Provisions of Community-Based Rehabilitation Services on Inclusive Education in Secondary Schools that Enrol Learners with Hearing Impairment in Tanzania

Salimini Mbazi (PhD Student)[1*], Prof. John Baptist Okech[2], Dr Stackus, Okwaput[3]

[1]Faculty of Special Needs and Rehabilitation, Department of Hearing Impairment and Sign Language Interpretations (Kyambogo University)

[2]Faculty of Special Needs and Rehabilitation, Department of Special Needs Studies (Kyambogo University)

[3]Faculty of Special Needs and Rehabilitation, Department of Hearing Impairment and Sign Language Interpretations (Kyambogo University)

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ABSTRACT

The study examined the provisions of Community-Based Rehabilitation services in inclusive secondary schools that enrol learners with hearing impairment in Tanzania. The objectives of the study were: (i) to analyze the CBR services offered in inclusive secondary schools that enrol learners with hearing impairment in Tanzania, (ii)to examine how CBR services are provided in secondary schools that enrol learners with hearing impairments in Tanzania. The study was guided by the social model of disability with assumptions that disability is not caused by an individual's medical condition or physical or mental impairment; instead, disability arises as a consequence of societal attitudes, physical and organizational structures. The study was underpinned by the constructivist paradigm, which employed a qualitative research approach with an exploratory case study design. Constructivists support qualitative and interpretive approaches that seek deep, contextual understanding rather than generalizable laws. The study used semi-structured interviews, focus group discussions, observations and document reviews. Data were collected from a criterion-purposive sample of 27 participants (8 teachers, 3 officials from voluntary organizations, and 16 learners with hearing impairments). Data collected through interviews and focus group discussions were analyzed using a thematic analysis protocol, followed by content analysis of the reviewed documents and observations. The study found that CBR services offered in inclusive schools include sign language interpretation services, instructional materials, infrastructure development (both physical and technological), and school fee subsidies. It was further revealed that services are provided in three ways: categorically, individually, and through a whole- school approach. The study recommends that voluntary organizations should adopt a bottom-up approach, from project planning to implementation. The study further recommends that the government develop training programs for teachers to use categorical, individualized, and whole-school approaches in inclusive schools.

Key words: Community-Based Rehabilitation services, inclusive schools, learners with hearing impairment,

1.0 INTRODUCTION

The history of Community-Based Rehabilitation (CBR) can be traced back to the 1970s when the world began to recognize disability not only as a medical issue, but also a social concern, as a result of leveraging local strengths and networks to address disability related barriers (Kran et al, 2006; Yeo &Moore, 2003; World Health Organizations, 1975). The CBR movement responded to the inadequacies of Institutional-Based Rehabilitation (IBR). Initially, rehabilitation services were primarily offered in clinical settings, often excluding individuals from their communities (World Health Organization, 2010). Development of CBR was influenced by human rights milestones such as the Alma-Ata Declaration of 1978, which emphasized on provision of primary health care, the UN International Year for Disabled Persons of 1981with a focus on rehabilitation and prevention

of disabilities, the UN Decade of Disabled Persons 1983– 1993, which emphasized improving education for persons with disabilities (WHO, 2010; M'kumbuzi & Myezwa, 2017).

CBR aims at enhancing the quality of life for individuals with disabilities. Its holistic approach integrates health, education, livelihood, and social participation into rehabilitation, empowering individuals with disabilities by fostering their capabilities, promoting inclusivity, and enabling access to social, educational, and economic opportunities (United Nations, 2006). The role of CBR services in education is to facilitate inclusion by increasing access, participation, and achievement for learners with disabilities. Mji & Mji (2017) noted that CBR services improve access to schooling and educational outcomes for learners with disabilities. In the same perspective, CBR services enhance enrolment and attendance of learners with disabilities as it addresses issues of transport, learning environments, assistive devices and training of teachers on learner-centred teaching strategies (Kahwa et al,2019; Suen & Chen,2016; Sharma & Verma,2022; Pant & Singh,2021).

The Salamanca Statement and Framework of Action, adopted in 1994 at the World Conference on Special Needs Education, was a significant document that guides voluntary organizations to offer CBR services to individuals with disabilities (UNESCO, 1994). The United Nations Convention on the Rights of Persons with Disabilities (UNCRPD) of 2006 emphasized the right to education for persons with disabilities. Hence, governments and voluntary organizations were tasked to provide CBR services and support regarding instructional materials, teaching and instructional strategies and the construction of disability-friendly learning environments (UN, 2006).

Inclusive education is a philosophy that provides equitable and quality education for all learners and advocates for teaching strategies catering to different learning needs and participation in the learning process (Ainscow, 2005; Tomlinson, 2014). The Salamanca Statement and Framework of Actions guide the transformation of education systems to be more inclusive by removing social barriers like negative language and rigid instructional and assessment strategies (UNESCO, 1994). From the same perspective, Article 24 of the UNCRPD guides general education to accommodate learners with disabilities in schools, develop appropriate curricula, and provide support services (UN, 2006; Tsitsi, 2018).

The Salamanca Statements and Framework of Action (UNESCO, 1994) linked inclusive education and CBR services. According to UNESCO (1994), schools were guided to accommodate all children regardless of physical, intellectual, social, emotional, or linguistic conditions. In sections (15, 22, 65, and 66), the framework guides voluntary organizations like Community-Based Organizations (CBOs), Civil Society Organizations(CSOs), Faith-Based Organizations (FBOs) and Non-Government Organizations (NGOs) to participate actively in advocacy, provision of disability-related services, and develop new ideas for helping learners with disabilities, including hearing impairments (UNESCO, 1994; Oort, Van, &Jalovcic, 2023; and Iemmi et al., 2015).

The UNCRPD of 2006 reaffirmed and emphasized the rights of people with disabilities towards inclusive education (Aziz, 2020). Article 24 Section 2(a, b) of the UNCRPD stipulates that Persons with disabilities can access inclusive, quality and accessible education on an equal basis with others in the communities in which they live and receive support services and reasonable accommodations to facilitate their effective learning (United Nations, 2006). Furthermore, Article 26 of the UNCRPD argues that member states consider comprehensive community-based rehabilitation programs to identify persons with disabilities, provide assistive technologies, rehabilitate and construct disability-related infrastructures and train teachers to meet the learning needs of all people (United Nations, 2006; United Nations, 2010). The recent United Nations Sustainable Development Goals (SDGs) of 2015, specifically Goal Number 4(a), target to build and upgrade educational facilities that are learner, disability, and gender sensitive and provide nonviolent, inclusive, and effective learning environments for all (Johnston,2016; Elder et al., 2021).

Based on the preceding legal and international policy commitments, it can be argued that globally, Community-Based Rehabilitation and inclusive education respond to learners' learning needs by providing equal access to educational opportunities, enhancing social inclusion, and increasing their participation by reducing barriers

in the teaching-learning process (UNESCO, 2008; Tarkala & Aunio, 2005). These perspectives make the two provisions convergent on helping individuals with learning needs (Chavuta et al., 2015).

Global statistics show that there are 34 million people with hearing impairment in the world (WHO, 2024). Out of the world's 34 million people with hearing impairment, over 18 million live in the Sub-Saharan area (Iselin et al., 2020). Studies show that CBR services can help secure essential resources to a learner with hearing impairment, such as hearing aids, cochlear implants, and teaching aids, through community support and partnership (Fumagalli & Hinders, 2017). It can also facilitate workshops and training sessions for teachers to develop inclusive teaching strategies and promote awareness and understanding of disability in hearing communities, whether in schools, at home, or within the community (Ainscow, 2016). Due to the nature of its service provisions as stipulated by the CBR matrix, Community-Based Rehabilitation promotes the integration of services across education, health, social aspects, livelihood and empowerment to ensure that learners with hearing impairment receive a comprehensive support network in a holistic approach (Raghavan & Kothari, 2019).

The context of this study is Tanzania, a country located in the sub-Saharan region. Tanzania, like any other country in the world, has different categories of learners with hearing impairment. The audiometric classification considers them as Mild (26–40 dB HL), who have problems with soft sounds and speech understanding in noise. Moderate (41–55 dB HL): those who experience difficulties hearing normal conversation without amplification. Severe (71–90 dB HL): frequent reliance on visual cues; amplification helps, but communication barriers remain. Profound (>90 dB HL): those who cannot perceive any sound at all, sign language is the only intervention (Lin et al, 2019). Statistics show that Tanzania has 7,190 learners with hearing impairments who are in both special, mainstream schools from primary to secondary (BEST, 2019). The modes of communication and instruction in these schools include oralism and manualism under the total communication philosophy (Alanazi, 2021; Strassman et al., 2019). This philosophy is supported by Floyd and Volker (2018), who suggest that multiple communication strategies, including total communication, argumentative, alternative communication, and visual supports, can engage and increase the participation of students with disabilities. In the same vein, Kuper et al. (2015) observe that integrated models, like oralism (lip reading) and manualism (signs), and a combination of the two models, yield more inclusion and empowerment of persons with disabilities.

