

Learning Environment for Visually Impaired Learners in Selected Inclusive Primary Schools in Tanzania

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Abstract

The study examined the learning environment for visually impaired (VI) learners in inclusive primary schools in Tanzania. The study employed a mixed-methods research approach and a concurrent mixed-methods design. The study involved a sample of 192 participants. Data were collected through questionnaires, interviews, focus group discussions and observations for triangulation and complementarity purposes. With the aid of SPSS version 26, quantitative data were analysed by using descriptive statistics (presented in the form of tables) and inferential statistics by using the Mann-Whitney U Test. Qualitative data were thematically analysed using MaxQDA 24 and presented through explanations and direct quotations. Findings suggest that the learning environment for VI learners in Tanzania is relatively poor. It is recommended that the Government should collaborate with education stakeholders such as non-governmental organisations, development partners, and civil society organisations to ensure the availability of resources and training of teachers on inclusive pedagogical practices in primary schools.

Keywords: *Inclusive education, VI learners, special schools, visual impairment*

Introduction

Tanzania is one of the countries that have practically complied with the international and national Education for All (EFA) policies stipulated by the Salamanca Statement and Framework for Action of 1994 by establishing inclusive schools in addition to special schools for individuals with disabilities. For instance, in 1998, Tanzania adopted the Salamanca Statement as a guide towards the establishment of an inclusive education system (Tungaraza, 2012). Initially, the educational approach to individuals with disabilities was the establishment of special schools for them. Recently, the special schools' approach has been challenged for its discriminatory nature

and failure to prepare learners with disabilities for community life (socialisation) after school (Bucholz & Sheffler, 2009). In this regard, an inclusive school's approach has been adopted as the best option to make people with disabilities feel accepted and improve their self-esteem (Katz & Mirenda, 2002).

UNESCO (2020) defines inclusive education as a system or practice of securing and guaranteeing the right of all children to access, presence, participation, and success in their local regular school. With this view of inclusive education, UNESCO calls upon neighbourhood schools to build their capacity to eliminate barriers to access, presence, participation, and achievement to be able to provide excellent educational experiences and outcomes for all children and young people (UNESCO, 2020). Inclusive education calls for transforming the existing school systems to suit learners with diverse needs while eliminating all forms of barriers and discrimination. Essentially, the transformation of policies, legislations, regulations, processes, structures, infrastructure, practices, and human resources is involved in the inclusive education approach to accommodate all learners to learn together wherever possible, regardless of their difficulties or differences.

According to UNESCO (2015), an inclusive environment is tailored to welcome, nurture, and educate all learners regardless of their gender, physical, intellectual, social, emotional, linguistic or any other characteristic. Similarly, the National Council for Special Education stipulates that accessible transport, buildings, materials, equipment, facilities, and activities must facilitate a welcoming and inclusive environment (NCSE, 2011). Learning environment is one of the crucial factors that influences the effectiveness and efficiency of children's learning. The classroom environment has the potential to either improve or impede students' ability to learn and feel safe and comfortable as members of the class (Bucholz & Sheffler, 2009). Research has shown that the environment around the learner is one of the barriers to the presence, participation, and learning for children with disabilities (Sharma & Samia, 2018). The nature and conditions of students usually determine the type of learning environment to be created. VI learners require a relatively different learning environment from the sighted ones. Bernas-Pierce and Miller (2005) note that each child with a visual impairment can learn differently and require teaching strategies, activities, and environments that support and encourage developmental progress. For instance, while at a glance, sighted learners learn by seeing colours, shapes, sizes, distances, facial expressions, and gestures; VI learners depend on touching and hearing to learn. A sighted child can learn several concepts in a

few seconds, but VI learners must be taught each concept specifically and individually to understand it (Bernas-Pierce & Miller, 2005).

The Context of the Study

Tanzania has consecutively developed three National Strategies for Inclusive Education (NSIE), and the most recent is that of 2021/2022-2025/2026, which builds on the achievements of the previous strategies, namely the 2009-2017 and 2018-2021. The 2021/2022-2025/2026 strategy, according to MoEST (2021), addresses explicitly five main issues that were identified as challenges in the NSIE 2018-2021. Such issues include ensuring that there is:

- i) explicitly inclusive supportive education policy, legislation, and guidelines
- ii) inclusive education culture and practice, staff competencies, support mechanisms, accessibility, internal evaluation, and external quality assurance
- iii) coordinated planning, collaboration, implementation, monitoring, and evaluation of inclusive education plans
- iv) identification and intervention, protection, continuity of learning, participation and development support, counselling, and guidance, and
- v) proper human and material resources allocation and a supportive learning infrastructure.

