schools, which accommodated hearing-impaired pupils to study with other normal pupils in one class.

The other factor was that the number of hearing-impaired pupils in the studied schools was at least large, about 6.1 percent compared to other inclusive primary schools that had 1.0 percent (URT, 2020). The participants were requested to participate freely and willingly in the study. To reach reliable findings, issues of plagiarism were observed by paraphrasing, using quotations, and acknowledging the sources of information used.

## RESULTS AND DISCUSSION

The study explored the engagement of hearing-impaired pupils in teaching and learning materials used in inclusive classrooms. To achieve this research objective, data was obtained through interviews with head teachers, teachers, and pupils with and without hearing impairment, as well as classroom observations. Thematic analysis assisted by an Excel pivot table was used to identify one theme and three subthemes related to the use of teaching and learning materials to engage pupils with hearing impairment. Key themes that emerged include prioritizing certain teaching and learning materials, showing the materials, and providing hands-on learning activities. Table 1 summarizes these key findings.

**Table 1.** Uses of teaching/learning materials

Uses	Frequencies
Prioritizing the materials	19(43%)
Showing the materials	15(34%)
Hands-on-activities	10(23%)
Total	44(100%)

Source: Field data 2022

## Prioritizing

According to Table 1, the prioritization of materials was predominantly used to engage hearing-impaired pupils in teaching and learning activities within the classroom. The findings indicate that teachers distributed reference books, textbooks, maps, diagrams, number charts, and word cards to these pupils seated in the class before distributing them to other pupils. Additionally, teachers stated that prioritizing these materials for the hearing-impaired pupils helped capture their attention and enabled them to directly participate in the lesson. These pupils were able to open the books and examine the provided materials, allowing them to actively follow along with the lesson. Supporting this, a pupil with hearing impairment from school A explained:

In our classroom, teachers who teach subjects like Kiswahili and English often bring textbooks, a map of Tanzania, and a digestive system diagram. These materials are distributed on our desks, and then the teacher proceeds with the lesson, asking questions. Regrettably, only our friends without hearing impairments are chosen to answer and ask questions. As hearing-impaired pupils, we are not allowed to participate by asking or answering questions. This leaves us feeling quiet and saddened because we are unsure of what to do (**Hearing-impaired pupil10- October 2022**)

The aforementioned findings from a pupil with hearing impairment are corroborated by the statements of a hearing pupil from school B who commented:

Our teachers typically distribute diagrams or books to the pupils, prioritizing those with hearing

impairments. However, these pupils sometimes struggle to understand the materials being used during the lessons. This issue arises because most of our teachers do not know sign language. Currently, only two teachers, one for English and one for science, can communicate using sign language (**Hearing pupil 3-October, 2022**)

. In support of this, a teacher from school A explained:

Dear researcher, in many instances, the available teaching and learning materials, particularly textbooks, are insufficient. As a result, I prioritize hearing-impaired pupils by giving them priority. Unfortunately, I encounter significant challenges when explaining certain concepts using sign language. For instance, when I created a diagram of the digestive system for a science lesson, I struggled to convey the concepts of ileum and duodenum through signs effectively. The truth is, my familiarity with sign language is limited, as I only know a few signs. I do not possess specialized education skills or training for teaching these pupils. These limitations hinder my ability to provide thorough explanations based on the materials I have prepared according to the planned lesson (**Teacher2- October 2022**)

On the other hand, table 2 provides a clear picture of the observation done in the classrooms of how materials are prioritized for hearing-impaired pupils.

**Table2.** The observed prioritizing teaching and learning materials

Uses	Observation
Distributing materials	+
Reading materials	±
Answering questions	-
Describing the materials	-

Source: Field data 2022

Key:

+ = fully observed

± = partially observed

- = not observed

The findings revealed that teachers effectively prioritize the engagement of hearing-impaired pupils. This was based on allowing these pupils to open textbooks and read the distributed subject books. However, the findings indicate that only hearing pupils were actively engaged in reading the distributed textbooks. This limited engagement of these hearing-impaired pupils when it came to reading these textbooks, resulted in their silence during the teaching and learning processes. Furthermore, it was observed that once hearing-impaired pupils receive the textbooks, there is no guidance provided on how to effectively utilize the materials in the classroom. As a result, the development of essential reading and writing skills is hindered for these pupils.

