



## Challenges faced by teachers in teaching inclusive education at St. Charles Special School, Zambia

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### ABSTRACT

This study aimed to identify the challenges encountered by science teachers at St Charles Special School when delivering subject content to learners, with the goal of proposing possible solutions to enhance the quality of knowledge and skills acquired by students. This study is grounded in social constructivist theory. A case study design was adopted, guided by the following objectives: (1) to identify the challenges associated with teaching science at St Charles Special School, (2) to assess the impact of these challenges on the learning of pupils with hearing impairment, and (3) to explore suitable teaching strategies that accommodate both groups of learners in an inclusive school setting. Respondents were purposively selected from the target school. To achieve the stated objectives, ten teachers from the science department completed a questionnaire comprising Likert-scale and open-ended questions. Additionally, ten pupils, five of whom were hearing impaired, responded to a questionnaire with open-ended questions. Data were analysed using SPSS and Excel, with findings presented in tables and pie charts. The results indicate that inclusive educators encounter various barriers that impede effective delivery of knowledge and skills. The study found that science teachers and learners at St Charles Special School face significant challenges, including communication barriers in sign language, a shortage of trained special education teachers, limited teaching resources, and bullying, all of which negatively affect teaching effectiveness and learners' understanding and academic achievement. The study underscores the need for educators to take an active role in fostering student success by employing teaching strategies that support all learners.

**Keywords:** Challenges, Hearing Impaired, Inclusive Education, Impacts, Special School

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### I. INTRODUCTION

Inclusive education is the active participation of students with disabilities in a general education classroom full time with students without disabilities. Inclusive education is a strategy to promote effective universal education because it can create schools that are responsive to the actual needs of children and society. Thus, inclusive education ensures access and quality of education (Yusuf et al., 2018). This has been a recent trend in schools across the country. Schools such as St Charles special school In Solwezi, Zambia have adopted this kind of learning and taking measures to ensure every child gets an education regardless of their physical abilities. In schools today, teachers and students are under intense pressure to improve academic achievement because of the implementation of the No Child Left Behind Act (NCLB) in 2001. Teachers need to be committed to ensuring that all students are meeting state standards and achieving. Educators need to understand students' learning differences and accommodate these different learning styles in classroom instruction on a daily basis. Teachers must understand that inclusive education is part of development, and development must always be inclusive, which means that it must respond to the needs of real people (in this case the learners) who are all different. The goal of an inclusive education System is to provide all students with the most appropriate learning environments and opportunities for them to best achieve their potential.

All children can learn and reach their full potential given opportunity, effective teaching and appropriate resources (Azalde et al., 2020). According to Ferris State University, 'there is a range of inclusive teaching strategies that can assist all students to learn but there are some specific strategies that are useful in teaching a group which includes students with hearing impairment.' In considering alternative forms of assessment, equal opportunity is not a guaranteed outcome, but the Objective. 'Teachers are not expected to lower standards to accommodate students with disabilities, but rather are required to give them a reasonable opportunity to demonstrate what they have learnt' (Idol, 2006). Despite what other researchers have done at international level for example in Africa with particular reference to south Africa and Zambia to address the problem for learners with hearing impairment in order for them to learn



better, it seems that there are still challenges faced in the implementation of inclusive education for learners with hearing impairment.

Having interacted with most of the hearing impaired learners at St Charles special school gave the researcher much interest in wanting to find better ways that can incorporate them in the learning of science, and this is the reason this research is aimed at the challenges of teaching in an inclusive school like St Charles special school. This research will focus on finding out about certain methods and approaches that can help in the effective ways of teaching and learning in inclusive schools for learners with hearing impairment disability. It will focus on finding effective ways of teaching science to learners in an inclusive school which involves learners with hearing impairment. In this research the researcher must put into consideration the fact that learners with hearing impairment or rather the deaf cannot be taught with the same approach as the learners with no disabilities or impairments. Therefore, better ways of teaching must be achieved in order for them to enjoy the art of science.

### 1.1 Statement of the Problem

According to United Nations Educational Scientific and Cultural Organization [UNESCO], the fundamental principle of inclusive schooling is that all children should learn together whenever possible regardless of any difficulties or differences they may have (UNESCO, 1994). Therefore, this research seeks to identify the challenges of teaching science in an inclusive school like St Charles in Solwezi and find possible solutions to the problems. Teaching science at St. Charles Special School comes with real challenges, right now, no one is documenting these experiences. This study aims to address this gap by identifying the specific challenges these teachers face and developing practical, evidence-based recommendations to enhance science education at the school.