Despite the Government's efforts to establish inclusive primary schools, much is still unknown as to whether the general physical and classroom environments of the inclusive schools have been designed to meet the educational demands of the diverse types of learners, particularly the VI learners. Similarly, a study by Moberg et al. (2019) on the attitude of teachers towards inclusive education in Finland and Japan suggests more research that investigates how inclusive education developments are understood and carried out in different settings. Based on this background, this study examined the learning environment for VI learners in inclusive primary schools in Tanzania. Since much is still unknown about inclusive education in Tanzania, this exploratory research examined the learning environment for students with visual impairment in detail.

Research Questions

The general purpose of this study was to examine the learning environment for VI learners in inclusive schools in Tanzania. Specifically, the study was guided by two research questions, namely:

- i) How does the general physical environment support learning of VI learners in inclusive schools?
- ii) How does the classroom environment support teaching and learning of VI learners in inclusive schools?

Methodology

This section presents the research approach, design, participants, sampling techniques, data collection methods and data analysis procedures employed in this study. The ethical adherence of the research is also described in this section.

Research Approach

This study used a mixed-methods research approach in which qualitative and quantitative approaches were used for data collection, analysis, and presentation of findings. Leech and Onwuegbuzie (2009) point out that mixed methods research involves collecting, analysing, and interpreting quantitative and qualitative data in a single study or a series of studies investigating the same underlying phenomenon. Adopting a mixed methods research approach is based on the combination of qualitative and quantitative research approaches, providing a better understanding of a research problem or issue than either research approach alone (Creswell & Clark, 2024; Johnson & Christensen, 2020). According to Yin (2006), integrating quantitative and qualitative methods can occur at different stages in the research process, from the study conceptualisation to setting research questions, to data collection and analysis, and interpretation of the study findings. In that regard, a mixed-methods research approach was used to complement and triangulate the results. That is, comparing quantitative and qualitative research results, using qualitative research to help explain quantitative findings and augmenting quantitative data with qualitative data. Thus, using a mixed-methods approach helped gain deeper insights about the learning environment for learners with visual impairment in inclusive primary schools in Tanzania.

Research Design

Studies that employ mixed methods research approaches usually vary in terms of the way data are collected, analysed, and presented to show how qualitative and quantitative results complement each other and respond to the research objectives. This study employed a concurrent mixed methods research design, whereby both qualitative and quantitative data were collected simultaneously (Creswell & Creswell, 2023). The advantage of using this design is that it saves time because it allows the researcher to collect both qualitative and quantitative data quickly. For example, Likert scale items were combined with open-ended questions within one questionnaire.

Study Participants

This study was conducted in public primary schools with VI learners in four regions of the Tanzania Mainland. The regions were purposively selected

based on the presence of both inclusive primary schools. The regions included Tanga, Dodoma, Iringa, and Tabora. A total of 192 research participants were involved in the study, as indicated in Table 1.

Table 1: The Number of Research Participants by Region

Regions	Schools	Ward Education Officers	Parents or Guardians	SL	VIL	Teachers	Heads of school	Total
Dodoma	3	2	3	10	8	18	3	47
Iringa	3	3	3	10	9	18	3	49
Tabora	3	3	3	10	6	18	3	45
Tanga	3	2	3	10	12	18	3	51
Total	12	9	12	40	35	72	12	192

Note: SL (Sighted learners) and VIL (VI learners)

Sampling Techniques

The participants of this study were sampled by convenience sampling, purposive sampling, and simple random sampling techniques. Purposive sampling was used to select heads of school, parents/guardians, Ward education officers, and learners with visual impairment. Simple random sampling techniques were used to select teachers and sighted learners. Three inclusive schools were purposively selected from each of the selected regions. Therefore, schools with visually-impaired learners at the time the study was conducted were included in the sample.

Data Collection Methods

Data for this study were collected using three main methods: survey, interview and focus group discussions. Each of these methods is further described in the subsequent sections.

