

Language and Literacy Learning Experiences of Deaf Students in Multilingual Primary Teacher Education Classrooms in Zambia: A Case Study of Kitwe College of Education

Abstract

This study explored the language learning experiences and challenges faced by deaf students in multilingual classrooms at Kitwe College of Education, specifically within the Primary Teachers Diploma program. It examines how the language barriers in a curriculum designed primarily for hearing students impact deaf learners' literacy development. Using a case study approach, data were collected from focus group discussions, classroom observations, and document review, focusing on first, second, and third-year students. Stratified purposive sampling was employed to select 15 students from across the academic levels. Thematic analysis was used to identify key themes in language and literacy learning. The study highlights significant challenges related to auditory-based instruction, such as phonics and phonemic awareness, which are inaccessible to deaf students. The lack of consistent sign language interpreters and difficulties understanding English-based literacy instruction were recurring issues. Deaf students also struggled with reading fluency, grammar, and syntax. Peer teaching proved valuable, but adapting the Primary Literacy Program (PLP) for deaf students was challenging. Despite communication barriers, Zambian Sign Language (ZSL) and visual aids were helpful. The study calls for an inclusive educational environment by integrating ZSL into the curriculum, revising literacy strategies, and developing more inclusive assessment methods. Educational policy should be revised to better address the linguistic needs of deaf students, ensuring equitable access to learning opportunities.

Keywords: Deaf students, inclusive literacy education for deaf students, language learning, multilingual classrooms, literacy development.

1. Introduction

Inclusive education is a fundamental right, as emphasized in the United Nations Convention on the Rights of Persons with Disabilities (UNCRPD), which calls for equal access to quality education for all learners, including those with disabilities (United Nations, 2006). Despite these rights, deaf learners continue to face significant barriers in traditional educational systems that are primarily designed for hearing students, using spoken language as the medium of instruction (Marschark, Tang, & Knoors, 2014). The

core challenge for deaf students lies in the mismatch between their mode of communication, sign language, and the predominantly auditory-based instructional methods used in most educational settings. This disconnect is especially evident in literacy, language, and phonology courses, where spoken language plays a central role (Swanwick & Tsakalidou, 2010). The experiences of deaf learners in Zambia, where education is typically structured for hearing students, highlight the urgency of rethinking how educational policies and practices can better serve these students.

In the Zambian context, inclusive education for deaf students is still in its early stages of development, facing challenges common to many sub-Saharan African countries. According to the Zambia Federation of Disability Organizations (ZFDO), as of 2020, an estimated 0.5% of the population in Zambia has a disability, and while the exact number of deaf students is not fully documented, it is clear that deaf learners are underrepresented in mainstream education (ZFDO, 2020). There are approximately 22 schools in Zambia that cater to the specific educational needs of students with hearing impairments, primarily located in urban centers like Lusaka and Kitwe (Ministry of Education, 2022). Despite these provisions, the enrollment rate of deaf students in higher education remains low, with Kitwe College of Education, one of the few institutions offering teacher training programs for deaf students, reporting an enrollment of only 30 deaf students in the 2023 academic year (Kitwe College of Education, 2023). This figure underscores the limited opportunities available for deaf students to pursue higher education and the need for a more inclusive educational framework that addresses the unique needs of this group.

The African context, including Zambia, further complicates the issue of inclusive education for deaf students. Many sub-Saharan African countries, Zambia included, face persistent challenges in the implementation of inclusive education, often hindered by limited resources, a lack of trained teachers, and the absence of standardized sign languages in various regions (Maphalala, 2016). Although Zambia has made efforts to incorporate sign language into its educational frameworks, these efforts remain inconsistent, especially in higher education, where deaf students are frequently excluded from full participation. Maphalala (2016) emphasizes the insufficient number of

qualified sign language interpreters and the failure to adapt curricula to meet the unique needs of deaf learners. These challenges indicate that, while progress has been made, there is still much to be done to ensure that deaf students receive the quality education they deserve, particularly in higher education institutions like Kitwe College of Education.

In Zambia, the educational landscape is further complicated by the multilingual environment. Zambian Sign Language (ZSL) is the primary mode of communication for deaf learners, yet the national curriculum and most higher education institutions continue to rely predominantly on English as the language of instruction (Chireshe, 2014). This reliance on English creates a substantial barrier for deaf students, who may struggle to fully comprehend the curriculum. English-based subjects such as phonology and grammar, which are heavily rooted in auditory concepts, are particularly inaccessible to deaf learners, further exacerbating the challenges they face in literacy education (Kusters, De Meulder, & O'Brien, 2015). This disconnect between the language used in instruction and the language most accessible to deaf students highlights the need for a more inclusive approach that better considers the linguistic realities of deaf learners.