### 1.2 Research Objectives

- i. To identify the challenges encountered in teaching science at St Charles special school
- ii. To determine the impact of these challenges on the learning of pupils with hearing impairment
- iii. To find suitable ways of teaching science that will favour both types of learners in an inclusive school

### 1.3 Research Questions

- i. What challenges do the teachers of science at St Charles special school face when teaching?
- ii. How do these challenges impact on the learning of pupils with hearing impairment?
- iii. What are suitable ways of presenting science lessons to learners in an inclusive school that will favour both types of learners?

## II. LITERATURE REVIEW

### 2.1 Theoretical Review

This section presents the theoretical lens through which the challenges and practices of inclusive education at St. Charles Special School are examined.

#### 2.1.1 Social Constructivist Theory

This study is grounded in Social Constructivist Theory, which suggests that learning is a social process where students actively build understanding through interaction with others (Vygotsky, 1978). The theory emphasizes that with the right support from teachers or more capable peers, learners can grasp concepts they would not master alone. This is especially relevant for hearing-impaired students in a science classroom, as it highlights the importance of skilled teachers who can mediate complex ideas using sign language and visual tools, and the value of peer collaboration (Bruner, 1996). This framework helps us understand how barriers like language difficulties or social isolation can directly interfere with the learning process.

### 2.2 Empirical Review

This section reviews existing literature and studies related to the key objectives of this research. It explores what other scholars have found regarding the challenges of inclusive education, their impact on learners, and the strategies used to overcome them.

#### 2.2.1 Challenges of Teaching in an Inclusive Setting

A significant body of research confirms that implementing inclusive education comes with real, everyday difficulties. This directly relates to the study's first objective: to identify the challenges at St. Charles Special School. One of the most commonly reported barriers is the lack of resources. In Zambia, studies show that many schools lack accessible infrastructure, appropriate learning materials, and the specialized support services needed for learners with



disabilities (Zambia Agency for Persons with Disabilities, 2015). Inclusive education requires serious investment in assistive technologies, accessible textbooks, and support staff like teacher aides and therapists. (Azalde et al., 2020).

Teacher preparedness is another major issue. Research suggests many teachers do not feel equipped to teach learners with diverse needs. Teacher training programs in many African countries do not adequately prepare teachers for special educational needs (Kebede & Phasha, 2024). Similarly, international research shows that teachers often feel unsure of how to support students with disabilities and may not be familiar with teaching strategies that actually work (Sharma & Sokal, 2016; UNESCO, 2020). For science teachers at a special school, this challenge is even greater when trying to explain difficult scientific terms using sign language. Other practical challenges include large class sizes, not enough teaching materials, limited support staff, and the demanding task of creating individual lesson plans for learners with different abilities (Ramos, 2018). Teachers also have to manage behavioural and social issues while trying to keep everyone engaged. These pressures can wear teachers down and affect how well inclusive education works in practice. Attitudes also matter. How teachers, school leaders, parents, and students feel about inclusion can make or break it. Positive attitudes help inclusion succeed, while negative ones can push learners with disabilities to the margins (Rodriguez, 2018). Research shows that teachers who have little experience or training in special education often feel anxious and stressed when teaching students with disabilities (Vogel, 2016). School leadership is key here good principals create supportive environments where teachers can collaborate and keep learning how to teach more inclusively (Salisbury, 2006).

Parents' views also count. While parents of children with disabilities generally support inclusion, some parents of children without disabilities worry about whether the quality of education will suffer (Leyser & Kirk, 2004). Still, studies show that inclusive classrooms can benefit everyone students often become more empathetic, understanding, and accepting of differences when they learn alongside peers with disabilities (Ainscow, 2020).

### **2.2.2 Impact of Challenges on Learners with Hearing Impairment**

The struggles teachers face do not stay with them they affect students directly. This speaks to the study's second objective: to understand how these challenges impact pupils with hearing impairment. When teachers lack training or resources, they cannot always give learners with disabilities the support they need. This can leave these students feeling left out or overlooked in the classroom (Bagree & Lewis, 2013). If teachers are not well prepared, they may struggle to adjust their teaching to fit different learning needs. For hearing-impaired students, this can mean falling behind academically. If scientific terms cannot be clearly explained in sign language, or if lessons rely too much on lectures (Kumatongo & Muzata 2021), these learners are at a real disadvantage. The social side is just as important. Even though inclusive education is supposed to bring students together, poor support can actually push learners with disabilities to the edges. Tavares (2011) found that without proper support, students with disabilities can feel lonely and isolated. That said, when inclusion is done right, it can boost academic results, help students connect socially, and build positive attitudes toward diversity (UNESCO, 2020; Chitiyo & Muwana, 2018).