Survey

The questionnaire consisted of a four-point Likert Scale (bad =1, not sure =2, average =3, and good =4) and open-ended questions. The questionnaire was used to collect data from teachers and students. Before the questionnaire was administered to the target sample, it was piloted on a similar sample. Piloting the questionnaire, among other things, was to help see the relevance of the data collection tool and the clarity of the questionnaire items. Additionally, piloting helped to sequence questions and ensure a common interpretation of questions by respondents (Ruel et al., 2016). After piloting, the questionnaires were revised and administered to the target research participants. A total of 72 teachers responded to the questionnaire.

Interview

Interviews were conducted using interview guides. One-to-one semi-structured interviews were conducted with 76 participants, including 27 pupils (15 sighted and 12 VI learners), 9 Ward Education Officers (WEOs), 16 teachers, 12 head teachers, and 12 parents. It should also be noted that a few of the teachers who filled in questionnaires were selected for interviews. The average duration of an interview was about 30 minutes.

Focus Group Discussions

A guide for collecting data during the focus group discussions (FGDs) was developed. Learners who did not participate in interviews were involved in focus group discussions. A total of 25 sighted and 23 VI learners were involved in FGDs. The focus groups were formed by combining sighted and VI learners from the same class. Each focus group discussion was composed of 5 to 6 members. The focus group discussions lasted between 50 and 60 minutes.

Data Analysis

Data collected through questionnaires, interviews, and focus group discussions were analysed and presented in various ways. In terms of qualitative data, the audio-recorded interviews were transcribed verbatim and analysed thematically using MaxQDA 24. A thematic analysis was conducted to gather information related to the research objectives. The researchers first read and re-read the transcribed data to familiarise themselves with the collected data. Through this process, researchers were able to generate codes for emerging themes such as 'physical environment support' and 'classroom environment support'. The themes were further refined to suit the research questions. Qualitative data were presented through explanations and transcribed quotations from participants. Quantitative data were sorted out, coded, and finally analysed using SPSS 26. Quantitative results were presented through charts, tables, graphs, and explanations. Descriptive and inferential statistics were used for presentation and analysis of quantitative data.

Ethical Consideration

The researchers adhered to the research ethical principles by protecting the rights and freedom of the participants and ensuring confidentiality of the information provided and participants' identities. The four regions were anonymised using Arabic numbers 1 to 4, and the twelve schools were pseudo-named using letters A to L. The participants were informed in advance about the purpose of the study. They were assured of the confidentiality of the information they provided and that the information would be used solely for this study. The involvement of children with and

without visual impairments in the study was preceded by prior communication with parents or guardians who signed a consent form to show their willingness to allow their children to participate in the study.

Results

This study assessed the learning environment for learners with visual impairment in inclusive schools. Specific focus was on assessing and observing physical infrastructure and the nature of the classroom environment necessary for supporting the learning and social welfare of learners with visual impairment.

General Physical Environment and Support for VI Learners

The first research question assessed how the general physical environment supported teaching and learning of VI learners in inclusive schools. Special focus was on how the learning environment could diversely influence the effective learning of VI learners. This section reports views from VI learners, sighted learners, teachers, heads of school, Ward education officers, and parents. Quantitative and qualitative results have been presented together for complementarity and triangulation purposes. For qualitative results, only representative quotations have been used to illustrate a given theme.

VI Learners' Perceptions of General Physical Environment

Through interviews and focus group discussions, VI learners were requested to give their opinions regarding the learning environment in their schools. The majority of VI learners in primary schools believed that the physical learning environment was good. The following narrations from some VI learners from primary schools support this view:

... I am satisfied with the physical learning environment because I love the school, the compound has places where you can sit and study well ... and all other services, such as dormitories and food, are good. (Interview, VI learner in School F).

... In my view, despite the presence of some challenges, the school environment is friendly. We are taught well. Similarly, teachers show great love to us. They help us when in need. (Interview, VI learner in School C).