In teacher training institutions like Kitwe College of Education, this linguistic barrier presents significant obstacles. Students are required to engage with a curriculum primarily designed for hearing students, with a strong emphasis on English phonology and language structure (Chireshe, 2014). However, these concepts are largely inaccessible to deaf students, who rely on ZSL. The focus on phonological awareness and linguistic skills in English further isolates deaf students, as they are expected to engage with concepts that are inherently auditory in nature (Marschark, Tang, & Knoors, 2014). This creates an educational environment where deaf students are at a marked disadvantage, especially in literacy courses, where reading and writing are closely tied to sound-based concepts. Such an environment underscores the importance of adapting both the curriculum and teaching methods to ensure that deaf students can fully participate in the learning process.

The challenges of inclusive education for deaf students are particularly pronounced during assessments. The linguistic barriers faced by deaf students often hinder their ability to fully comprehend course material, creating anxiety, especially during tests and exams. Chibuwe and Khoza-Shangase (2021) suggest that when students struggle to understand the material, they may resort to dishonest methods, such as using mobile phones for unauthorized assistance, as a means of coping. This behavior is not a reflection of the students' capabilities or intentions but rather a response to an educational system that does not accommodate their unique learning needs. Research has shown that when deaf students are assessed in a language they do not fully understand, it leads to feelings of failure and helplessness (Swanwick & Tsakalidou, 2010). The lack of support for their linguistic realities further exacerbates the difficulties these students face in completing assessments.

At Kitwe College of Education, while the provision of sign language interpreters has helped deaf students gain access to content, the overall reliance on spoken English in teaching and assessments remains a significant challenge. The use of interpreters, while beneficial in providing access, does not fully resolve the linguistic barriers. Often, the complexity of the original spoken language is lost in translation, leading to compressed or oversimplified content that may fail to convey the full depth of the material (Marschark, Tang, & Knoors, 2014). Even with interpreters, deaf students continue to struggle to comprehend critical academic content, particularly in areas like phonology and English grammar, which are essential for success in literacy education. This indicates the need for further adaptation of teaching methods to ensure that deaf students can fully access and engage with the curriculum.

The purpose of this study is to explore the language and literacy learning experiences of deaf learners in higher education in Zambia, with a specific focus on teacher training programs at Kitwe College of Education. By examining the experiences of deaf students in multilingual classrooms, this study aims to provide insights into the challenges they face in language and literacy learning, particularly in the context of a curriculum that is not tailored to their needs. The findings of this study will contribute to broader discussions on inclusive education in sub-Saharan Africa, emphasizing the need for an

educational framework that is adaptable and equitable for all students, including those who are deaf. This study will also shed light on the gaps in understanding the unique experiences of deaf students in multilingual classrooms, particularly in higher education, and offer recommendations for improving accessibility and inclusivity for these students. The integration of ZSL into the curriculum and revising literacy instruction methods will be central to ensuring that deaf learners have equal access to education and can thrive in their academic pursuits.

2. Literature Review

This literature review explores the language and literacy learning challenges faced by deaf students in multilingual primary teacher education classrooms. It focuses on how traditional, auditory-based instruction, which is designed for hearing students, presents barriers for deaf learners who rely on sign language.

2.1 Theoretical Framework

Vygotsky's Sociocultural Theory provides a useful framework for understanding how learning is mediated by social interactions and cultural tools. However, applying this theory to deaf education reveals significant limitations. While Vygotsky emphasizes the role of social interaction in cognitive development, it is important to consider that deaf students, particularly in regions where sign language is not widely recognized, are often excluded from the mainstream social and educational discourse. This exclusion undermines their access to the necessary cognitive tools that Vygotsky describes, such as language, to mediate their learning (Vygotsky, 1978). In the context of Zambia, where there is a lack of standardization and recognition of sign language, the application of Vygotsky's theory faces practical challenges that need to be addressed before it can be fully beneficial for deaf learners.

Theories of bilingualism and multilingualism also support the idea that proficiency in more than one language benefits cognitive development and academic achievement. For deaf students, this typically involves acquiring both sign language and a spoken language, with research indicating that bilingualism is beneficial for their cognitive

flexibility and literacy (Marschark, Tang, & Knoors, 2014). However, these theories fail to fully account for the reality that many educational systems, particularly in sub-Saharan Africa, are not adequately equipped to implement bilingual education. In Zambia, where multiple local languages coexist alongside English and Zambian Sign Language (ZSL), the expectation that deaf students must master both spoken and sign languages often leads to cognitive overload, exacerbating their academic difficulties. The practical limitations of multilingual education for deaf students cannot be ignored in favour of theoretical ideals. Moreover, the failure of educational systems to provide both languages in a coherent, integrated manner often results in incomplete or uneven linguistic development for these students, hindering their academic success.