In this study, the categories of LwHI include only deaf and hard of hearing. The population in this study is 2500 teachers, 50 inclusive secondary schools, 1500 CBR officials from 158 voluntary organizations, and 7190 LwHI. Furthermore, the study considered only LwHI from form one to form four, teachers teaching inclusive classrooms, and voluntary organizations that offer CBR services in the selected schools.

Inclusive education in Tanzania started in 1998 after adopting the Salamanca Statements and Framework of Actions of 1994, with a few pilot schools in the Dar es Salaam region (Possi & Milinga, 2017). Like any other developing country, CBR in Tanzania emerged in the 1980s and was influenced by the mentioned international movements. Later, the Tanzania Federation of Disabled Organizations (TFDO) was established in 1992 to advocate for the rights of people with disabilities and to promote their inclusion and participation in education, health, and employment (Kadir, 2017). CBR projects in Tanzania are implemented by government-related agencies, Civil Society Organizations (CSOs), Community-Based Organizations (CBOs), and Faith-Based Organizations (FBOs). Tanzania ratified the UNCRPD of 2006 in 2009. This led to the formulation of hard laws on inclusive education, Disability Act of 2010, the Education and Training Policy (ETP) of 2014 and the National Strategy on Inclusive Education (NSIE) of 2009/2017. These legal frameworks established a legal framework to protect the rights of persons with disabilities, promote their full participation in society, including access to education, employment, and public services (Haki Elimu, 2017).

Despite the favorable legal frameworks, schools implementing inclusive education in Tanzania face challenges ranging from non-inclusive school cultures (Mhando &Swai, 2019; Kayagula, 2019), low acceptance of learners with disabilities by their peers and poor inclusive teaching and assessment strategies (Mumba et al., 2022), rigid curriculum, poor classroom management and large class sizes (Revelian & Tibategeza, 2022), stigmatization and insufficient support services (Philip, 2022; Phiri, 2017). These challenges hinder communication

and learning among learners with hearing impairment (Kayagula, 2019; Revelian & Tibategeza, 2022). Negative attitudes from both teachers and peers without disability increase a social gap, poor acceptance, and low interaction, which affects their participation and benefit from inclusion (Adesokan, 2022; Xu et al., 2020; Tanrdiler et al., 2015). Based on the above existing challenges and the observed impact on LwHI in inclusive schools, the researcher considered conducting a study on the provisions of CBR services on inclusive education in secondary schools that enrol learners with hearing impairment in Tanzania.

Objectives of the Study

The study aimed to achieve the following objectives;

i. To analyze the CBR services offered in inclusive secondary schools that enrol learners with hearing impairment in Tanzania

ii. To examine how CBR services are provided in inclusive secondary schools that enrol learners with hearing impairments in Tanzania.

2.0 THEORETICAL FRAMEWORK

This study is guided by the Social Model of Disability by Mike Oliver (1983). The model stipulates that individuals with disabilities, including LwHI, are not disabled by their conditions but by the environment in which they live (Maela, 2023). This model fundamentally challenges the established, traditional viewpoints by shifting the focus of analysis and intervention from the individual's impairment to the societal barriers that impede their full participation in society. Instead of viewing disability as an inherent characteristic of a person, the social model highlights the disabling effects of societal structures and attitudes. The core of the social model rests on several interconnected assumptions that ‘’disability as a social construct’’ meaning that disability is not solely or primarily caused by an individual's medical condition or physical or mental impairment. Instead, disability arises as a consequence of societal attitudes, physical and organizational structures, and prevailing environments that actively exclude or systematically disadvantage some people with impairments. These physical, attitudinal, or institutional barriers prevent individuals with impairments from fully engaging in education, employment, social life, and other essential aspects of society (Goodley, 2014; Levitt, 2017). The model considers ‘’promotion of inclusion and accessibility across all domains of life’’ because removal of societal barriers is essential to enabling full participation, ensuring equal opportunities, and upholding the fundamental rights of disabled persons. By actively dismantling these barriers and creating more inclusive environments, societies can unlock the potential and contributions of individuals with impairments, fostering a more just and equitable society for all (Oliver & Barnes, 2014).

The aforementioned assumptions from the social model of disability helped the researcher in this study in various ways; first, it helped formulate research questions reflecting the approaches of providing CBR services. Second, the assumptions that disability is a social construct suggested a qualitative method and approach that required face-to-face interactions between the researcher and the participants. Third, the social model of disability as a discursive theory with assumptions that disability is a result of norms, language and power relations rather than individual medical deficits helped the researcher to use a thematic and inductive analysis protocol because the experiences and interpretation of the phenomenon under study are subjective and context- bound.

The social model of disability is relevant in this study, as it places the school as a society representative that meets the diverse learning needs of each learner and provides appropriate support services (Levitt, 2017). Schools must remove environmental, linguistic, pedagogical, policy and attitudinal barriers to enhance the inclusion of learners with disabilities (Sánchez et al., 2019). With the assumptions that disability is a social problem in Tanzanian context, the country ratified the CRPD in 2009 which led to the formulation of the Disability Act OF 2010. Additionally, ETP of 2014 and inclusive education strategy of 2009 -2017 with emphasis on inclusive education, removal of learning barriers and accessibility. In this context, the social model of disability provides a platform to align theory to practice, to identify and remove learning barriers, barrier-free infrastructures and inclusive service design in schools (URT, 2017; Watson and Beardon, 2019)

Recognizing societal barriers leads to increased engagement in community-based rehabilitation (CBR) services, which is vital for inclusive education and shifting the focus from individual deficits to societal barriers, encouraging inclusive attitudes among educators and communities (WHO, 2018). Additionally, schools as a miniature society should foster inclusive cultures and systemic inequalities by adopting inclusive, partnering with CBR programs to promote understanding and acceptability of diversity (Bates & Davis, 2018; Goodley, 2014; Oliver, 2017; Oliver & Barnes, 2014; WHO,2018).

3.0 LITERATURE REVIEW

Reviewing the related literature sheds light on what has been done in other contexts and from related phenomena. Convergently, literature was reviewed based on the research objectives, looking at studies conducted outside Africa, in Africa and in Tanzania.

CBR Services offered in Inclusive Secondary Schools that Enrol Learners with Hearing Impairment

Among the studies conducted on CBR services provided in schools is the one by Pasara (2022) on the impact of Community-Based Rehabilitation on attaining sustainable development goals in Zimbabwe. The study employed a mixed method approach to collect data through questionnaires, interviews, focus group discussions, record inspections and site visits. The study revealed that CBR services offered in schools include training children with disabilities, parents, and communities on disability and inclusion, rehabilitation, and the construction of inclusive infrastructures.

Sign language interpretation was mentioned as another service to LwHI in inclusive schools. Mertens and Recker (2018) evaluated the role of sign language interpretation services for deaf students in the United Kingdom and the United States of America. The study used interviews and observations to collect data from deaf students, teachers and sign language interpreters. The study found that sign language serves deaf students and facilitates classroom communication.

Cawthon and Milk (2019) conducted a study on how students with hearing loss experience learning in inclusive schools. The study employed a phenomenology design, and data were collected through interviews with students with hearing loss in inclusive classrooms. The study found that sign language interpretation services enhance communication, visualization and engagement of students with hearing loss in the learning process. The study aligns with Stinson (2019), who found that sign language interpretation enhances visual support, leading to social development and peer relationships.

Murnan and Murnan (2020) conducted a systematic review to evaluate the physically accessible school infrastructures for students with disabilities in the United States of America's primary schools. The study used students with disabilities and school administrators as participants. The study found that school infrastructures that enhance participation, safety and independence include: ramps, elevators, and well-designed and spacious classrooms. This study was a systematic review that used secondary data and was conducted in the United States of America. The current empirical study uses primary data collected from inclusive secondary schools enrolling LwHI.

Another study was conducted by Gonzalez (2020) on inclusive design principles for accessible pathways in educational settings. The study used literature reviews, case analysis and expert consultations as the data collection methods from architects, educators and access specialists. The study found that clear and unobstructed pathways, alert systems and corridors designed for clarity improve accessibility, safety and overall participation of learners with hearing impairments.

Instructional materials were also mentioned as an essential service. The study by Lupart et al. (2021) explores accessible materials for generally inclusive classrooms in Canada. The study employed a case study design to review the literature on the accessibility of teaching materials in primary and secondary schools. The study found that inclusive schools offer digital and text-based materials like videos with captions, speech-to-text apps, diagrams, charts and graphic organizers. Al-Hinai et al. (2020) supported the idea that technological

infrastructures like frequency modulation systems, videos with captions, and visual aids like diagrams, charts, and graphic organizers improve access and engagement of LwHI.