### **2.2.3 Suitable Teaching Strategies for Inclusive Science Classrooms**

The third objective of this study is to find practical ways of teaching that work for everyone. The literature points to several approaches that have shown promise. Teaching methods focused on the learner like group work, hands-on demonstrations, and project-based learning work much better for students with disabilities than traditional lectures. These approaches get students involved rather than just sitting and listening. (Kumatongo & Muzata, 2021), One useful framework is Universal Design for Learning (UDL), which encourages teachers to plan lessons from the start in ways that offer different options for engagement, presentation, and expression. This way, all students can access the material without teachers having to constantly make last-minute changes. In a science class with both hearing and hearing-impaired students, this might mean explaining a concept through words, pictures, and a practical activity all at once.

The European Agency for Development in Special Needs Education (2003) highlights strategies like cooperative learning, mixing students of different abilities in groups, and collaborative problem-solving. These approaches help students learn from each other and build social connections. Working together is essential. Collaboration among teachers, special education staff, parents, and other professionals helps everyone understand better what learners need and how to support them. This teamwork makes inclusive education stronger and more effective. Ultimately, research suggests that when inclusive strategies are used well like differentiated instruction and cooperative learning, everyone benefits. Students not only learn better but also grow in empathy and acceptance of others.



### III. METHODOLOGY

#### 3.1 Research Design

This study employed an action research design in the form of a single case study, with St. Charles Special School serving as the case. Action research is systematic inquiry conducted by educational stakeholders to gather information about how their particular schools operate, how they teach, and how well their students learn, with the goals of gaining insight, developing reflective practice, and effecting positive change in the school environment (Mills, 1999). This design was appropriate as the study sought not only to understand the challenges of teaching science in an inclusive setting but also to generate practical solutions that could be implemented at the school.

#### 3.2 Research Approach

The study adopted a mixed-methods approach, combining both quantitative and qualitative data collection and analysis. The research was largely qualitative in nature, capturing the lived experiences and perspectives of teachers and learners, but also incorporated quantitative data from structured questionnaires to identify patterns and strengthen findings through triangulation (Creswell & Creswell, 2018).

#### 3.3 Research Site

The research was conducted at St. Charles Special School in Solwezi, Zambia. This is a co-educational institution that enrolls learners with various disabilities, including hearing impairment, and operates both primary and secondary sections.

#### 3.4 Target Population

The target population comprised all science teachers at the secondary level (grades 8-12) and all learners in grade 12 at St. Charles Special School. The accessible population included all science department teachers (n=6) and all grade 12 learners enrolled during the data collection period.

#### 3.5 Sample and Sampling Technique

##### 3.5.1 Sample Size

Teachers: All 6 members of the science department participated in the study (census sampling). Learners: 10 grade 12 learners were selected, comprising 5 learners with hearing impairment from the special class and 5 learners without hearing impairment from the general education class.

##### 3.5.2 Sampling Technique

Purposive sampling was employed to select participants. This non-probability sampling technique involves deliberately choosing individuals based on their knowledge, experience, and ability to provide relevant information (Palinkas et al., 2015). The researcher selected grade 12 learners because they had the longest exposure to science instruction at the school and could provide informed perspectives. All science teachers were included due to the small size of the department.

#### 3.6 Data Collection Instruments

Two instruments were used for data collection:

*Questionnaires.* Self-administered questionnaires were developed for both teachers and learners. Questionnaires were selected because they allow for data collection from a relatively large sample, can be completed in the researcher's absence, and are cost-effective (Cohen et al., 2018). Separate questionnaires were designed for teachers and learners, with items tailored to each group's experience and literacy levels. Questions included both closed-ended items (for quantitative analysis) and open-ended items (for qualitative insights). *Interviews.* Semi-structured interviews were conducted with key informants, including the Head of Department for Science and selected teachers, to explore challenges and strategies in greater depth than questionnaires alone would permit.

#### 3.7 Data Collection Procedure

The following procedure was followed:

*Approval and Consent:* The researcher obtained written permission from the school head and the Head of Department for Science before commencing data collection. All participants were informed of the purpose of the study, procedures involved, their right to withdraw at any time, and how data would be used. *Questionnaire Administration:* Questionnaires were distributed to participating teachers and learners during normal school hours at a time agreed upon with the class teacher and Head of Department. The researcher was present to clarify questions where needed. For hearing-impaired learners, a sign language interpreter assisted in explaining the purpose of the



questionnaire and clarifying any items. *Interviews:* Interviews were scheduled at participants' convenience and conducted in a private setting within the school.