It was found that the limited engagement of hearing-impaired pupils in teaching and learning materials was primarily due to communication barriers. The participants indicate that the lack of active engagement stems from inadequate communication between teachers and pupils. The findings further reveal that many teachers in inclusive classes lack familiarity with sign language, which is essential for effective communication with hearing-impaired pupils. This resulted in hearing-impaired pupils struggling to grasp a clear understanding of some concepts of the content when teachers utilize these materials. Such circumstances can contribute to lower academic achievement among hearing-impaired pupils in inclusive settings. Therefore,

engagement in this context is closely tied to the understanding of the specific learning materials used in a given lesson. Consequently, teachers should familiarize themselves with the concepts presented in the materials, enabling these pupils to grasp and apply them effectively when given exercises or tasks. Teachers who instruct inclusive classes must receive comprehensive training, particularly in sign language, as it plays a vital role in the learning process of hearing-impaired pupils.

Similarly, Alsolami and Vaughan (2023) and Athaley et al. (2023) found that teachers in inclusive classrooms reported having limited time to engage these pupils in activities such as drawing, touching, molding, and explaining learning materials. Additionally, the teachers' lack of knowledge of sign language further hindered the quality of teaching and learning, preventing real engagement and focus for hearing-impaired pupils. This situation denies hearing-impaired pupils their right to receive the intended instructions at the same level as their hearing peers, as proper engagement is blocked by language barriers and time limitations for learning materials. The study suggests that teachers have in-service training on how they can handle hearing-impaired pupils to meet their diverse and unique needs in inclusive schools.

This finding aligns with Kermit (2019), Opoku et al. (2022), and Ordu (2021), who found that the core responsibility of all teachers in inclusive schools is to identify themselves as competent enough to serve all pupils regarding their physical and intellectual variations. Likewise, Nyavor (2020) supported the idea that teachers teaching hearing-impaired pupils need to have a positive attitude and provide opportunities for learning materials that increase learning interest among hearing-impaired pupils. This may support more efficient learning and active participation in the teaching and learning process, particularly when teachers use the materials. Thus, teachers should guide and show their interest in helping hearing-impaired pupils

through the use of teaching and learning materials to promote their academic performance.

### **Showing the materials**

Showing teaching and learning materials was recognized as a crucial factor in ensuring the engagement of hearing-impaired pupils in learning materials in the classroom. In this context, the teacher's responsibility was to visually present materials like diagrams, maps, or number cards to hearing-impaired pupils as a means of engaging them. Hearing-impaired pupils were then expected to respond based on their observations of the teacher's actions. A teacher from school B provided a comment regarding this aspect:

Incorporating learning materials, such as books, maps, or pictures, I actively involve hearing-impaired pupils by visually presenting these materials to them. I informed them that these are the resources we will be using to learn the lesson for the day. This approach provides them with the opportunity to establish a connection between the lesson content and the materials I have shown them, offering them an advantage in understanding the subject matter (**Teacher7-October, 2022**)

On the same views, one pupil with hearing impairment from school B added:

Our teachers facilitate our learning by visually presenting the learning materials to us. For instance, during a Kiswahili lesson, the teacher might bring examples of official and friendly letters. They would then approach our seating area and show us the letters that were relevant to the lesson. This inclusive approach ensures that hearing-impaired pupils can visually engage with the materials

and actively participate in the lesson  
**(Hearing-impaired pupil4-October, 2022)**

Reflecting on these findings, one hearing pupil from school A responded:

Upon entering the classroom, teachers come prepared with a variety of materials, including books, multiplication tables, and tangible objects like stones, flowers, and even a drawing of a heart, particularly in the case of the science teacher. As the teacher begins to present these materials to hearing-impaired pupils, a noticeable sense of joy and enthusiasm fills the classroom. When the teacher poses questions to our friends with hearing impairments, they eagerly respond with happiness  
**(Hearing Pupil 10-October, 2022)**

A similar observation further supports these findings, wherein a vocational skills class was observed. The teacher brought a basket containing water, a toothbrush, a sponge, a dish, and soap. Hearing-impaired pupils were called to the front of the class, and the teacher proceeded to visually present each item. It was observed that the hearing pupil displayed great excitement upon seeing these objects and responded positively to questions related to the materials.