Munez (2014) explored the role of Community-Based Rehabilitation (CBR) in advancing inclusive education for learners with disabilities in Kenya. The study employed a case study design, and data were collected through interviews and observations. The findings showed that CBR provides assistive technologies to support and facilitate interactive classroom teaching.

Kirk et al. (2019) conducted a systematic review to examine the type and effectiveness of assistive technologies used to improve educational access and outcomes of learners with hearing impairment in the United States of America. The study found that community-based rehabilitation offers assistive hearing devices like hearing aids, cochlear implants and frequency modulation systems to learners with hearing impairment in inclusive schools.

Navid et al. (2024) conducted a systematic review to evaluate the technological integration in an education setting for students with hearing impairment. The review combined quantitative and qualitative performance data analysis. The study found that visual (diagrams, pictures, captioned videos) and auditory (hearing aids, frequency modulation systems) combined with interactive teaching strategies enhance engagement, participation and academic performance of learners with hearing impairment. Though the study came up with visual and auditory assistive technologies for LwHI, it was a systematic review using quantitative and qualitative data. The current qualitative study used primary information from participants (teachers, LwHI, and officials from voluntary organizations.

Given the literature reviewed above, it is evident that CBR services in schools are provided by teachers and officials from voluntary organizations. The provided services include the construction of infrastructure, sign language interpretations, Instructional materials, and training of teachers on inclusive strategies and assistive technologies.

How the CBR services are provided in Inclusive Secondary Schools that Enrol Learners with Hearing Impairment

The study by Osei-Tutu et al. (2021) on the implementation of total communication in an inclusive schooling context in Ghana found that the Whole School Approach ensures that teachers, non-teaching staff, and administrators are trained in lip reading, signs, facial expressions, and gestures and engaged in consistent communication. The study further recommended using shared language across the school environments to promote accessibility and participation.

The study by Sailor (2017) on equity as a basis for inclusive educational system change in Australia revealed that the WSA is preferred in implementing inclusive education services in mainstream schools because it is within the school where teachers work collaboratively with specialist staff to identify, monitor, and support learners needs and types of intervention at different times and for other purposes (Karrie et al., 2024). This suggestion aligns with Aiscow (2020), who conducted a study in early childhood settings and found that WSA considers the assessments of how learners are taught and engaged in learning, the grouping of learners, the support services each learner gets from the school, and how the school responds to diversity.

A study by Dudu (2019) on a whole-school approach to implementing inclusive education in one province in Zimbabwe informs that the WSA is preferred in implementing inclusive education because it considers school culture embedded in vision and mission, school policies on inclusion, and general practice (adaptation of curriculum, instructional and assessment strategies, and timetable). Though this study had the same purpose as the current one, it involved head teachers and caretakers as the participants and was conducted in special schools in Zimbabwe.

A whole school approach improves academic achievement among learners with disabilities in inclusive schools. A study by Lewallen et al. (2015) on how the combination of the whole school, whole community, and whole child model improves academic achievement of learners with disabilities reveals that the whole

school approach is the best due to the following reasons (i) each learner in a school is accommodated in a user friend environment (ii)each learner is actively engaged in learning and connected to the school culture(iii) the qualified teachers support each learner (iv)schools teaches social interaction skills to all learners to enhance inclusion and acceptance among learners.

In the same vein, Easterbrook and Hardly (2018) conducted a study that supported the whole-school approach to the inclusion of students with hearing loss. The study involved educational leaders, teachers, speech therapists, and audiologists to collect data through interviews and document analysis. The study found that the whole school approach involves the provision of services to all stakeholders, from teachers to learners with hearing loss to administrators and non-teaching staff. This implies that the whole school approach to service provision can be envisaged from the school culture.

Kang and Kim (2019) explored the impact of the Whole-School Approach on enhancing communication for diverse learners. The study aimed to examine how implementing the Whole-School Approach enhances communication support for diverse learners across school systems. The study found that the Whole-School Approach fosters consistent communication, improved staff collaborations, and better inclusion of students with disabilities. The study recommended that schools prioritize staff and non-teaching staff for adequate communication support.

Nguyen and Zhao (2022) evaluated the impact of community-based Rehabilitation on the learning environment for students with hearing impairment in China and Vietnam. The study employed a mixed approach, and data were collected from students, teachers, community health workers and patients. The study found that CBR offer services categorically by considering rehabilitation activities to a given category, i.e. hearing aids for the hard of hearing and resource room activities for a particular category. The study found that services offered categorically improve communication, social interaction and educational engagement of students with hearing impairment. This argument aligns with Wang, Li and Zhang (2019) that CBR services offered categorically enhance access to assistive technologies and the concerned category of learners and improve their academic performance. Though the study has identified what and how of the categorical approach, it was a mixed study conducted in Vietnam and China. The current study employed a qualitative approach and was conducted in Tanzania.

Garcia et al. (2021) argued that the provision of CBR services through categories requires deep training on strategies to offer specialized services; for example, a teacher teaching hard of hearing learners equipped with appropriate strategies for teaching lip reading. The argument is that teachers may attend seminars, workshop training and internal meetings among the teaching staff to learn teaching strategies for all categories of LwHI, including hard of hearing.

Holt and Leavitt (2013) conducted a literature review on the best practices for delivering individualized instructions for students with hearing impairment in the United States. Information/data was collected from the existing research and best practices. The study found that teachers provide individualized lesson plans, assistive technologies and language of communication tailored to each student's needs.

Munyiri and Karanja (2019) examined the impact of an Individualized Education Plan (IEP) on the learning outcomes of hearing-impaired students in inclusive Kenyan schools. The study employed a mixed method where data were collected from teachers, hearing-impaired students and special education officials through interviews, surveys and document analysis. The study found that the personalized guiding document for teaching learners with specific hearing needs influences the learning and social participation of learners with hearing impairment in the learning process. The study aligns with Verhoeven (2015) that individualized instruction in inclusive classrooms integrates differentiated teaching strategies that enhance interaction and engagement.

The reviewed literature is evidence that CBR services in inclusive schools are provided through the whole school approach (WSA), categorically and in an individualized approach. The whole school approach is associated to the Ubuntu philosophy as it removes all school-oriented barriers to learners with hearing impairment.

Synthesis of Literature Review and Gaps

The reviewed empirical literature has provided a deductive clue that the CBR services offered include the construction of infrastructure, sign language interpretations, Instructional materials, and training of teachers on inclusive strategies and assistive technologies. The reviewed literature indicates that CBR services in inclusive schools are provided through the whole school approach (WSA), categorically and in an individualized approach. Furthermore, CBR services improve inclusive education by creating user-friendly school infrastructures for disabled learners, increasing awareness of disability and inclusion, increasing social participation and confidence of learners with disabilities in school environments, and advocating for education policy that supports inclusion. Despite those observations, some gaps were noted as follows: First, there was a methodological gap because many studies used a mixed approach (Beattie & Dwyer, 2016; Munyir &Karanju; Nguyen & Zhao, 2019; Odhiambo & Wanyama, 2021; 2019), other studies used systematic reviews (Manson&Patel, 2020; Murnan &Murnan, 2020; Zhang & Li, 2023; Bhtchley, 2020). Second, most of the studies used participants different from the ones used in the current study (Mason &Patel, 2020; Murnan & Murnan, 2020; Wallelign, 2018). Third, many studies were conducted in contexts other than Tanzania (Kirk et al., 2019; Lupart et al., 2021; Munez, 2014; Passara, 2022; WHO,2013). Fourth, some studies focused on general and other disabilities besides hearing impairment. For example, (Gonzalez, 2020; Mason & Patel,2020; Murnan & Murnan, 2020; WHO,2013; Munez, 2014; Dudu, 2019; Mpofu, 2023; Okech et al., 2021; Mhando& Swai, 2019).

Based on the evidence from the literature gaps, it can be suggested that the current study was the first to be conducted on the provisions of CBR services toward inclusive education in secondary schools that enrol learners with hearing impairment in the Tanzania context. These reasons make the current study significant in contributing to the knowledge gap identified from the reviewed studies.

4.0 METHODOLOGY

This study was guided by the constructivist paradigm. The researcher was motivated to use the constructivist paradigm because social meanings in this phenomenon under study are embedded in school cultures and situations. Constructivist philosophers assume that reality is subjective, multiple, and socially constructed based on individuals' experiences (Huyler & McGill, 2019; Harrison et al., 2017; Matta, 2022).

This study adopted a qualitative research approach. Qualitative research involves iterative cycles of data collection and analysis, continuously refining research questions, evidence, and theory (Creswell, 2014). The researchers' constructivist orientations in this study sought to build knowledge by understanding individuals' unique viewpoints and the meaning attached to those viewpoints (Creswell & Poth, 2018). The decision to choose the qualitative approach was based on the current study, which is on the experiences of teachers, LwHI, and officials from the organizations working with the selected schools on the approaches of providing CBR services in inclusive schools. Bryman et al. (2022) argue that understanding and experiences towards a specific phenomenon must be reported with explanations (qualitatively) because personal experiences are always connected to the setting (context).