### 3.8 Data Analysis

Quantitative data from closed-ended questionnaire items were analysed using the Statistical Package for Social Sciences (SPSS) version [specify version]. Descriptive statistics, including frequencies, percentages, and measures of central tendency, were generated and presented using tables, bar graphs, and pie charts.

Qualitative data from open-ended questionnaire items and interviews were analyzed thematically. Responses were coded, categorized, and organized into themes that addressed the research objectives and questions. Direct quotations from participants are used in the findings chapter to illustrate key themes and preserve participant voices.

### 3.9 Ethical Considerations

All participants were fully informed about the purpose of the study, what participation entailed, and their right to withdraw without consequence. Written consent was obtained from adult participants and from parents/guardians for minor learners. Participants were assured that their identities would remain confidential. No names appear in this report; pseudonyms or participant codes are used where necessary. Data collection was conducted in private settings, and participants were not required to answer any questions they found uncomfortable. Institutional approval was obtained from the school administration before any data collection began. Participants were informed that the study aimed to benefit their school and similar institutions by generating recommendations to improve science teaching and learning.

### 3.10 Limitations of the Methodology

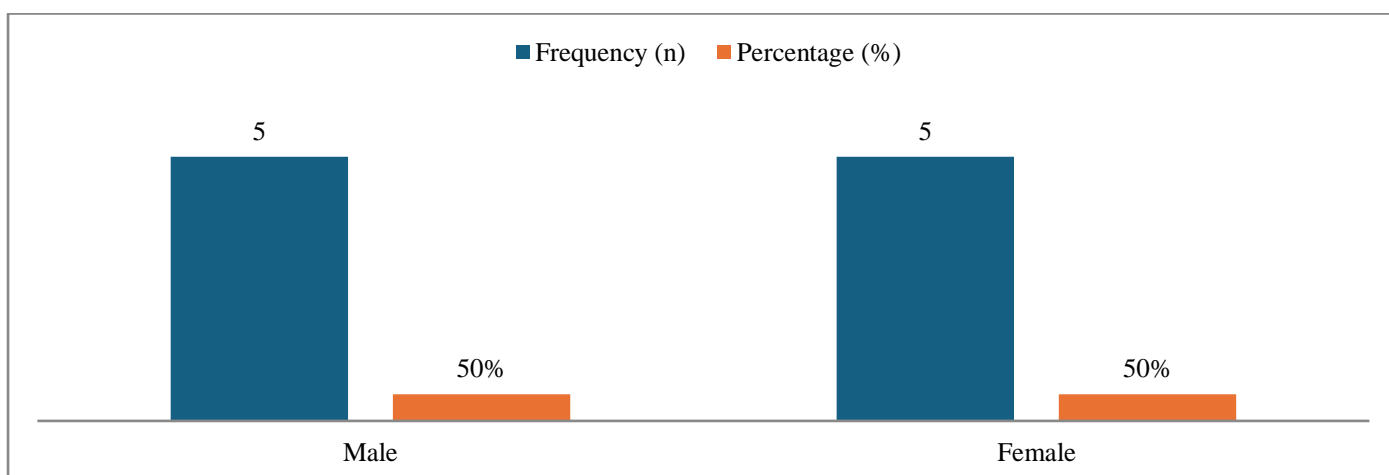
The following limitations are acknowledged: The small sample size, particularly of teachers, limits the generalizability of findings beyond St. Charles Special School. The use of purposive sampling may introduce selection bias. Self-reported data from questionnaires may be subject to social desirability bias. Communication with hearing-impaired learners required interpretation, which may have affected the nuance of their responses.

## IV. FINDINGS & DISCUSSIONS

### 4.1 Findings

#### 4.2 Demographic Characteristics of Respondents

**Gender Distribution of Pupils:** The pupil sample consisted of 10 grade 12 learners. As shown in Figure 1, 50% (n=5) were female and 50% (n=5) were male, providing a balanced gender representation.



**Figure 1**  
*Gender Distribution of Pupils*

**Physical Ability of Pupils:** Table 1 presents the distribution of pupils by physical ability. Of the 10 pupil respondents, 50% (n=5) were hearing impaired and 50% (n=5) were not hearing impaired.

**Table 1***Physical Ability of Pupils*

Response	Frequency	Percent
Valid Hearing Impaired	5	50.0
Not Hearing Impaired	5	50.0
<b>Total</b>	<b>10</b>	<b>100.0</b>

Gender Distribution of Teachers: Ten teachers from the science department participated in the study. Figure 2 shows that 40% (n=4) were male and 60% (n=6) were female. Physical Ability of Teachers: Table 2 indicates that 40% (n=4) of teachers in the science department have hearing impairment themselves, while 60% (n=6) do not.