The aforementioned quotations and classroom observation highlight the significance of utilizing learning materials such as books, maps, and pictures, as well as friendly and official letters, to engage hearing-impaired pupils, leading to their excited responses to questions posed in the classroom. These findings underline the importance of visual engagement for these hearing-impaired pupils, as they rely on their sight to learn due to their hearing impairment. This implies teachers' intention to help these pupils comprehend both the materials being used and the

subject matter of the lesson. This approach aligns with Birinci and Saricoban (2021), who emphasized the importance of visual learning for hearing-impaired pupils to grasp the essence of the lesson through their eyes.

Similarly, Dzulkifli (2021) and Ibrahim et al. (2021) found that visual materials help hearing-impaired pupils concentrate on the lesson through what they see and touch. This method provides them with the opportunity to memorize the lesson content more effectively and have the ability to respond to questions related to the teaching and learning materials. Contrary to the findings of Kisanga et al. (2019, 2020), who revealed that the effectiveness of this method depends significantly on the teachers' knowledge and positive attitude toward pupils with hearing impairment when engaging pupils with hearing impairment in various materials, Teachers need to familiarize themselves with the materials they present and use their expertise to ensure that the materials are well understood by the learners. This is also supported by Ibrahim et al. (2021), who found that in-service training for teachers teaching hearing-impaired pupils is crucial to reminding them of their respective duties in helping pupils with special needs, particularly those with hearing impairments. Therefore, inclusive education policy should severely direct the education organs to allow special education programs for teachers in every region to increase their understanding, experiences, and skills about these pupils.

Catalano (2021) found that in inclusive classrooms, hearing-impaired pupils are given fewer chances to participate in various activities relating to teaching and learning materials. This hinders their academic growth and limits the true inclusion of all pupils, despite their impairments. In this regard, when a teacher is showing the teaching and learning materials, hearing-impaired pupils end up looking at how their peers without hearing impairments perform using these materials. Pilonieta and Martínez (2019) and

Onuigbo et al. (2020) suggested that true inclusion involves not just physical presence but also equitable access to learning opportunities and teaching and learning materials in the classrooms. This provides opportunities for all pupils to ask and respond to various questions regarding the materials used by the respective teachers. Consequently, teachers are encouraged to adequately prepare visual materials and use them effectively to facilitate their visualization and comprehension of the lesson content. Braun (2020) further emphasized that barriers to inclusion must be addressed through appropriate inclusive education policies that can indicate ways to be employed by teachers to engage their hearing-impaired pupils when using materials. Consequently, reforms should be made in inclusive education pedagogy to ensure that these hearing-impaired pupils are taught exclusively by teachers proficient in sign language.

### **Hands-on- activities**

This section explored activities involving hearing-impaired pupils about teaching and learning materials. Two sub-themes emerged to explain this aspect: drawing and touching, as well as mentioning. The findings about these activities are presented in Table 3 as follows:

**Table 3.** Hands-on-activities for hearing-impaired pupils

Uses	Frequencies
Drawing, labeling, and explaining	27(61.4%)
Touching and mentioning	17(38.6%)
<b>Total</b>	<b>44(100%)</b>

**Source:** Field data 2022

According to the results presented in Table 3, the primary engagement activities in teaching and learning materials for hearing-impaired pupils were found to be drawing, labeling, and explaining, accounting for 61.4% of the total. Touching and mentioning were also identified as significant engagement activities, comprising 38.6% of the total. A detailed elaboration of these findings is provided below.