The study adopted an exploratory case study because of its potential to provide a rich description of the issues relating to a better understanding of the phenomenon under study. The exploratory case study was relevant because the literature reviewed revealed a dearth of information about the phenomenon under study (Yin, 2017; Creswell, 2014).

This study was conducted in the Arusha and Kilimanjaro regions in Tanzania. Tanzania has an estimated population of about 61,741,120 (United Republic of Tanzania, 2022). According to the 2022 national census, the Kilimanjaro region has a population of 1,861,934 and covers an area of about 13.250 km per square meter (UNICEF, 2022). On the other hand, the Arusha region lies on the eastern edge of the Great Rift Valley and borders Kenya to the north and northeast. The Arusha region has a population of 2,356,255 and covers an area of about 37.376 km per square meter. The Arusha and Kilimanjaro regions were selected because there are

many schools which are provided with CBR services compared to other regions in Tanzania (Save the Children,2019; Smith & Mwangi,2021; UNICEF Tanzania,2020; World Vision Tanzania,2022). The target population in this study was (110 teachers from nine (9) inclusive schools, 65 CBR officials from 20 organizations, and 1400 LwHI from inclusive secondary schools in the Kilimanjaro and Arusha regions. Schools were labelled as school X from Kilimanjaro and school Y from the Arusha region. In addition, the researcher used a purposive sampling strategy to sample teachers, officials from voluntary organizations and LwHI because of its usefulness in helping the researcher to access the key informants with rich information about the case. The sample composition is described in Table 4.1

Table 4. 1 Study's Sample Composition

Schools	**Population**	**Sample**
X	Teachers	04
	LwHI	08
	Officials from organizations	01
	Total	13
Y	Teachers	04
	LwHI	08
	Officials from organizations	02
	Total	14
GRAND TOTAL(X+Y)		27

Source: Field data (2025)

Key: X, school X; Y, school Y

Data was collected through interviews, focus group discussions, observations and document reviews. The data collection methods in this study were interviews, focus group discussions, observations and document reviews. The interview and focus group discussions data were analyzed using Braun & Clarke's (2006) thematic analysis framework. Data collected through document reviews and observation were analyzed using the content analysis method. Literature review and the study objectives facilitated the development of prior coding using a deductive approach (Nowel et al., 2017; Alhajoilan, 2012; Braun & Clarke, 2021). Qualitative data from the field were coded manually, and the analyzed were presented in the form of quotes and verbatim. Manual coding was appropriate for the following reasons: First, the researcher did not have technological expertise in computer applications to handle, code, and analyze data using software (Braun & Clarke, 2006). Second, manual coding allows a researcher to immerse fully in the data, to be familiarized with the data, fostering a nuanced understanding that may be lost with automated or software-assisted coding (Saldaña, 2016).

Schools were labelled as Y and X. Teachers from school Y were named as YT1, YT2, YT3, YT4, and from school X were labelled as XT1, XT2, XT3, and XT4. Officials from voluntary organizations working with school Y are labelled as YCBR1, YCBR2 and the one working with school X as XCBR1. Learners with hearing impairment from school Y are labeled as YS1, YS2, YS3, YS4, YS5, YS6, YS7, YS8 and those from school X were labeled as XS1, XS2, XS3, XS4, XS5, XS6, XS7, XS8. This was done as a strategy of assigning labels as pseudonyms to ensure the anonymity of participants.

Approvals from the relevant authorities were sought before the data collection process. For instance, a research permit was granted by the Commission of Science and Technology (COSTECH) of the United Republic of Tanzania after submitting the introductory letter from the Directorate of Research and Graduate Training (DRGT) of Kyambogo University. The research permit from COSTECH was issued with reference number CST00001151-2025-2025-00193. Consent was sought from participants, and the purpose of the study was explicitly explained. Participation was voluntary, and the participants' responses were kept confidential.

5.0 RESULTS AND DISCUSSIONS

The study had two objectives: first, to analyze the CBR services offered in inclusive secondary schools that enrol learners with hearing impairment in Tanzania, and second was to examine how CBR services are provided in secondary schools that enrol learners with hearing impairment in Tanzania.

CBR services offered in inclusive secondary schools that enrol learners with hearing impairment

Regarding objective one, the findings revealed that CBR offers services like instructional materials, development of infrastructures, sign language interpretation services and assistive technologies. Table 5.1 summarizes the offered CBR services and their important categories.

Table 5.1 CBR Services offered to Inclusive Schools Enroling LwHI

CBR services	Categories
Assistive technologies	Hearing aids, computers, projectors, and assistive devices. Provision of computers, projectors, sign language interpreters, assistive devices (audio recorders, mirrors, apps supporting hearing aids)
Sign language interpretation services	In-class and out-of-class interpreter services, staff and teacher sign language training
Instructional materials	Charts, diagrams, images, textbooks, dictionaries, graphic organizers, videos with captions
Development of infrastructures	Building classrooms, labs, dorms, toilets (by churches and government), fire alarms, projectors, sound barriers (lacking), and user-friendly pathways

Source: Field data (2025)

Assistive Technologies

The study found that inclusive secondary schools have and use assistive technologies ranging from high to low technologies. The most mentioned were computers, projectors, hearing aids, visual alert devices and applications like speech-to-text. Mentioning those assistive technologies implies they always use them for effective teaching, engagement and participation of learners with hearing impairment in their schools. To attest this, one teacher from school Y had this to say:

Specifically, for learners with hearing impairments, we are working with two organizations: one is Achraf Hakim Foundation and the second is Finish Special Education Africa, which offers assistive technologies like hearing aids, alert devices, and Information and Communication Technologies (ICT) like computers with caption software and projectors to all learners with disabilities, including those with hearing impairment (**Transcript of an interview with a teacher, YT1**).

Similarly, another teacher from school X who was interviewed on the same question reported that:

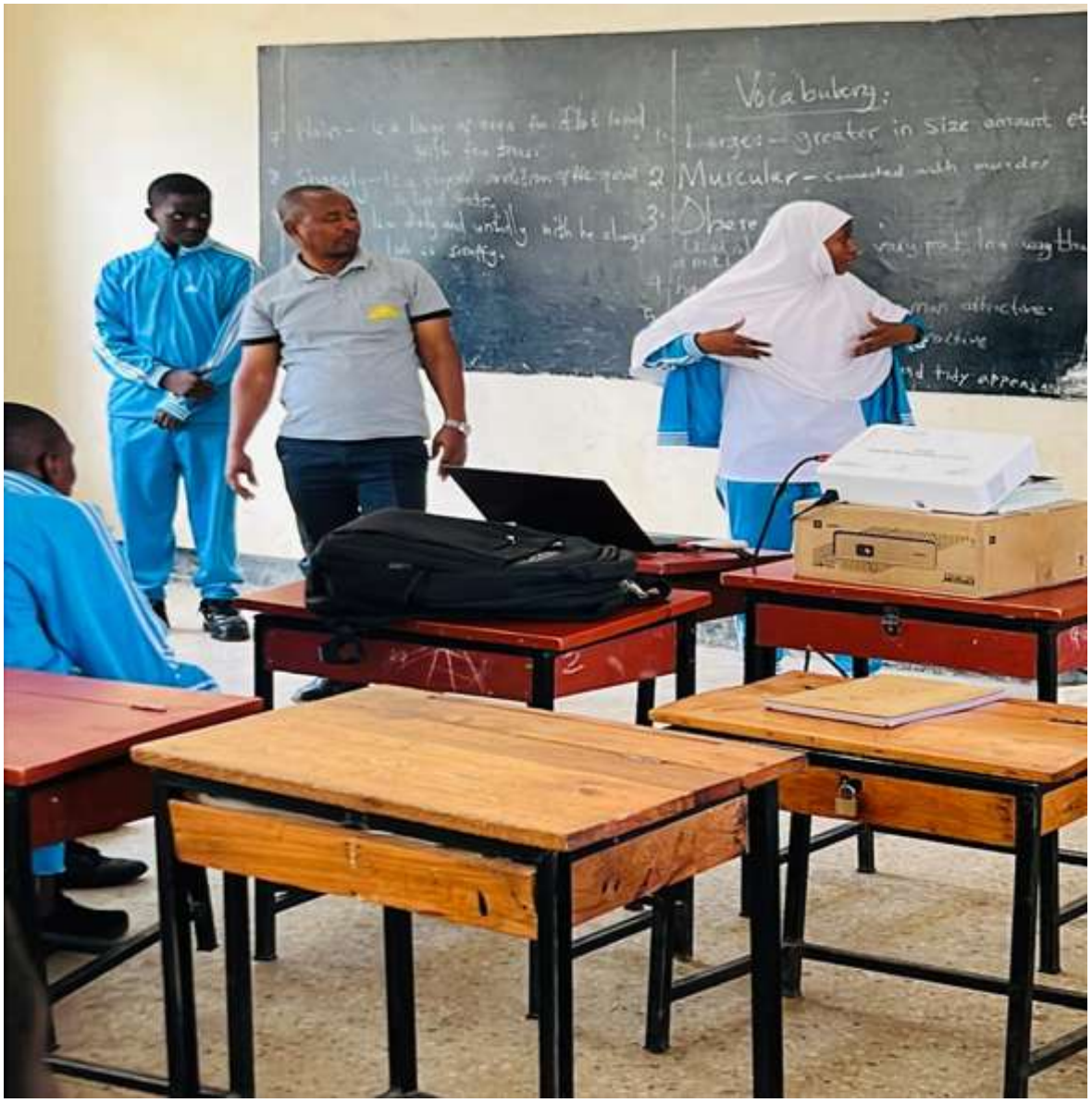
The Roman Catholic Church Diocese of Moshi, as a Faith-Based Organization (FBO), provides assistive technologies like computers, projectors, hearing aids, pictures, diagrams and software to enable speech-to-text transcriptions and computers with software to teach sign language (**Transcript of an interview with a teacher, XT1**).