**Table 2***Physical Ability of Teachers*

Response	Frequency	Percent
Valid Hearing Impaired	4	40.0
Not Hearing Impaired	6	60.0
<b>Total</b>	<b>10</b>	<b>100.0</b>

Teacher Qualifications in Special Education: Table 3 presents data on teacher qualifications. Eighty percent (n=8) of teachers are trained in special education, while 20% (n=2) are not.

**Table 3***Teachers Trained in Special Education*

Response	Frequency	Percent
Valid Yes	8	80.0
No	2	20.0
<b>Total</b>	<b>10</b>	<b>100.0</b>

**4.2.1 To Identify the Challenges Encountered in Teaching Science at St Charles Special School**

Teachers' Ability to Communicate Scientific Terms Using Sign Language: Table 4 shows teachers' self-assessment of their ability to communicate scientific terms in both spoken language and sign language.

**Table 4***Teachers' Ability to Communicate Scientific Terms Using Sign Language*

Response	Frequency	Percent
Valid Agree	6	60.0
Undecided	2	20.0
Disagree	1	10.0
Strongly Disagree	1	10.0
<b>Total</b>	<b>10</b>	<b>100.0</b>

Only 60% of teachers agreed that they can effectively communicate scientific terms in both spoken and sign languages. Twenty percent were undecided, 10% disagreed, and 10% strongly disagreed. Pupils' Difficulty in Understanding Scientific Terms: Table 5 presents teacher perceptions of whether hearing-impaired learners experience greater difficulty understanding scientific terms compared to their peers without hearing impairment.

**Table 5***Pupils with Hearing Impairment Have Difficulties Understanding Scientific Terms*

Response	Frequency	Percent
Valid Strongly Agree	8	80.0
Agree	2	20.0
<b>Total</b>	<b>10</b>	<b>100.0</b>

All teachers (100%) agreed that learners with hearing impairment have difficulties understanding scientific terms compared to those without, with 80% strongly agreeing and 20% agreeing. Teacher Preparation and Support for Inclusion: Table 6 shows teacher responses regarding whether general education teachers are adequately prepared and supported to include students with disabilities.



**Table 6**  
*Teachers Are Adequately Prepared and Supported for Inclusion*

Response	Frequency	Percent
Valid Strongly Agree	2	20.0
Agree	5	50.0
Undecided	1	10.0
Disagree	1	10.0
Strongly Disagree	1	10.0
<b>Total</b>	<b>10</b>	<b>100.0</b>

Seventy percent of teachers agreed that general education teachers are adequately prepared and supported for inclusion (20% strongly agreed, 50% agreed). Ten percent were undecided, while 20% disagreed (10% disagreed, 10% strongly disagreed). Qualitative Findings: Challenges Identified by Teachers: When asked open-endedly about challenges faced when delivering science lessons in an inclusive class, teachers provided the following responses: Language barrier (especially when trying to communicate scientific terms) Lack of learning and teaching materials Defining scientific terms to the hearing impaired is difficult Explaining difficult terminologies. Qualitative Findings: Challenges Identified by Pupils: When asked to state challenges they face in class when learning, pupils responded as follows: Failure to communicate effectively with fellow pupils (the deaf especially) Bullying from peers Failure to move at the same pace with the deaf pupils when learning. Pupils' Preference for Inclusive Classrooms: Seven out of ten pupils (70%) indicated they do not like being in an inclusive class, while only three (30%) responded positively.

#### 4.2.2 To Determine the Impact of these Challenges on the Learning of Pupils with Hearing Impairment

Behavioural Problems among Students with Disabilities: Table 7 shows teacher responses regarding whether students with disabilities demonstrate behaviour problems in the general education classroom.

**Table 7**  
*Students with Disabilities Demonstrate Behaviour Problems*

Response	Frequency	Percent
Valid Strongly Agree	1	10.0
Agree	2	20.0
Undecided	1	10.0
Disagree	6	60.0
<b>Total</b>	<b>10</b>	<b>100.0</b>

Sixty percent of teachers disagreed that students with disabilities demonstrate behaviour problems, while 30% agreed they do, and 10% were undecided. Cooperation and Participation in Inclusive Classrooms: Table 8 presents teacher perceptions of whether inclusive education encourages cooperation and participation among pupils.