Inclusive education advocates for the integration of students with disabilities into general education settings, a principle supported by international conventions and frameworks such as UNESCO's Education for All (2009). However, the reality of inclusive education for deaf students in Zambia and other African countries is far more complicated. While policies exist, their implementation is often marred by resource constraints, insufficient teacher training, and the absence of appropriate teaching methods tailored for the needs of deaf learners (Chireshe, 2014). This disconnects between policy and practice suggests that inclusive education remains an aspirational goal rather than an operational reality for many deaf students. The principles of inclusion fail to address the systemic barriers that prevent deaf learners from accessing quality education. The ideal of inclusive education cannot be realized without the necessary infrastructure, trained teachers, and pedagogical adjustments that account for the specific needs of deaf students.

2.2 Language Learning and Deaf Education

The process of language acquisition for deaf students is inherently different from that of hearing students, given that deaf children often acquire sign language as their primary language rather than spoken language. Research indicates that the delay or inadequacy in acquiring both a spoken language and sign language can result in significant learning challenges (Chireshe, 2014). Furthermore, while bilingual education

has been proven to support deaf students' linguistic and academic development (Marschark et al., 2014), the reality in many African countries, including Zambia, is that such education is not universally available. Deaf students, particularly in teacher training institutions, frequently encounter a curriculum that is not designed to accommodate their unique needs. These students are often expected to learn in English or a local spoken language without sufficient support in sign language, leading to poor performance on language-based assessments. This mismatch between the language expectations of the curriculum and the language competencies of the students exacerbates the difficulties faced by deaf learners, leading to a sense of inadequacy and frustration.

Critically, while bilingual education is widely recognized as the optimal model for deaf education, its application is far from perfect. In Zambia, for example, teachers are often inadequately trained in both sign language and bilingual teaching methods. As a result, deaf students are left to traverse a linguistically and pedagogically challenging environment. The lack of standardized sign language instruction further limits the effectiveness of bilingual education, resulting in disparities in language proficiency among deaf learners. These gaps in language learning can have long-term consequences, as research shows that early language delays can negatively affect cognitive development and academic performance (Marschark et al., 2014). Thus, the notion of bilingual education, while theoretically sound, requires a comprehensive, systemic approach to be effective in the Zambian context.

2.3 Challenges in Multilingual Learning Environments

The multilingual nature of Zambia adds another layer of complexity to the education of deaf students. The country's linguistic diversity, which includes English, local languages, and Zambian Sign Language (ZSL), presents a unique challenge for deaf students. Deaf students are expected to traverse a learning environment where the medium of instruction is often English or a local spoken language, neither of which may be fully accessible to them. This linguistic divide creates communication barriers that hinder understanding and academic performance. In particular, the gap between the written and spoken forms of the language poses significant difficulties for deaf learners,

who may have limited exposure to the spoken language used in academic assessments (Chibuwe & Khoza-Shangase, 2021).

Moreover, the lack of qualified teachers exacerbates these challenges. Studies indicate that the teacher shortage in Zambia is a critical issue for deaf education, with many teachers lacking the necessary skills in sign language and inclusive teaching methods (Chireshe, 2014). Without adequate teacher training, deaf students often find themselves in classrooms where their learning needs are not fully met, and their academic progress is impeded. The scarcity of resources and the absence of teaching materials that cater to deaf learners further limit the effectiveness of the educational system. Without proper training, teachers may resort to conventional methods that fail to address the specific needs of deaf students, leaving them behind.

In addition to these structural challenges, deaf students often experience psychological barriers such as fear of failure, which becomes particularly evident during assessments. In many cases, the pressure to perform in exams, where they may struggle due to language barriers, leads to anxiety, stress, and a tendency to resort to academic malpractice (Chibuwe & Khoza-Shangase, 2021). In Kitwe College of Education, this behaviour is especially prevalent, with students attempting to use mobile phones during tests in an effort to circumvent their difficulties in understanding the language of the exam. The underlying issue here is the failure to provide deaf students with assessments that are designed to accommodate their unique linguistic needs. The mismatch between the assessment process and the students' linguistic competencies creates a cycle of stress and cheating that undermines the integrity of the educational process.

2.4 Empirical Studies and Gaps

The existing literature emphasises the challenges faced by deaf students in multilingual and resource-limited settings. Studies such as Chireshe (2014) and Chibuwe and Khoza-Shangase (2021) highlight the difficulties of implementing bilingual education effectively in sub-Saharan Africa, especially in Zambia, where the education system often fails to meet the linguistic needs of deaf students. While these studies emphasize

the importance of bilingual education, they also reveal the systemic barriers that prevent its full realization. These include a shortage of qualified teachers, a lack of standardized sign language instruction, and inadequate resources.