### **Drawing, labeling, and explaining**

Exploring the engagement activities for hearing-impaired pupils involved in drawing, labeling, and explaining teaching and learning materials was important. Teachers and pupils provided feedback, stating that engagement was facilitated through tasks such as drawing and labeling maps, trees, the digestive system, and flowers as part of the lesson. Teachers acknowledged their efforts in providing opportunities for hearing-impaired pupils to grasp the lesson using these prepared materials. Hearing-impaired pupils were assigned the tasks of labeling and explaining the drawn learning materials. The findings reveal that pupils were prompted to explain specific aspects of the heart system and the essential elements of maps. In support of this, a teacher from school B elaborated:

During my science lessons, I incorporate visual aids such as illustrations depicting the digestive system, the human heart, and various machines. After explaining these illustrations, I instruct all the pupils, including those with hearing impairments, to draw and label the diagrams on the chalkboard or in their exercise books. Interestingly, hearing-impaired pupils display a talent for drawing, and they actively participate in these lessons, showing genuine enjoyment and interest **(Teacher2- October 2022)**

Another teacher from school A had the following to say:

In our school's timetable, each session is allocated only forty minutes, which proves insufficient for adequately guiding all pupils, including those with hearing impairments, in drawing, labeling, and explaining materials. Due to the specific nature of their impairment, more time is

required to ensure their understanding of a single lesson. As a result, I often struggle to effectively engage these pupils using materials that are intended for engagement activities. This limitation hampers their full participation and restricts their comprehension of the lesson **(Teacher9- October 2022)**

According to the teachers' findings, the chalkboard and exercise books are used as tools to assist hearing-impaired pupils in drawing diagrams and pictures. They guided the tasks of labeling and explaining the materials about the lesson, providing an opportunity for hearing-impaired pupils to learn from their peers and develop skills in reading, writing, and drawing. However, teachers also expressed concerns about time limitations that hindered the drawing, labeling, and explaining exercises. In interviews, teachers emphasized that the allocated forty minutes were insufficient for all activities to be completed. They highlighted the need for hearing-impaired pupils to have more time during teaching and learning compared to their hearing peers.

Similarly, the head teacher from school A highlighted several challenges teachers encountered when using learning materials, resulting in differences in engaging hearing-impaired pupils. The head teachers expressed the same opinions regarding the Ministry of Education Science and Technology of Tanzania, which only allocated forty minutes per lesson. This duration was considered insufficient for hearing-impaired pupils. On the other hand, hearing-impaired pupils encountered language difficulties when engaged in teaching and learning materials. This situation hindered their full participation, like that of other hearing peers. On this, one hearing pupil from school B explained:

A group of our friends with hearing impairments were allowed to come to

the chalkboard and draw a flower. When the teacher asked them to explain their drawings, some of them attempted, but others were unable to accurately convey the meaning behind their pictures. This difficulty arises from the fact that sign language is not widely understood by most of the pupils and even some of the teachers (**Hearing pupil 3- October 2022**)

The findings revealed that the ability to explain learning materials was limited due to constraints in sign language. This was also observed during a classroom session in School B. In this particular instance, a teacher was teaching a science subject and presented a diagram of the nervous system. The teacher relied on hearing pupils who were familiar with sign language to explain the diagram to the hearing-impaired pupils. Unfortunately, only a few aspects of the diagram were explained, and the pupils struggled to provide further elaboration. This implies the importance of engaging hearing-impaired pupils in learning materials, ensuring that both teachers and pupils understand the language of instruction and have sufficient time for instruction. Thus, limited time and understanding of sign language among teachers and pupils hinder the comprehension of concepts presented through materials. Additionally, relying solely on peers who are familiar with sign language cannot provide hearing-impaired pupils with the necessary understanding that they would have gained if their subject teachers were proficient in sign language. The limited time to deny the active engagement of hearing-impaired pupils to see the materials and learn more effectively under the guidance of their teachers. Alias, Harun and Kamaruddin (2021) showed that because of their hearing impairments, these pupils benefited more from the lesson by using their visual senses to see diagrams, maps, and other real objects brought

into the classroom compared to other hearing pupils.

Dzulkifli (2021) emphasized that engagement and inclusion are implemented by teachers to guide their pupils in performing related activities, such as drawing diagrams and pictures of animals and plants in their exercise books and on the chalkboard. These hands-on activities do not only develop the pupils' skills in writing and drawing but also facilitate their interaction with the learning materials. Teachers need to prepare and use teaching and learning materials that enable their pupils to perform various activities related to the lesson's content, thereby enhancing their learning experience. This is very important to enhance the learning attention of these hearing-impaired pupils.