**Table 8**  
*Inclusive Education Encourages Cooperation and Participation*

Response	Frequency	Percent
Valid Strongly Agree	4	40.0
Agree	5	50.0
Undecided	1	10.0
<b>Total</b>	<b>10</b>	<b>100.0</b>

Ninety percent of teachers agreed that inclusive education encourages cooperation and participation (40% strongly agreed, 50% agreed), while 10% were undecided. Time Demands on Teachers: Table 9 shows teacher responses regarding whether students with disabilities take up disproportionate teacher time.

**Table 9***Students with Disabilities Do Not Take Over Teachers' Time*

Response	Frequency	Percent
Valid Strongly Agree	3	30.0
Agree	2	20.0
Undecided	1	10.0
Disagree	3	30.0
Strongly Disagree	1	10.0
<b>Total</b>	<b>10</b>	<b>100.0</b>

Fifty percent of teachers agreed that students with disabilities do not take over their time, while 40% disagreed, and 10% were undecided. Additional Time and Attention Requirements: Table 10 presents teacher perceptions of whether hearing-impaired learners require additional time and attention, potentially disadvantaging students without disabilities.

**Table 10***Hearing-Impaired Pupils Require Additional Time and Attention*

Response	Frequency	Percent
Valid Strongly Agree	9	90.0
Agree	1	10.0
<b>Total</b>	<b>10</b>	<b>100.0</b>

All teachers (100%) agreed that learners with hearing impairment require additional time and attention, with 90% strongly agreeing and 10% agreeing. Teachers' Overall Experience: Table 11 shows whether teachers have had a positive experience teaching science at an inclusive school.

**Table 11***Teaching Science at This School Has Been a Positive Experience*

Response	Frequency	Percent
Valid Strongly Agree	3	30.0
Agree	4	40.0
Disagree	2	20.0
Total	9	90.0
Missing System	1	10.0
<b>Total</b>	<b>10</b>	<b>100.0</b>

Seventy percent of teachers reported a positive experience (30% strongly agreed, 40% agreed), while 20% disagreed, and one teacher (10%) did not respond.

#### 4.2.3 To Find Suitable Ways of Teaching Science that will Favour Both Types of Learners in an Inclusive School

Collaborative Teaching: Table 12 shows teacher perceptions of whether collaborative teaching helps in delivering science lessons.

**Table 12***Collaborative Teaching Helps in Delivering Science Lessons*

Response	Frequency	Percent
Valid Strongly Agree	6	60.0
Agree	3	30.0
Total	9	90.0
Missing System	1	10.0
<b>Total</b>	<b>10</b>	<b>100.0</b>

Ninety percent of teachers affirmed that collaborative teaching helps in delivering science lessons (60% strongly agreed, 30% agreed), while one teacher (10%) did not respond.



## Collaboration between Special and General Education Teachers

When asked whether special education and general education teachers collaborate to support students with disabilities, 100% of teachers responded “yes.” One teacher further stated:

*“Teamwork is one of the core values of our school, thus teachers work as one.”* (A teacher interviewed on 15<sup>th</sup> June 2025)

## Effective Teaching Methods Identified by Teachers

When asked about suitable teaching methods for inclusive science classrooms, teachers identified:

Demonstration, Field trips, Individualized activities, Hands-on experiments, Observation, Question and answer, Teacher exposition, Investigation, Teaching aids, and Total communication (combining sign language with oral instruction)

## Teacher Recommendations

Based on the teachers’ recommendations, many key areas were identified for improvement and action. These areas include Ensuring adequate teaching and learning materials at the school, providing adequate sign language training for teachers, and supplying more learning aids specifically designed for hearing-impaired learners. Additionally, the teachers requested for well-equipped laboratories and the recruitment of more trained special education teachers and assistants.

## 4.3 Discussion

### 4.3.1 To identify the challenges encountered in teaching science at St Charles special school

The study found that science teachers at St. Charles Special School face several interconnected challenges in inclusive classrooms, particularly in communication and professional preparedness. While 60% of teachers reported being able to communicate scientific terms using both spoken and sign language, 40% struggled, and all teachers agreed that learners with hearing impairments have greater difficulty understanding scientific concepts due to language barriers. This highlights communication as a major obstacle in science instruction, especially given the abstract nature of scientific terminology. Additionally, although 70% of teachers felt adequately prepared for inclusive teaching, a notable minority did not, with many calling for more training in sign language and improved teaching resources; this concern is further compounded by the fact that some teachers lack formal special education qualifications. Studies suggest many teachers do not feel equipped to teach learners with diverse needs, and teacher training programs in many African countries do not adequately prepare teachers for special educational needs (Kebede & Phasha, 2024). International research similarly shows that teachers often feel unsure of how to support students with disabilities and may not be familiar with teaching strategies that actually work (Sharma & Sokal, 2016; UNESCO, 2020). Research also indicates that teachers who have little experience or training in special education often feel anxious and stressed when teaching students with disabilities (Vogel, 2016).