However, a critical gap remains in understanding how the fear of failure, coupled with linguistic barriers, leads to academic malpractice among deaf students. Most existing studies have not thoroughly explored the psychological and social factors that drive deaf students to cheat, despite the growing prevalence of such behavior in high-pressure academic environments (Chibuwe & Khoza-Shangase, 2021). This gap in research suggests the need for a more nuanced examination of the relationship between language barriers, assessment methods, and academic integrity. Furthermore, while there is some research on the challenges of multilingual education for deaf students, there is limited focus on how these students experience assessments specifically, and how these experiences shape their academic behavior, including cheating.

In summary, this literature review highlights the complex challenges that deaf students face in multilingual education settings. While the theoretical frameworks, including sociocultural theory and bilingualism, provide valuable insights into the educational experiences of deaf students, the practical realities in Zambia, such as insufficient teacher training, inadequate resources, and systemic barriers, undermine the effectiveness of these models. The lack of access to a comprehensive bilingual education and the failure to accommodate the unique needs of deaf learners, particularly in assessments, leads to a cycle of fear, stress, and academic malpractice.

3. Methodology

This research methodology section outlines the approach used to explore the language and literacy learning experiences of deaf students in multilingual primary teacher education classrooms at Kitwe College of Education. It details the research design, the population, data collection methods and analysis, as well as ethical considerations.

3.1 Design

This study adopted a case study design to explore the experiences of deaf students enrolled in the Primary Teachers Diploma program at Kitwe College of Education. A case study approach was selected because it enables an in-depth investigation into the challenges faced by deaf students in an educational setting, particularly within a curriculum that does not fully cater to their communication needs. This design was deemed particularly suitable as it provides the opportunity to gain a comprehensive understanding of how language barriers and curriculum misalignment impact the academic experience of deaf students in higher education.

The selection of Kitwe College of Education for this case study was based on several key reasons. Firstly, Kitwe College of Education is one of the prominent institutions in Zambia offering teacher training programs, including the Primary Teachers Diploma. It is representative of the challenges that deaf students face in higher education in Zambia, making it an ideal setting for exploring how the education system supports or hinders their learning. Secondly, Kitwe College of Education is situated in a region that is home to a significant number of deaf students, and it is one of the few institutions in Zambia that actively admits and includes deaf learners in its mainstream programs. This makes the college a critical location for understanding the intersection between inclusive education policies and their real-world application within the classroom.

Additionally, the college has been involved in some initiatives to incorporate Zambian Sign Language (ZSL) and improve accessibility for deaf students, making it an interesting context for studying both the existing challenges and potential strategies for improvement in the academic experience of deaf learners. The fact that Kitwe College of Education has a relatively diverse student population from different regions of Zambia also allowed for the inclusion of deaf students from varying backgrounds, providing a more representative sample of the challenges they face. Given these unique characteristics, Kitwe College of Education offers a rich and relevant context for investigating the experiences of deaf students and understanding how the college's policies and teaching practices affect their language and literacy learning outcomes.

3.2 Research Site and Participants:

The research was conducted at Kitwe College of Education, located in Zambia's Copperbelt Province. This institution was chosen for its role in training primary school teachers, including those with hearing impairments. Despite ongoing efforts to integrate inclusive education practices, challenges persist, particularly in making the curriculum fully accessible to deaf students. The study involved 15 deaf students who were enrolled in the 3-year Primary Teachers Diploma program at Kitwe College of Education. The sample size of 15 participants was carefully chosen to balance the need for depth and manageability within the scope of the study. While a larger sample could have provided a broader set of experiences, a smaller, more focused group allowed for detailed, in-depth exploration of the lived experiences of these students. By selecting a manageable number of participants, the study was able to maintain a clear focus on each individual's experiences while ensuring the data collection process remained feasible within the timeframe and resources available.

The participants were selected from different academic levels: four first-year students, five second-year students, and six third-year students. Stratified purposive sampling was used to ensure that all three academic levels within the Primary Teachers Diploma program were represented. This sampling strategy allowed for a comprehensive exploration of how the experiences of deaf students evolve as they progress through the program. By including students from all academic years, the study was able to capture a broader range of perspectives and experiences, providing insights into how challenges and learning outcomes may vary at different stages of the program.

In addition to academic levels, gender and other diversity factors were also considered in the selection of participants. Although the primary focus was on the academic progression of students, efforts were made to ensure a gender balance, with a mix of male and female students from each academic year. This was important as it allowed for a more comprehensive understanding of how gender may intersect with the challenges faced by deaf students in the context of a predominantly hearing-focused educational system. Additionally, diversity factors such as geographic background and previous exposure to formal education were considered to ensure that the sample reflected a range of experiences within the cohort of deaf students enrolled in the

program. This approach contributed to a more holistic view of the challenges and learning experiences of deaf students, enhancing the study's relevance to a wider range of potential educational contexts and policy considerations.