The statements above indicate that voluntary organizations work hand in hand with the government in the provision of Community-Based Rehabilitation (CBR) services in inclusive secondary schools. This implies that the government is effectively implementing the NGOs Act of 2002, which guides the Civil Society Organizations (CSOs), Non-Government Organizations (NGOs), Community-Based Organizations (CBOs) and Faith-Based Organizations (FBOs) to supplement the government in the provision of inclusive education.

Documents on CBR services provided were analyzed, and among other services that were offered were the provision of assistive technologies such as hearing aids, charts, diagrams, computers, projectors, and wares that convert speech into text. Teachers' lesson plans were also analyzed. A lesson plan of one teacher teaching the sub-topic titled ‘’Animal Growth in Biology’’ indicates that the instructional materials used include charts and diagrams.

The researcher observed the infrastructure at school Y and found that there are well-furnished and spacious classrooms, inclusive pathways and toilets. It was also found that teachers use computers and projectors in the teaching process. This is a government-owned school where students do not pay school fees at all. Figure 5.1 shows the teacher using projector in the teaching process.

Figure 5.1 teacher using projector in the teaching process in School Y process



Source: Field data (2025)

The findings concur with the assumption of a social model of disability that positions a school as a miniature society to remove environmental, pedagogical and communication barriers by providing assistive technologies to teachers to enhance engagement and participation of learners with disabilities in the learning process(Levvit,2017). The findings are also consistent with those of the study conducted by Kirk et al (2019), that CBR offers assistive hearing devices like hearing aids, computers and FM systems to amplify sounds for those learners with hard of hearing.

The findings from the data and the previous studies indicate that assistive technologies for learners with hearing impairments are crucial in facilitating communication, enhancing learning experiences, and ensuring accessibility in educational settings. For these reasons, assistive technologies in inclusive schools become important to ensure engagement, participation, and improve the academic performance of learners with hearing impairment.

Sign Language Interpretation Services

Sign language interpretation is another community-based rehabilitation service that is offered by voluntary organizations in inclusive secondary schools. One teacher from school Y narrated:

> Voluntary organizations working with our school offer sign language interpretation services to all learners, including those with hearing impairment, in classrooms. (**Transcript of interviews with a teacher, YT1)**.

Officials from the voluntary organizations revealed that sign language interpretation is provided to inclusive secondary schools to enhance access to information, engagement, participation, retention and academic performance of learners with hearing impairments. An officer from one voluntary organization offering CBR services to school Y narrated that:

> Currently, we have employed sign language interpreters who are professional teachers with bachelor's degrees and are always in classrooms for interpretation. (**Transcript of an interview with an official from a voluntary organization, YCBR1).**

The two statements above indicate that interpretation services are provided to enhance accessibility to information. Sign language interpreters are also teaching because they are professional teachers.

The issue of sustainability and continuity in the provision of CBR services in inclusive schools emerged. Though voluntary organizations work to complement the government in implementing inclusive education, the data have shown that the government does not make any succession plan to ensure continuity of the projects and services in inclusive schools. Once the CBR project is over, no continuation of CBR services like sign language interpretations to LwHI. To attest to this, an official from one voluntary organization narrated that:

> Sustainability and continuation of CBR services to learners with disabilities are significant because they need continuous drilling and access to information through an adapted measure; however, the government is always silent on employment of sign language interpreters'' **(transcription of an interview with an official from the organization, YCBR1**).

Another official lamented that:

> Government leaders take the issue of inclusive education lightly; they just promise to continue providing sign language interpretation services to LwHI to complement voluntary organization and yet fail to fulfil their promises'' **(transcription of an interview with an official from an organization, YCBR2**).

Another pertinent issue in relation to sign language interpretations in inclusive schools emerged. Participants added that despite the provision of sign language interpretations in schools, sign language interpretation services get stuck because of variations, which creates psychological and social problems for LwHI. To attest to this, one participant added that:

> There is a language barrier because LwHI have different backgrounds in terms of sign language, this makes teachers and sign language interpreters take time to teach standard sign language for effective communication. When learners fail to comprehend during lessons, it creates mistrust, lack of confidence and isolation **(transcription of interview with official from organization, YCBR1**).

The quotes above indicate that sign language interpretation in inclusive secondary schools face challenges due to sign language variations in primary schools.

Specific findings from schools' X and Y indicate that organizations have employed professional teachers as sign language interpreters who can handle the pre- and post-teaching sessions for learners with hearing impairment. Furthermore, sign language has shaped school culture as it is used for communication in and out of the classroom.

The findings are also in line with Mertens and Recker (2018), who found that sign language services are provided and serve deaf students and facilitate classroom communication. Interpreters assist during tests, quizzes, and formative assessments, ensuring the learners can demonstrate knowledge without language barriers. For many Deaf or hard-of-hearing learners, sign language is a first language and sign language interpretation facilitates the development of cognitive and linguistic skills by providing access to complex concepts and vocabulary. Makunja and Mndemu (2020) also found that sign language services are provided to LwHI in inclusive schools in Tanzania, though there are divergent dialects, limited resources and a lack of official recognition that hinders their unification. Variation of sign language in primary schools becomes a challenge in secondary schools when form one students from across the country are enrolled for the first time. This finding is in line with Chimusa (2019), who observes that there is little integration of standardized sign language in primary schools in Tanzania. The findings from the data and the previous studies indicate that sign language interpretation services are provided to allow learners to access lessons, participate in discussions, and understand teacher explanations as they occur. Interpreters assist during tests, quizzes, and formative assessments, ensuring the learners can demonstrate knowledge without language barriers.

Instructional Materials

It was found that instructional materials mostly provided include visual aids like ready-made charts, diagrams, images and pictures, flow charts and written materials like textbooks, dictionaries and encyclopedias. To attest this, one teacher from school X narrated that:

> The church, as the owner of the school, offers instructional materials like charts, diagrams and images as visual aids and written materials like textbooks and encyclopedias, which improve comprehension and retention of information. The aim is to enable LwHI to access information in classes (**Transcript of an interview with a teacher, XT1).**

One teacher, however, noted that some instructional materials are not provided. The teacher said that:

> Despite the effort to provide instructional materials, sometimes the organizations lack funds to buy the very important materials, and the ones we have cannot tally with the number of students due to the influx of students with hearing impairments from special schools (**Transcript of an interview with a teacher, YT1).**

The above quotes from teachers (XTI and YT1) indicate that charts, diagrams, images, and written materials like textbooks, dictionaries, flow charts and encyclopedias are the common instructional materials used. The findings reveal that voluntary organizations supplement the government in implementing inclusive education.

Officials from the voluntary organizations, who are the service providers, were also interviewed, and one reported that:

> Our organization also offers instructional materials to ensure that learners with hearing impairment can access the information in classrooms. We normally offer charts, diagrams and images as visual aids and written materials like textbooks, dictionaries, flow charts, encyclopedias and videos with captions, which are useful for instruction. We sometimes offer manuals for the hands-on activities like shoe making games and sports, and gardening (**Transcript of an interview with official from a voluntary organization, YCBR2).**

In responding to the issue of instructional materials, pertinent issues emerged that the sustainability of CBR projects is a challenge because the government is silent when it comes to supporting these organizations in times of financial crisis. To attest this, one participant added that:

> Insufficient funds to buy instructional materials is a challenge because resources are scarce and needs are so many because the number of LwHI is always increasing. Our projects are scheduled for two to four years, and the budget in the proposal is the one to be followed. When needs increase, we fail to provide accordingly **(transcription of interview with an official from the organization, YCBR1**).