**Resource Limitations:** Teachers identified lack of learning and teaching materials as a significant barrier. This practical constraint affects their ability to make science accessible to hearing-impaired learners, who benefit from visual and tactile learning resources. Without adequate materials, teachers struggle to translate abstract scientific concepts into accessible formats. This finding aligns with Zambian research showing that many schools lack accessible infrastructure, appropriate learning materials, and the specialized support services needed for learners with disabilities (Zambia Agency for Persons with Disabilities, 2015). Other practical challenges identified in the literature include large class sizes, not enough teaching materials, limited support staff, and the demanding task of creating individual lesson plans for learners with different abilities (Ramos, 2018).

**Attitudes and Learner Reported Challenges:** Pupils identified three main challenges: communication difficulties with deaf peers, bullying, and different learning paces. The finding that 70% of pupils do not like being in an inclusive class is particularly striking. This suggests that inclusion, as currently practiced, may be creating negative experiences for learners. Literature confirms that attitudes matter significantly. How teachers, school leaders, parents, and students feel about inclusion can make or break it. Positive attitudes help inclusion succeed, while negative ones can push learners with disabilities to the margins (Rodriguez, 2018). Students with hearing impairment face frustration when attempting tasks too complex for their current understanding, which defeats inclusion's purpose. Research indicates that when teachers devote additional attention to hearing-impaired learners, some parents of children without disabilities worry about whether the quality of education will suffer (Leyser & Kirk, 2004). However, studies also show that inclusive classrooms can benefit everyone—students often become more empathetic, understanding, and accepting of differences when they learn alongside peers with disabilities (Ainscow, 2020).

### 4.3.2 To determine the impact of these challenges on the learning of pupils with hearing impairment

The second objective examined how identified challenges impact the learning of pupils with hearing impairment. **Behavioural and Social Impacts:** While 60% of teachers disagreed that students with disabilities



demonstrate behaviour problems, the 30% who agreed suggest that behavioural challenges do emerge in some cases. Communication barriers and bullying likely contribute to frustration and withdrawal among affected learners. When students feel isolated or discriminated against, behavioural responses may follow. Literature supports that the struggles teachers face affect students directly. When teachers lack training or resources, they cannot always give learners with disabilities the support they need. This can leave these students feeling left out or overlooked in the classroom (Bagree & Lewis, 2013). Tavares (2011) found that without proper support, students with disabilities can feel lonely and isolated. Even though inclusive education is supposed to bring students together, poor support can actually push learners with disabilities to the edges.

The finding that 90% of teachers believe inclusive education encourages cooperation and participation is encouraging. However, this positive perception must be weighed against the 70% of pupils who reported not liking inclusive classrooms. There appears to be a disconnect between teacher beliefs about inclusion's benefits and learners' lived experiences. Literature indicates that when inclusion is done right, it can boost academic results, help students connect socially, and build positive attitudes toward diversity (UNESCO, 2020; Chitiyo & Muwana, 2018). Time and Attention Demands: The most striking finding in this section is that 100% of teachers agreed that hearing-impaired learners require additional time and attention, which can disadvantage students without disabilities. This confirms what literature identifies: implementing inclusion requires significant time, energy, and commitment from teachers. Teachers have to manage behavioural and social issues while trying to keep everyone engaged. These pressures can wear teachers down and affect how well inclusive education works in practice.

Teachers are tasked with addressing multiple learning styles and needs simultaneously, often without additional support staff or resources. The finding that 70% of teachers report positive overall experiences suggests resilience and commitment despite these challenges. School leadership plays a key role here—good principals create supportive environments where teachers can collaborate and keep learning how to teach more inclusively (Salisbury, 2006). Teacher Support as a Protective Factor: Encouragingly, 90% of pupils affirmed that teachers are supportive within the school setting. This support is crucial. When teachers create classrooms where differences are normalized and each student is valued, students with disabilities feel part of a learning community. Teacher support may buffer some negative impacts of the challenges identified, helping learners persist despite difficulties.

#### **4.3.3 To Find Suitable ways of Teaching Science that will Favour Both Types of Learners in an Inclusive School**

The third objective sought to identify suitable ways of presenting science lessons that benefit both hearing and hearing-impaired learners. Effective Teaching Methods: Teachers identified numerous effective strategies: demonstration, field trips, individualized activities, hands-on experiments, observation, question and answer, teacher exposition, investigation, teaching aids, and total communication (combining sign language with oral instruction). These methods align with literature on effective classroom practices for inclusive settings. The European Agency for Development in Special Needs Education (2003) highlights strategies like cooperative learning, mixing students of different abilities in groups, and collaborative problem-solving. These approaches help students learn from each other and build social connections. Teaching methods focused on the learner—like group work, hands-on demonstrations, and project-based learning—work much better for students with disabilities than traditional lectures. These approaches get students involved rather than just sitting and listening (Kumatongo & Muzata, 2021).