3.3 Data Collection Methods:

Data for this study were collected through focus group discussions, classroom observations, and document review. These methods were chosen to provide a well-rounded view of the challenges faced by deaf students. The data collection tools allowed for both subjective insights from the students and objective observations of the teaching and learning environment.

The main data collection method was conducted through focus group discussions. The 15 students were grouped according to their year of study: first-year, second-year, and third-year students. Semi-structured discussions were guided by open-ended questions designed to encourage participants to reflect on their experiences within the program, particularly regarding language barriers, curriculum accessibility, and available support mechanisms. This approach aimed to provide rich, qualitative data that could capture the nuances of the students' educational experiences. The discussions were facilitated by a qualified sign language interpreter to ensure effective communication and enable full participation from the students. The use of a professional interpreter was essential to ensure that participants could express their views in their preferred language, Zambian Sign Language (ZSL), allowing them to communicate freely and accurately. This step was critical in creating an inclusive environment where deaf students felt comfortable and confident in sharing their perspectives. To mitigate potential biases introduced by interpreter-mediated focus groups, several precautions were taken. First, the interpreter was carefully selected based on their proficiency in ZSL and their ability to maintain neutrality during the discussions. Prior to the focus group sessions, the researcher and interpreter reviewed the open-ended questions to ensure that the interpreter was familiar with the topics and could convey the intended meaning clearly. This preparation helped to prevent any miscommunication or alteration of the participants' responses.

Additionally, the researcher was actively involved in the discussions, ensuring that the facilitator (the interpreter) remained neutral and did not unintentionally influence the responses of the participants. The researcher also remained mindful of non-verbal cues and body language, which are crucial elements of communication in ZSL, to ensure that all participants were equally engaged and that their responses were accurately represented. If there was any uncertainty about the interpretation of a response, the researcher sought clarification directly from the participants, allowing them to restate their views if necessary. This procedure helped to minimize any potential biases introduced by the interpreter's role and ensured the data collected was as authentic and representative as possible.

Classroom observations were conducted in language and literacy courses to document teaching methods, interactions between instructors and students, and how the curriculum was implemented in practice. Observations focused on how deaf students engaged with the content and how the role of sign language interpreters influenced their learning. The observations also highlighted the challenges associated with auditory-based instruction and its impact on students' comprehension and participation, particularly in subjects such as phonology and grammar that require an understanding of sound-based concepts.

A review of institutional documents was conducted to assess how well the curriculum and teaching materials addressed the needs of deaf students. This review included course syllabi, lesson plans, and any guidelines related to inclusive education. The purpose was to examine whether the curriculum was adapted to accommodate deaf students' unique needs, particularly in areas where auditory concepts dominate, such as language and literacy.

3.4 Data Preparation and Analysis

The data collected through focus group discussions were transcribed from Zambian Sign Language (ZSL) into written English, with the assistance of the sign language interpreter who facilitated the discussions. The transcriptions were checked for accuracy

to ensure that the students' responses were accurately captured. Classroom observation notes were transcribed into detailed field notes, documenting key observations such as teaching methods, student engagement, and the role of interpreters in facilitating communication. These notes were organized and coded to identify recurring themes and patterns relevant to the research questions.

Thematic analysis was used to analyze the qualitative data collected from focus group discussions, classroom observations, and document reviews. Thematic analysis allowed the researcher to identify patterns and themes in the data, which were then categorized to explore the experiences and challenges of deaf students in relation to the curriculum. The analysis focused on key themes such as the impact of auditory-based content on learning, the effectiveness of sign language interpretation, and the accessibility of instructional materials. By analyzing the data across the three academic years, the study examined how the challenges faced by deaf students evolved throughout the course of their training.

4. Results

4.1 Lesson Delivery

The way a lesson is delivered is crucial for deaf students because it directly impacts their ability to access, understand, and retain information effectively. In the lesson delivery process, deaf students rely heavily on interpreters who provide translations from spoken language to Zambian Sign Language (ZSL). However, while the interpreters bridge the communication gap, they are not always able to fully capture the linguistic complexities of the spoken language, particularly when the content involves phonetic terms, grammar structures, or language-specific meaning. One of the most significant challenges faced by deaf students is the understanding of the phonetic component of language instruction, particularly in subjects like reading and literacy. The curriculum in the Primary Teachers Diploma program, which is based on sound recognition (phonemic awareness), expects students to decode and understand sounds, which inherently requires hearing the sounds. However, deaf students are

unable to access this sound-based knowledge directly. A third-year student explained their frustration during literacy lessons:

When we are asked to break down words into their sounds, I can't participate fully. I can't hear the sounds, and while the interpreter signs, I still struggle to understand how to break words into syllables.