Another official from a voluntary organization working with school X added that:

> Church as a Faith Based Organization(FBO) offers instructional materials to meet learning needs of our learners, but sometimes runs a shortage of fund. This is a challenge especially for the purchase of laboratory reagents, equipment and chemicals and repair of infrastructures **(transcription of interview with an official from the organization, XCBR1**).

Learners with hearing impairment as the beneficiaries of instructional materials, were also interviewed in a focus group discussion. Their findings are in agreement with officials from the voluntary Organizations as follows:

> Finnish Special Education Africa and Achraf Hakimi Foundation offers instructional materials like diagrams, pictures, maps, charts, flow charts, textbooks, sign language dictionaries and practical manuals for Biology, Geography, Chemistry and Physics subject. (**Transcript of a Focus Group Discussion with LwHI from school Y).**

In a similar perspective, learners with hearing impairment from school X had similar views with their colleges from school Y as follows:

> The church has also provided computers, projectors and soft wares to change speech into texts. Also, it provides text books, diagrams, atlas, charts, dictionaries and practical manuals and periodicals to enable learners to learn using their eyes to enhance access to information (**Transcript of a Focus Group Discussion with LwHI from school X).**

From the quotes above, it can be established that learners with hearing impairment are provided with visual media and graphic organizers to access information and participate in the learning process. The researcher observed the instructional materials from the classrooms and libraries and found various charts, maps, pictures for different subjects' torsos for biology subject, graphic organizers and text books. The researcher observed videos with captions in the computer laboratory where LwHI use them during lessons and their private studies.

The findings above corroborate Smith's (2021) study, which found that visual aids like diagrams, charts, and pictures are provided to improve the understanding and retention of information among learners with hearing impairment. The findings also align with those of Neumann and Neumann (2021), who state that visual media are always provided to increase engagement and motivation, as learners with hearing impairments benefit from visual aids and create more abstract concepts. The researcher suggests that when used effectively, visual aids activate the visual cortex and make it easy to associate the signs and the information written or displayed on the board.

The findings attest to the study by Adams (2023) that the use of graphic organizers and educational apps like the one that converts speech to text engages learners, improves comprehension and retention of information among learners with hearing impairment. Flow charts and maps enable the cognitive part and the visual cortex to work together to enhance writing and reading comprehension among learners with hearing impairment.

The findings are also in agreement with Kouroupos and Koutsouba (2021), who contend that the use of various instructional materials increases students' engagement and motivation and caters to the diverse learning needs and learning styles of learners with hearing impairment.

Development of Infrastructures

Learners with hearing impairment need an infrastructure that enables them to access information like their hearing peers.

The infrastructures mentioned by the participants include classrooms, visual alert systems, accessible out-of-class areas, technological infrastructure, and designed spaces for sign language interpreters and resource rooms with relevant equipment and specialists. The said infrastructure exists in schools, and teachers use it in teaching learners with hearing impairment. One teacher from school Y had the following to say:

> As you can see construction of infrastructure is handled by the government itself. Our classrooms are spacious only but they lack sound-absorbing materials. We have active fire alarms and signals, and projectors are fixed in classrooms to enable learners with hearing impairment to access information through visualization easily and participate in the learning processes. (**Transcript of an interview with a teacher, YT1).**

Similarly, a teacher from school X had this to say:

> So the infrastructure you see in this school is the work done by the Catholic Church diocese of Moshi. Resource rooms, user-friendly pathways, playgrounds, classrooms, dormitories, projectors fixed in classrooms, and universally designed toilets for all learners, including those with hearing impairment (**Transcript of an interview with a teacher, XT1).**

The quotes above imply that infrastructure development in school Y is handled by the government, while in school X is handled by the church which is the voluntary organization. The data above show that one organization, which owns a school (X), constructs infrastructures from building classrooms to providing technological infrastructures that enhance access to information for learners with hearing impairment. On the other hand, an organization working with School Y offers assistive technologies in the existing classrooms.

A learner with hearing impairment from school Y had this to say:

> We have well-varnished and accessible classrooms, toilets, and dormitories that can be used by all students regardless of the type of disability. Everywhere you pass in this school, there are emergency signals. Our classrooms have well-fixed projectors which can support videos with captions and a well-equipped resource room for speech and language therapists. (**Transcript of FGD with learner with hearing impairment from school Y).**

On the same point, another learner with hearing impairment from school X narrated that:

> The Roman Catholic Church Diocese of Moshi has provided us with classrooms, dormitories, and playgrounds. The classrooms are spacious and designed to be inclusive, featuring designated space for a sign language interpreter, noise-reducing windows, large black and white boards, few computers with speech-to- text apps, video and caption compatibility, and accessible pathways. (**Transcript of FGD with learner with hearing impairment from school X).**

The findings from learners with hearing impairment complement what has been said by teachers and officials from the voluntary organizations. Learners commend that there are alert systems and well-designed pathways to enable them to move away from danger at times of danger and emergencies.

The findings concur with Robinson, Lee, and Martinez (2022), who argued that alert systems are mandatory to ensure the safety and informed participation of students with hearing impairments in an inclusive educational setting, specifically on visual alert systems that help students to attend critical sounds like fire alarms or announcements. In the same view, Gonzalez et al. (2020) argued that accessible pathways are also mandatory and crucial for promoting independence, safety, and participation among all students, particularly those with hearing impairments who rely on visual cues and straightforward navigation incorporating visual indicators, such as floor markings or colour-coded pathways, to assist students with hearing impairments in understanding their environment.

The findings are also consistent with Kretzschmar et al (2016) that classroom design for students with hearing impairments needs to be user-friendly. The arrangement of desks and seating that is suitable for all learners, including those with hearing impairments, is significant. The findings reveal that infrastructure-as-a-service is provided by voluntary organisations and the government in inclusive secondary schools in Tanzania. Specific findings from schools' X and Y indicate that they have smart technology classrooms and are spacious enough. Furthermore, the school's owner is responsible for constructing the building infrastructure. The great message is that there should be adaptations from the time of designing the learning environment, like classrooms, resource rooms and the technological infrastructures, teaching methods and strategies and evaluation strategies.

How CBR Services are provided in inclusive secondary schools that enrol learners with Hearing Impairment

Regarding objective one, the approaches of providing the CBR services, the data revealed that CBR services are provided through the individual, categorical, and whole-school approaches. Table 5.2 shows the summary of the identified approaches and their important quotes.

Table 5.2 Approaches of Providing CBR Services in Inclusive Schools

Theme	Sub-themes	Categories
Approaches to CBR services	Whole school	Sign language training for all students, teachers, and staff (by organizations like FINISH SPECIAL EDUCATION)
	Individualized	Customized plans considering different disabilities; groupings based on communication needs (deaf, hard of hearing, etc.)
	Categorical	Separate interventions for different disabilities (e.g., deaf vs. hard of hearing, visual impairment, autism, physical disabilities)

Source: Field data (2025)

Whole School Approach

Information about the approaches that voluntary Organizations use to offer Community-Based Rehabilitation (CBR) services was collected through interviews with all teachers and officials and focus group discussions with learners with hearing impairment involved in this study. The study revealed that services are provided through the whole school approach. To attest this, one teacher from school Y had this to say:

> Some organizations provide CBR services to all learners to ensure total inclusion. This is a whole-school approach because an organization like Finish Special Education Africa trains all students on sign language. The organization, trains teachers, students, and non-teaching staff on sign language to enhance inclusion in a school (**Transcript of interview with a teacher, YT1)**.

In the same vein, another teacher from school Y explained:

> Some students have multiple disabilities, so these Organizations consider all learners and offer the necessary intervention to ensure inclusion. For instance, Finish Special Education Africa trains all learners in this school in sign language. Achraf Hakim Foundation offered computers and projectors that are useful to all learners. This makes it a whole school approach (**Transcript from interview with a teacher, YT3)**.

The quotes from teachers suggest that, though some services are targeted to a specific group of learners, voluntary Organizations and the entire school provide for all learners as a strategy to ensure inclusion. All 08 teachers from two schools reported that sign language services in their schools are provided to all learners and taught as a compulsory subject. On top of that, teachers disclosed that sign language interpreters train teachers and non-teaching staff in sign language.

Officials from voluntary Organizations as service providers were asked on the same issue, and one of them had this to say:

> Our organization (Finnish Special Education Africa) responds to the national strategy on inclusive education. We offer technological and sign language interpretation services to all learners, including those with other disabilities (**Transcript from interview with an official from the voluntary organization, YCBR1)**.