### **Touching and mentioning**

According to the results presented in Table 3, the study demonstrates that touching and mentioning were utilized as strategies to involve hearing-impaired pupils in the learning process through materials. The findings indicate that teachers effectively engaged hearing-impaired pupils by encouraging them to physically interact with and verbally refer to specific learning materials, such as the map, word card, and phone. A teacher from School A explained this:

Hearing-impaired pupils face challenges when it comes to translating essential map elements from the Kiswahili language to sign language. When asked to name these materials, they often struggle and exhibit signs of frustration or confusion, such as looking down and expressing wonder. As a teacher, I find it difficult to assist them fully in this task, as my knowledge of sign language is limited. Instead, I use other peers familiar with sign language to assist their peers with

## hearing impairment (Teacher1- October 2022)

The findings indicate that the lack of familiarity with sign language among teachers and pupils hinders their ability to engage in activities involving touching and mentioning. Hearing-impaired pupils often struggle to mention materials using sign language, resulting in feelings of confusion and looking down. Likewise, observation of a Geography class highlighted the difficulties faced by a teacher when a pupil with hearing impairment was unable to name a region on a map using sign language. This implies limited engagement of these pupils with hearing due to communication barriers.

The findings revealed the dependency on peers to support engagement in teaching and learning materials. In this regard, pupils who are expected to assist their peers need enough knowledge of sign language to provide accurate and comprehensive explanations. Relying on hearing pupils to translate or explain materials places an unnecessary burden on these pupils. It also introduces variability in the quality of instruction received by hearing-impaired pupils. This approach can result in incomplete or inaccurate transmission of knowledge, as peers may lack the depth of understanding or the ability to convey complex information effectively. Contrary to this, Khalid et al. (2021) revealed that the use of peer support in an inclusive classroom is crucial for providing social and emotional assistance to hearing-impaired pupils. This approach allows these pupils to access teaching and learning materials more effectively. Furthermore, it provides opportunities for hearing-impaired pupils to feel included by their peers rather than isolated. As a result, increased interaction and participation lead to improved academic success for hearing-impaired pupils.

Mitiku and Balew (2020) revealed that there are insufficient teachers specializing in sign language to help hearing-impaired pupils in inclusive settings. Many teachers teaching

inclusive schools have no training in sign language or special education. Thus, teachers enter an inclusive classroom with limited knowledge of special education. Both teachers and pupils need to be familiar with the language of instruction to facilitate effective learning, without communication, learning cannot take place (Catalano, 2021). This situation can lead to negative attitudes among hearing-impaired pupils and a sense of isolation in the classroom. In inclusive educational environments, it is crucial to familiarize teachers and pupils with sign language to support the learning of hearing-impaired pupils.

## CONCLUSION

The study findings revealed that to effectively engage hearing-impaired pupils in inclusive classrooms, teachers used three key methods when using teaching and learning materials: Prioritizing teaching and learning materials: Teachers prioritized these materials to meet the learning needs of hearing-impaired pupils; Showing teaching and learning materials; Teachers showed and verbally explained how to use various teaching materials, ensuring hearing-impaired pupils could use their eyes to see those materials and understand the lesson. Hands-on activities: Teachers provided opportunities for hearing-impaired pupils to directly interact with and use learning materials to reinforce their engagement and understanding. There is a need for further research to explore the use of teaching and learning sign language materials for hearing-impaired pupils in other regions of Tanzania. This research would provide valuable insights into the effectiveness of these materials and their impact on engagement and learning outcomes at different educational levels and contexts. Based on the findings of the study, it is recommended to conduct a comprehensive review of the inclusive education policy and its implementation, with a specific focus on addressing the needs of hearing-impaired pupils. This review should aim to identify areas for improvement and ensure that the policy is fully

aligned with the specific requirements of hearing-impaired pupils in inclusive classrooms. One key area for improvement is the timetable for inclusive classrooms. It is recommended to allocate sufficient time for explaining, drawing, and labeling teaching and learning materials. This will provide hearing-impaired pupils with more opportunities to comprehend and engage with the materials effectively. Furthermore, the Ministry of Education Science, and Technology in Tanzania should initiate comprehensive training programs specifically designed for teachers working in inclusive classrooms. The government should take measures to ensure an adequate supply of learning materials and competent teachers, with an emphasis on proficiency in sign language as a language of instruction for hearing-impaired pupils.

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