The challenge is not just about not hearing, but also about trying to understand what the sounds represent in sign language, which is hard to translate. (Third-year student, FGDs)

Furthermore, the syntax and grammatical rules of English create additional challenges. English, which is the medium of instruction (LoI), has complex syntactic structures that are often difficult to grasp for students who use ZSL as their primary language. ZSL has different sentence structures, word order, and grammar rules, so directly translating English syntax into ZSL often results in confusion for both the deaf students and the interpreter. A second-year student shared:

In some lessons, when the teacher talks about verb tenses or conditional sentences, I get confused because in sign language we don't always follow the same sentence structure. So, I end up missing some important points about the lesson. The grammar is difficult for me to understand, especially when it's not directly represented in sign language. (Second-year student, FGDs)

Additionally, certain English grammatical structures, such as the use of articles, prepositions, or verb conjugations, can be particularly challenging. For example, ZSL lacks specific markers for some English articles ("a," "the"), which often causes misunderstandings and incomplete comprehension of key grammatical concepts.

4.2 Assessment

Fair assessment is important for deaf students because it ensures that their unique needs and communication methods are considered, allowing for a fair and accurate evaluation of their knowledge and skills. The deaf students in the Primary Teachers Diploma program face substantial challenges when it comes to assessment. As previously mentioned, assessments in literacy-focused subjects heavily emphasize phonemic awareness and reading fluency, which are inherently auditory. These assessments assume the ability to decode sounds, a skill that is difficult or impossible for deaf students. One student, reflecting on their recent assessment, shared:

In the tests, we have to demonstrate knowledge of sound and syllable segmentation as well as blending skills. Since I can't hear the sounds, I'm at a disadvantage. Even if I can recognize the word visually, the test doesn't give me a chance to demonstrate my understanding of it in a way that works for me. It feels like I'm being tested on something that's impossible for me to do. (First-year student, FGDs)

In addition to the challenge of phonics and phonemic awareness, there are also difficulties with reading fluency—a key aspect of literacy assessment. Deaf students cannot practice or demonstrate reading fluency through the typical methods of sounding out words. Instead, their reading fluency relies on their ability to visually recognize whole words or patterns, which is not the focus of traditional literacy assessments.

Another significant issue is the lack of accommodations in the assessment structure. Deaf students feel that they are not provided with equal opportunities to showcase their understanding. For example, while the hearing students might be able to decode sounds and read aloud, deaf students have to rely on reading comprehension skills alone. As one student put it:

It is frustrating because in my exams, I can read the passage and answer the questions, but when the test asks me to identify specific sounds, I can't do it. The test seems unfair because it doesn't account for the fact that I can't hear the sounds. (Second-year student, FGDs)

This lack of recognition for the unique challenges faced by deaf students in literacy assessments often leaves them feeling like their academic potential is underestimated.

4.3 Peer Teaching

In the second-year of the Primary Teachers Diploma program, students are required to peer-teach aspects of the Primary Literacy Program (PLP), particularly the parts of the program that emphasize phonics, phonemic awareness, and reading fluency. The PLP, which focuses on teaching reading and writing through phonics-based instruction, presents considerable challenges for deaf students. Since the PLP is based on auditory skills, many deaf students struggle to teach these components in a way that makes sense to them and their peers. The task of peer teaching becomes even more daunting because deaf students are unable to demonstrate the critical phonemic decoding skills

that are central to teaching reading fluency. Without the ability to model these skills, the peer teaching process becomes an exercise in frustration. A second-year student reflected on their experience:

When I was asked to teach my peers about phonics using the PLP, I felt really stuck. How could I teach something I couldn't even do myself? I can show them how to read the words, but I can't demonstrate how to decode the sounds because I don't hear them. It's difficult to teach something I don't fully understand. (Second-year student, FGDs)

The lack of adequate training in alternative methods for teaching literacy to deaf students also exacerbates the situation. Deaf students who are expected to teach others how to decode sounds are not taught how to adapt the literacy instruction to meet their specific communication needs. This gap in their training often leaves them unprepared and feeling less competent.

4.4 Interaction in Class

Group work is important for deaf students because it fosters inclusion, collaboration, and social development while enhancing their learning experience. However, group work and class discussions pose significant challenges for deaf students, particularly when the content involves language-based tasks such as phonics practice, grammar exercises, or reading comprehension. Since the classroom discussions are primarily auditory, deaf students often struggle to fully engage or contribute unless they have an interpreter. Even with the interpreter, the fast-paced nature of group discussions often leaves them behind. One student shared:

Group work is difficult because I often miss out on what's being said in discussions. The other students speak in English, and while the interpreter signs, I don't always understand the details. If they talk about a word's pronunciation or meaning, I miss it unless they can explain it in a way that works for me. (Third-year student, FGDs)

This exclusion from discussions often leaves deaf students feeling isolated. Moreover, in groups focused on literacy tasks such as phonics or writing, they find it difficult to contribute effectively because the activities are primarily designed to be carried out

through spoken language. However, in groups that focus on written language or use visual aids, deaf students feel more comfortable and are able to contribute more meaningfully. When discussions focus on interpreting written text or using visual representations of words, the communication barrier is significantly reduced.