The emphasis on concrete, hands-on approaches is particularly significant for science education. Literature confirms that when inclusive strategies are used well, like differentiated instruction and cooperative learning, everyone benefits. Students not only learn better but also grow in empathy and acceptance of others (Ainscow, 2020). One useful framework from the literature is Universal Design for Learning (UDL), which encourages teachers to plan lessons from the start in ways that offer different options for engagement, presentation, and expression. In a science class with both hearing and hearing-impaired students, this might mean explaining a concept through words, pictures, and a practical activity all at once. The methods teachers at St. Charles report using reflect these principles. Collaborative Teaching: All teachers affirmed that collaborative teaching helps deliver science lessons effectively, with one teacher emphasizing teamwork as a core school value. Literature emphasizes that working together is essential. Collaboration among teachers, special education staff, parents, and other professionals helps everyone better understand what learners need and how to support them. This teamwork makes inclusive education stronger and more effective.

Individualized Planning and Recommendations: teachers reported varying approaches to individualized lesson planning. Literature acknowledges the demanding task of creating individual lesson plans for learners with different abilities (Ramos, 2018). Teachers' recommendations focus on practical supports: adequate teaching and learning materials, sign language training for teachers, more learning aids for hearing-impaired learners, equipped laboratories, and additional trained special education teachers. These recommendations align with literature calling for investment in assistive technologies, accessible textbooks, and support staff like teacher aides and therapists (Azalde et al., 2020)

## V. CONCLUSION & RECOMMENDATIONS

### 5.1 Conclusion

The Zambian government through the ministry of General Education has developed inclusive education policy to enable every child, without any form of discrimination to be educated in schools near to or within their communities, thus the endorsement of inclusive education. The main purpose of this study was to identify the challenges that teachers of science at St Charles special school encounter when delivering their subject topics to the learners to improve on the quality of knowledge the learners receive and also the skills they get.

From the findings of the research, it was discovered that teachers and pupils face a number of challenges in inclusive schools, some which are similar to those found in regular general classrooms. These challenges affect the performance and achievement of both teachers and pupils. For the teachers, the findings show that challenges like failure to communicate sign language to the deaf affects their lesson delivery especially when explaining scientific terms. This makes it hard for the hearing-impaired learners to understand certain concepts and also slows the learning process. The shortage of teachers trained in special education is a major challenge in the effective teaching in inclusive classes which poses as a threat in the quality of education that is offered to the learners. In addition, the shortage of teaching and learning materials/aids poses as a challenge in lesson delivery for teachers when teaching in inclusive classes. Pupils with hearing impairment have difficulties in understanding and the lack of teaching resources only makes it worse. Bullying is also one of the challenges that pupils encounter which strongly affect the learner's academic stance.

Educators must take an active role in ensuring students' success by utilizing teaching strategies that facilitate learning by all students and help create the appropriate, effective learning environment. This should be done without leaving any child behind in line with the 'No Child Left Behind Act' of 2001. Teachers need to be committed to ensuring that all students are meeting state standards and achieving. Educators need to understand students' learning differences and accommodate these different learning styles in classroom instruction on a daily basis. Teachers must understand that inclusive education is part of development, and development must always be inclusive, which means that it must respond to the needs of learners who are different in nature.

### 5.2 Recommendations

The core purpose of inclusive education is to change the education system and improve schools to better meet the diverse needs of all learners. However, inclusion in schools faces various challenges that hinder the effective delivery of knowledge and skills to learners. Based on the findings and discussion of the research, the following are the proposed recommendations: To ensure that adequate specialized teaching and learning materials are acquired by prioritizing funding for the education sector in inclusive schools. To train more teachers in special education needs education, including those persons with special needs (e.g., the deaf), and to deploy them to inclusive schools. To equip laboratories with the necessary equipment to facilitate the learning process. To review and strengthen school-based Continuing Professional Development (CPD) for all teachers. School leadership should fully support CPD areas to ensure that all teachers participate and collaborate. School management and class teachers must ensure that the school community is well informed about inclusive education to dispel certain misconceptions among learners and possibly parents. The school must develop clear and well-coordinated inclusive education policies and guidelines, which should be made available to all educational stakeholders.

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