In the same vein, another official from a voluntary organization responded:

> Our organization provided computers and projectors and levelled the football ground to be used by all students, including those with hearing impairment. Computers, projectors and a football ground are for all students in school. Inclusion is meaningful when all learners use the services together in or out of the classroom. Sign language interpreters also train teachers and non-teaching staff, like accountants, school drivers and cooks in sign language. (**Transcript from interview with an official from the voluntary organization, YCBR2)**.

The excerpts from voluntary organization officials indicate that the services they offer are universally designed so that whoever is in the concerned school can easily access and use them. The computers provided are universally designed to be used by non-teaching staff. Cooks, bursars, and nurses are also trained in sign language to serve learners with hearing impairment.

A learner with hearing impairment from school Y, as a beneficiary of inclusion, reported that:

> Finnish Education Africa offered maps, atlases, pictures, diagrams, and charts that are useful in biology, geography, chemistry, and physics, and they benefit all learners in our classroom. Achraf Hakim brought computers for all students, and they levelled our football pitch so that all students could use it. Even the school nurse, secretary and regular teachers were trained on sign language to enable them to offer services to us (**Transcript of FGD with LwHI from school Y)**.

Similarly, a learner with hearing impairment from school X explained that:

> Church, as an organization, provides assistive technologies like computers and projectors to be used by all students. Our dormitories and classrooms were constructed in such a way that it accommodates all students. We sleep in the same dormitory and study in the same classroom despite our disabilities. Sign language interpretation services is provided to the whole school (I mean students, teachers and non-teaching staffs) and all students must learn sign language as a compulsory subject (**Transcript of FGD with LwHI from school X)**.

Quotes from learners with hearing impairments indicate that all learners are the beneficiaries of the CBR services regardless of their learning needs. The instructional materials, such as diagrams, charts, and maps, are universally designed, and one teacher can use them to teach a whole class that consists of learners with various abilities. Sign language interpretation services benefit everyone in the class.

Generally, the data reveal that community-based rehabilitation services are offered to the whole school as they cut across the learners with different learning needs, teachers, and non-teaching staff. The most mentioned services are sign language and interpretation services provided to the entire school in a holistic manner. Learners with hearing impairment reported that their schools made sign language the language of communication in and out of the classroom to enhance inclusion. Inclusive schools that enroll LwHI need to use sign language as a language of instructions due to the following reasons: first, sign language is an important service as it enhances visual support to LwHI and second, sign language simplifies communication, social development and peer relationships (Mertens &Recker,2018; Stinson,2019).

In practice, the languages of communication in regular schools are Kiswahili and English. However, in these modal-inclusive schools, the administrators have agreed that sign language should be the language of

communication. This implies that sign language has changed the school culture, and the school environment forces everyone to learn and use sign language. These findings agree with López-López et al. (2017) that systemic changes within the entire school framework bring about an effective and whole school approach to inclusion in a school. Making sign language a language of communication implies that the systemic changes have impacted the school culture and created opportunities for learners with hearing impairment to work together and cooperate with peers in a unified community.

The findings of this study also align with Kang and Kim (2019), who argue that a whole-school approach enables CBR officials to consider training both teachers and non-teaching staff to foster consistent communication, improve staff collaboration, and improve inclusion. Likewise, Osei-Tutu et al. (2021) also note that a whole-school approach emphasizes the development and use of shared sign language among members of the school communities.

The findings from the data and the previous studies imply that a whole school approach to service provision may ensure access to information for all learners, including those with hearing impairment, because all learners can use sign language. Provision of equal services may enable peers (the hearing ones) to develop positive attitudes towards inclusion and disability. Furthermore, equitable access to instruction may improve the social acceptability and academic performance of LwHI in inclusive schools.

Individualized Approach

Learners with hearing impairment have different learning needs depending on their strengths and weaknesses. CBR targets to intervene special learning needs of a learner. To attest this, one teacher from school Y had this to say:

> Some of the skills need an individualized plan because you can see these students here as hearing impaired, but each has different learning needs. Having more than one disability is also a challenge that causes variations in learning needs among them. We normally plan to meet individual learning needs (**Transcript of interview with a teacher, YT1)**.

Another teacher from school X had this to say:

> Inclusive classrooms have learners with variabilities. Though we use universal design of learning principles to teach them, there comes a time to use the individualized strategy for the extreme cases. (**Transcript of interview with a teacher, XT2)**.

The quotes from teachers indicate that services are provided through an individualized approach. The reason is that learners with hearing impairment have different learning needs. Within the group of learners with hearing impairment, some are slow learners, and others have difficulties interacting with others. Teachers noted that inclusive classes have learners with various variabilities; these variabilities call for differentiated instructions, teaching and assessment strategies.

Officials from the voluntary organizations, who are the service providers, were also interviewed about the approaches they use to provide school services. One official reported that:

> Sometimes, we consider individual learners due to their backgrounds, severity, and intellectual capacity. Sign language training is sometimes done individually because of these factors. Some can learn faster, while others cannot. We sit with teachers and our sign language specialists to plan interventions for individual learners (**Transcript of interview official from voluntary organization, YCBR1)**.

Another official from a voluntary organization explained that:

> In some instances, we find that some learners with hearing impairment cannot move at the same pace as their peers because of their low intellect and health condition. In this case, teachers plan for the individualized plan (**Transcript of interviews with an official from a voluntary organization, XCBR1**)

The quotes from officials from voluntary organizations show that the backgrounds of the learner in terms of severity of disabilities and intellectual capability are the factors for individualized approaches to service provisions. Teachers identify and assess learners when they join the school for the first time. To attest this, one teacher explained that:

> The background information about the student helps us (teachers) to do a learning assessment, i.e can she/he write, whether good in sign language or lip reading. If the student reports without any information from either the previous school or hospital, we refer him/her to the hospital for medical assessment. The identification and assessment form is a roadmap to the teaching and learning of a particular learner (**Transcript of interview with a teacher, XT1)**.

For an effective individualized approach to service provision, teachers, parents, psychologists, speech therapists, and counsellors should plan together on the goals to achieve and propose the appropriate strategies. This implies that teachers assess the learner to plan for the appropriate intervention. The researcher received similar responses from six participants, YT2, YT3, YT4, XT3, XT4 and YCBR2, that learners with hearing impairment are different and sometimes they need a personalized or individualized education plan (IEP) with specific goals set, targeted services and relevant accommodations to a learner. Learners with hearing impairment, as the beneficiaries of the approaches, were also interviewed in groups. One learner from school Y narrated that:

> Some learners require individualized intervention. They take more time and learn very little. Some learners can take time to learn the signs used in this school until teachers take extra time to teach them separately. Sometimes they say those few learners with hearing impairment also have cognitive disabilities (**Transcript of FGD with LwHI from school Y)**.

Another learner from school X reported that:

> Those who fail to learn sign language after one term are likely to see their parents coming to school to talk to teachers and the student him/herself, and then see they are trained individually. After some time, they master sign language and continue to communicate (**Transcript of FGD with LwHI from school X)**.

The quotes from learners with hearing impairment indicate that an individualized approach is provided to specific groups of learners in their schools. The low achievers who cannot manage to cope with the subject teacher and sign language interpreters' pace in the normal sessions and those who fail to master sign language for more than one term find it difficult to interact with peers. Based on the data, learners with hearing impairment seem to be familiar with the factors for an effective individualized approach to service provision. They confidently disclosed that the approach involves teachers, parents and the learner him /herself in planning the goals to achieve and the appropriate teaching strategies to use.

The overall findings are consistent with Holt and Leavitt (2013), who observe that individualized approach is effective when teachers have identified the learners' weaknesses and strengths, set goals to attain and the possible instructional strategies. The findings also agree with Munyiri and Karanja (2019) that individualized approach always focuses on the specific learning needs. The findings also concur with Verhoeven (2015), who found that individualized approach is effective if the plan made touches modification of contents, teaching strategies and assessment to meet the individual learning needs. From the same perspective, the interactive instructional materials and technologies play a significant role because when they are tailored, they can meet the learning needs of many individuals in an inclusive class.

The findings from the data and the previous studies indicate that individualized approach is applied after realizing the weaknesses and strengths of a learner. Major focus should be on curriculum modifications with the simplified language, extension of time for tasks and the assessment by considering the relevant alternative format, provision of sign language interpreters and extension of time for examinations.

Categorical Approach

The categorical approach targets to provide specialized services based on distinct categories of disabilities. The benefit of a categorical approach in the provision of services is that learners engage with peers who experience similar challenges, and this may enhance social and academic support. To attest this, one teacher narrated that:

> Some of the services, like hearing aids, lip reading, mouthing, and signing, are too categorical. We normally put those as one identified learning need in one category and make interventions. We cannot mix up deaf and hard of hearing when we teach them lip reading and mouthing. We cannot fix hearing aids for the deaf as well (**Transcript of interview with a teacher, YT2)**.