4.5 Alternative Grading Schemes

Adapting grading schemes to focus on the skills and competencies that align with the abilities of deaf students can help ensure fairer evaluation. For example, grading could place more emphasis on visual literacy, comprehension of written material, and sign language proficiency rather than on auditory-based tasks. One educator commented:

Assignments and tests could be graded on the basis of written responses, comprehension of texts, and the ability to engage in visual or signed communication, rather than penalizing students for their inability to decode sounds. (Educator, interview, 2024)

Briefly, the findings from this study highlight that deaf students in the Primary Teachers Diploma program face significant language-related challenges. The reliance on sound-based literacy components, such as phonics, phonemic awareness, and reading fluency, presents substantial barriers to their academic success. In addition, the complexity of English grammar and syntax, along with the reliance on auditory-based teaching methods, further complicates the learning process. Despite these challenges, deaf students continue to demonstrate resilience and commitment. However, it is clear that adaptations to the curriculum, teaching methods, and assessment tools are urgently needed to ensure equitable opportunities for all students, including those with hearing impairments. Through inclusive pedagogical practices that incorporate visual, written, and non-auditory learning methods, deaf students can have the opportunity to excel and contribute meaningfully to the education system.

5. Discussion:

The findings of this study illustrate the substantial challenges faced by deaf students. These challenges, which primarily relate to language-based issues in lesson delivery, assessment, peer teaching, group work, and their interaction with the Primary Literacy

Program (PLP), point to significant barriers in achieving educational equity. The difficulties these students experience are largely rooted in the dissonance between their linguistic competencies and the structure of the curriculum, which heavily relies on auditory processing and spoken language.

Deaf students in this study face challenges due to the auditory-based nature of the curriculum, which is grounded in phonics and phonemic awareness—skills reliant on hearing. These findings echo existing research on the difficulties deaf students experience when learning literacy in environments where the primary mode of instruction is spoken language (Marschark & Knoors, 2012). Phonemic awareness, which is crucial for decoding sounds and developing reading fluency, is a particularly challenging aspect for deaf learners since they lack direct access to sound. Research has indicated that visual methods of instruction, such as those involving **sign** language or written materials, can be more effective for deaf students (Strong, 2018). However, the primary literacy curriculum used in this study focuses on phonics-based instruction, which does not fully accommodate deaf students' primary language—Zambian Sign Language (ZSL). As the students themselves noted, translating sounds into visual representations in ZSL is an ongoing struggle. The interpreter's role, while crucial, does not always bridge the gap effectively, as sign language does not map directly onto the phonetic structure of English. This observation supports the findings of scholars who argue that interpreters often cannot replicate the richness of spoken language in sign language translations (Marschark et al., 2007).

Moreover, the discrepancy between the grammar and syntax of English and ZSL further complicates lesson comprehension. English grammar—with its use of articles, tenses, and sentence structures—differs significantly from ZSL, which lacks certain grammatical structures, making it difficult for deaf students to understand and use English syntax (Strong, 2018). These language differences contribute to feelings of disconnection and frustration among deaf students, as they are unable to directly participate in lessons designed for hearing students.

The assessment process in this study revealed another crucial issue: the difficulty deaf students face in tests and assignments designed around phonics and reading fluency. Phonemic awareness is an auditory skill, and since deaf students cannot engage with this aspect of the curriculum, their ability to perform well in such assessments is compromised. This finding aligns with the work of scholars who have highlighted the limitations of traditional literacy assessments for deaf students, particularly when they do not account for visual literacy (Knoors & Marschark, 2012). The frustration expressed by students regarding their inability to score higher than their hearing peers in assessments is understandable. Deaf students often feel that their performance is judged based on a framework that assumes hearing ability (Knoors & Marschark, 2012). This is particularly evident in the phonics-based tests, where the auditory nature of the assessment creates an inherent disadvantage for deaf students, who must rely on alternative strategies, such as visual decoding and contextual guessing. While the visual strategies they employ may allow them to achieve some level of comprehension, these strategies are often not adequately recognized or rewarded within the structure of traditional assessments.

The deaf students in this study found peer teaching—especially in teaching the Primary Literacy Program (PLP)—to be an immense challenge. The PLP emphasizes phonics and phonemic awareness, which require students to decode sounds. Since these skills are inherently inaccessible to deaf students, teaching them to their peers was an exercise in frustration. This difficulty reflects the disconnect between the curriculum's expectations and the students' communication needs. Peer teaching is typically designed to foster collaboration and active learning, yet for deaf students, it becomes a task that reinforces their disadvantage rather than offering a meaningful opportunity to teach and learn. The findings highlight a critical gap in the training of future teachers, where visual strategies for teaching literacy to deaf students are not emphasized. Without explicit instruction on alternative teaching methods for deaf learners—such as using sign language and visual aids—deaf students are left to navigate a curriculum that is designed for hearing students. This challenge is consistent with existing research that

calls for more inclusive teaching methodologies in teacher education programs (Marschark & Knoors, 2012; Strong, 2018).

Lastly, deaf students in this study expressed difficulties participating in group discussions and classroom activities, particularly when tasks focused on spoken language. Without access to auditory cues or real-time speech, these students found it challenging to follow group discussions, and often felt isolated from their peers. This aligns with research by Marschark et al. (2007), who noted that group work in a classroom setting can become exclusionary for deaf students when there is insufficient visual support. When the focus of the group activity is on phonics or oral expression, deaf students may find it difficult to contribute meaningfully, further deepening the sense of exclusion. However, as reported by the students, when written tasks or visual aids were used, they felt more empowered to engage with their peers. This finding suggests that incorporating more visual learning methods into group work could improve deaf students' social integration and academic success.

In general, the findings from this study point to several language-related issues that are central to the challenges faced by deaf students. First, the phonetic-based instruction in literacy lessons fails to accommodate the unique linguistic needs of deaf learners. Deaf students in this study were expected to engage with a curriculum that emphasizes the auditory decoding of sounds, a skill that is not accessible to them due to the nature of their hearing impairment. Furthermore, the grammatical and syntactic differences between English and ZSL compound the problem, making it difficult for students to fully grasp and apply key literacy concepts. The disconnect between language-based teaching methods and the communication needs of deaf students is not a new issue. Scholars have long pointed out that traditional literacy instruction, which emphasizes phonics and phonemic awareness, tends to disadvantage deaf students (Marschark & Knoors, 2012). These findings highlight the urgent need for more inclusive literacy strategies, such as visual phonics or bilingual education models that incorporate both sign language and written English, to address the specific needs of deaf learners.

6. Conclusion

This study highlights the substantial barriers faced by deaf students in a multilingual classroom of the Primary Teachers Diploma program, particularly in relation to language-related challenges in literacy instruction. The over-reliance on auditory-based teaching methods, such as phonics and phonemic awareness, proves to be a major hindrance for deaf students who rely on Zambian Sign Language (ZSL) for communication. These challenges extend to various aspects of the academic experience, including lesson delivery, assessments, peer teaching, and group work. The inability of deaf students to fully access auditory concepts, such as phonics and grammar rules, impedes their ability to develop essential reading fluency and understanding of language structures, leaving them at a distinct disadvantage compared to their hearing peers. Despite these challenges, the deaf students demonstrated considerable resilience and resourcefulness. They adapted by using visual aids, written materials, and sign language interpreters to bridge the gap in comprehension. However, the frequent absence of sign language interpreters during lessons and the reliance on English-based curriculum that does not adequately cater to the unique needs of deaf students creates a persistent barrier to academic success.

Therefore, to create an equitable and inclusive learning environment, it is essential that the curriculum be adapted to better meet the needs of deaf students in the Primary Teachers Diploma program. By adopting a bilingual education model, tailoring literacy instruction to visual and sign language strategies, and revising assessment methods to accommodate the linguistic realities of deaf students, institutions can foster an educational system where deaf students are not only able to participate fully but also succeed. This would ensure that deaf students are equipped to become effective educators, capable of teaching both hearing and deaf students in a manner that recognizes and respects their unique linguistic and learning needs.

Consent:

Ethical considerations were paramount in this study. Informed consent was obtained from all participants, ensuring they understood the purpose of the study, the data collection methods, and the voluntary nature of their participation. The students were informed that they could withdraw from the study at any time without any consequences. Confidentiality was maintained by anonymizing all data and ensuring that participant identities were not revealed in any of the research outputs. The use of sign language interpreters during the informed consent process and throughout the data collection ensured that all participants fully understood the study and could communicate their consent freely.

Disclaimer (Artificial Intelligence):

The author(s) hereby declare that, while writing and editing this manuscript, generative AI technologies such as Grammarly, QuillBot, and Consensus were utilized to aid in improving grammar, rephrasing for clarity, and ensuring coherence in the presentation of ideas. The use of these tools was solely for the purpose of enhancing the manuscript's readability and ensuring academic integrity. The content, ideas, and conclusions presented in the manuscript remain the sole responsibility of the author(s).

1. **Grammarly:** Employed to refine grammar, punctuation, and overall language style.
2. **QuillBot:** Used for paraphrasing and rewording specific sections to enhance clarity and coherence.
3. **Consensus:** Applied to assist in summarizing and synthesizing key points relevant to the literature review.

This declaration underscores that the writing process was facilitated by AI tools for language improvement, with the original content and research being developed and authored by the author(s).

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