Another teacher from school X had this to say:

> The practice is that each category, let's say Albinos, receives sunblock lotion this week, learners with hard of hearing receive hearing aids and training on lip reading in the coming month, and those with physical disabilities receive wheelchairs or maintenance on another day (**Transcript of interview with a teacher, XT2)**.

The above excerpts indicate that teachers use categorical approach of offering the CBR services to learners with hearing impairment. The argument is that they are in one group of hearing impairment, but due to diverse learning needs, they are in categories. Hard of hearing learners benefit from lip reading, hearing aids and signs, while the deaf benefit from signs. This calls for categorization in service provision, where categories are formed after identification and assessment. Other teachers stated that in an inclusive school, hearing impairment is considered as one category, visually impaired and physically impaired as other categories, with specific provisions.

Furthermore, concerning the categorical approach they use to offer community-based rehabilitation services, an official from one voluntary organization explained that:

> As an organization, we know that learners with hearing impairment are divided into two categories: deaf and hard of hearing. Sometimes, we provide services categorically; for example, hearing aids and lip-reading services are for the hard of hearing, and sign language is for both the deaf and hard of hearing (**Transcript of interview official from voluntary organization, YCBR1)**.

In the same vein, an official from another organization reported that:

> We offer technological devices like hearing aids to learners who are hard of hearing, only because this category can benefit from them. Learners who are deaf depend entirely on sign language, while their counterparts benefit from hearing aids for sound amplification, lip reading, and signs (**Transcript of interview official from voluntary organization, XCBR1)**.

The quotes from officials from voluntary organizations show that services are categorized to meet the learning needs of each learner. Though some of the provisions, like sign language interpretations, are for all learners, teachers make more efforts to teach those who benefit, with sign language only as the priority. The researcher received similar responses from seven participants: YT1, YT3, YT4, XT1, XT3, XT4, and Y CBR2. These participants reported that learners with hearing impairment are categorized into deaf and hard of hearing. They are categorized to allow easy planning and provision of reasonable accommodation specific to the learning needs of a learner. For example, the deaf can benefit from signs and body language, while the hard of hearing can benefit from both sign languages, body language and lip reading.

A learner with hearing impairment from school Y, who is the beneficiary of the specialized services, also had similar explanations during a focus group discussion, said:

> Though we are all learners with hearing impairment, we are in categories. One day, our teacher started teaching our fellows who are hard of hearing to speak using videos and small mirrors, but not for us, who are totally deaf. He said we leave it for our fellows who have a small amount of hearing. The following day, they were given hearing aids, but not us, because they can hear using the residual hearing (**Transcript of FGD with LwHI from school Y)**.

A learner with hearing impairment from school X also disclosed that:

> Learners who are hard of hearing benefit more than those who are deaf. They are given hearing aids and taught to speak and lip-read because they hear little sounds. I asked my teacher one day why they were not providing us with hearing aids, and they said that we are deaf, and our fellows have the ability to hear once given those aids, it is given according to medical doctors' descriptions (**Transcript of FGD with LwHI from school X)**.

The quotes from learners with hearing impairment indicate that services are provided according to categories because of their differences in learning needs. For example, our fellows who are hard of hearing can hear once given hearing aids, and they can also lip read because they have hearing residues.

The theoretical implication of these findings is that the team of experts to develop the tailored instructions may include a decision maker at the school level who will ensure that there is equity in resource allocation and support the concerned category. All these align with the social model of disability, with the view that decision-makers will advocate for systemic changes to remove barriers and provide equal opportunities to all learners in a school.

The findings of this study are consistent with the findings of many studies. For example, Wang et al. (2019) found that tailoring interventions to meet the categorical needs of learners enables LwHI to improve communication skills. The statement that teachers are conversant with the categorical approach is in agreement with Garcia et al. (2021) that teachers are trained on a specific category, like hearing impairment, with its sub-categories, so when it comes to dealing with one sub-category, they effectively engage learners and their unique challenges.

The finding that CBR services are provided categorically aligns with Nguyen and Zhao (2022), who pointed out that a categorical approach in CBR services enhances the physical and social learning environment by cultivating a more positive and conducive learning atmosphere. A categorical approach to service provision

comes in when teachers have identified and assessed learners with hearing impairment. The strengths and weaknesses identified call for a team of a broad spectrum of actors, including teachers, administrators, and counsellors, to develop tailored interventions (Jones and Smith,2020). The categorized approach is like a combination of many individualized approaches where learners with hearing impairment are put in categories depending on communication challenges, i.e. hard of hearing versus deaf, those who need hearing aids versus cochlear implant, and those who require speech-to-text apps versus those who need sound implications. Importantly, teachers need to set clear categorical boundaries to ensure that each category goals are achieved and establish a cross category collaboration to ensure inclusion.

6.0 CONCLUSIONS

Regarding objective one, it has been revealed that voluntary organizations and government agencies provide sign language interpretation services, instructional materials, infrastructure development (both physical and technological), and school fee subsidies as CBR services in inclusive secondary schools in Tanzania. The descriptions of the provided services are as follows:

First, the study reveals that the use of instructional materials allows all learners to concentrate on one task as a group and easily learn under cooperative perspectives. It was further revealed that visual instructional materials like diagrams and charts enable learners with hearing impairments to concretize abstract concepts.

Second, CBR services, like the provision and use of assistive technologies like captioned videos and sign language interpretations from competent interpreters, allow learners with hearing impairment to easily engage and participate in the learning process.

Third, sign language interpretations, assistive technologies, instructional materials and relevant infrastructures increase enrolment, retention, increase engagement and participation in the learning process, and improve the academic performance of LwHI.

Fourth, voluntary organizations through CBR programs train teachers on sign language, inclusive teaching and assessment strategies, and on the use and maintenance of high assistive technologies (computers, projectors and interactive boards) and low assistive technologies (hearing aids) for LwHI in inclusive schools.

Regarding objective two, it was concluded that Community-Based Rehabilitation services are offered at the group level (whole-school), at the individual level, and by category of need, depending on the learner's severity. This determines the ways of engaging the learner, representing the concepts and how they can express their understanding. The type of disability also determines the required interventions. The descriptions of the approaches used to provide CBR services are as follows;

First, the Whole School Approach (WSA) to inclusive education emphasizes that inclusion is not just the responsibility of a single department or a special program, but a shared, systemic effort across the entire school community. It involves leadership, teaching and learning, environment, health and well-being, and family engagement working in harmony to ensure that all learners, including those with disabilities or additional needs, can participate meaningfully and succeed.

Second, learners are categorized for eligibility (e.g., deaf, hard of hearing, unilateral, bilateral hearing loss). Each category has tailored interventions, but there is a cross-category collaboration team to ensure inclusive planning and avoid fragmentation. A categorical approach to providing CBR services in inclusive schools enhances accountability, equity in resource allocation, and easier monitoring of progress for each category.

Third, an individualized educational approach focuses on tailoring teaching, supports, and accommodations to the unique needs of each learner, while keeping them in an inclusive setting. These approaches determine the ways of engaging the learner, representing the concepts and how they can express their understanding.

Of interest, however, is that several pertinent issues emerged through the research data findings. They are the issues that are useful to give attention to. These findings are on the challenges that voluntary organizations face

in implementing CBR services in inclusive schools. First, the findings have shown that the government does not make any succession plan to ensure continuity of the projects and services in inclusive schools. This implies that there is low political will and policy influence on the implementation of inclusive education. Second, the sustainability of CBR projects is a challenge because the government is silent when it comes to supporting these organizations in times of financial crisis. Third, sign language interpretation services get stuck because of variations across primary schools in the country, which creates communication, psychological and social problems for LwHI when they join form one for the first time.

7.0 RECOMMENDATIONS

Given that the CBR project stops when the voluntary organization finishes its tenure, it is recommended that: First, the government should sustain and ensure continuity of CBR projects in schools when voluntary organizations conclude their programs. Second, all primary schools should use standard Tanzanian Sign Language to eliminate challenges associated with language variation among form one learners with hearing impairment enrolled in inclusive schools. Third, whole school, individualized and categorical perspectives should be considered during extra teaching time to enhance participation and understanding of lesson concepts. The fourth one is on methodology, as this study was conducted in only two inclusive secondary schools, it employed the constructivist paradigm and the qualitative approach and involved teachers, LwHI and officials from voluntary organizations. Therefore, the study recommends the following for future research:

i. Future research should consider the pragmatism paradigm and mixed approaches to combine qualitative descriptions with quantitative data to better influence policy makers on the implementation of inclusive education in secondary schools that enrol learners with hearing impairment.

ii. Future research should include other participants, such as policymakers from district levels, be it Special Needs Educational Officers (SNEOs) or District Education Officers (DEOs) and parents of LwHI.

iii. The current study delved into inclusive secondary schools enrolling learners with hearing impairment. A similar study could be conducted in special secondary schools for learners with hearing impairment.

Conflict of Interests

The authors declare that there is no conflict of interest**.**

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