However, some VI learners were unsatisfied with the physical learning environment. The interviewed VI learners showed dissatisfaction with the school environment in which they lived and studied. Some of the VI learners were dissatisfied with the physical conditions of the school. For example, they were uncomfortable with rough pathways, the absence of school fences, unhygienic toilets, and long distances from the hostels to the classrooms. The following quotes from some primary school students recorded during interviews provide evidence of the dissatisfaction:

... The roads here have holes all over. Larger areas of the school have trees and stones scattered everywhere. It is a problem. To get lost is a common phenomenon. The dormitories are also located far from the classrooms. This distance limits our freedom to do things in a hurry. (Interview, VI learner in School A)

... The environment is bad, and the roads are unfriendly because we have difficulty accessing classrooms, hostels, and toilets. (Interview, VI learner in School F)

... My former primary school was specifically designed for VI learners. I didn't use the walking stick. However, here I am forced to use it because the environment is not friendly. Without the walking stick, I will likely fall into the ditches and get hurt. (Interview, VI learner in School H)

... There are some challenges in our school. ... For instance, we don't have adequate learning resources such as books written in braille format and audiotapes. (Interview, VI learner in School D).

... Some of our teachers are not skilled enough to teach in inclusive classrooms. For example, during teaching, they use diagrams or pictures, and sometimes we can hear our fellows laughing at the picture, but because we cannot see it, we cannot join the laughter, and the teacher does not explain what the picture is about. As a result, we are often left behind and our performance is not very good ... (Interview, VI in School A)

The differences in how visually impaired students view the school environment may be due to the variations in the nature of their schools in terms of their leadership, location of the school, history of the school, and age of the school, to mention a few. The explanations from the learners with visual impairment regarding their dissatisfaction with the general physical environment indicate that there are pertinent issues that need to be addressed in inclusive primary schools, including improvement of support infrastructure, provision of adequate teaching and learning and training of teachers on special needs pedagogies.

Sighted Learners' Perceptions of General Physical Environment

During interviews and focus group discussions, sighted learners were also asked to describe the general physical environment in their schools and how it affected their peers with visual impairment. Although few sighted learners had no clear understanding of how the general physical environment affected visually impaired students, most of them could state the situation of their schools and how VI learners were affected by such a physical environment. The general impression from many sighted learners was that their schools had an unfriendly general physical environment for learners with visual impairment. This is evident from the testimonies provided by sighted learners:

... Some classrooms and dormitories in our school have worn-out floors with holes, which are dangerous for the visually impaired pupils In addition, the toilets, which are meant for the visually impaired pupils, are not well cleaned.... (FGD, Sighted Learner in school B).

A school student narrated a story of his visually impaired friend who complained about the behaviour of teachers:

... I have a Form I visually impaired friend who kept complaining about some of their teachers He complained that some teachers do not know how to teach visually impaired students. They speak in a low voice when they teach or demonstrate something, and when they write, they assume all students can see what they are writing (FGD, Sighted Learner in School A).

The two narratives from sighted learners imply that sighted learners understand the suffering of their visually impaired peers, and they feel uncomfortable about such a physical learning environment. From such a situation, it can be argued that all learners in inclusive classrooms, regardless of their conditions, are psychologically affected when some of their peers face challenges. Therefore, creating a friendly physical learning environment for learners with disabilities in inclusive classrooms is also psychologically rewarding for learners without disabilities.

Teachers' Perceptions of General Physical Environment

The teachers in the selected inclusive schools were asked about their perceptions regarding the physical learning environment and how it supported learning for VI learners. The results are summarised in Table 2.

Table 2: Teachers' Perceptions on General Physical Environment Support for VI Learners

S.N	Statements	Level of Agreement in Percent		
		Disagree	Not Sure	Agree
1.	VI learners can learn well in inclusive classrooms	25	75	
2.	VI learners learn well in special schools	12	6	82
3.	VI learners can easily move around within the school compound	11	9	80
4.	School infrastructure has been designed to cater for the needs of VI learners	69	10	21

The teachers who responded to the general physical environment also had varied perceptions. The quantitative data collected from teachers indicated that none agreed that VI learners can learn well in inclusive primary schools. It was also noted that most teachers perceived that VI learners learn well in special schools. Moreover, in terms of the design of infrastructure in schools,

although the majority of teachers perceived the school's general physical environment as suitable for VI learners, many teachers disagreed on whether the infrastructure was designed for VI learners. Survey results were also supported by explanations provided by some teachers during interviews, as follows:

... I don't know the situation in other schools, but the learning environment for VI learners in our school is good. Though the school was not initially meant for inclusive education, several modifications have been made to accommodate VI learners. (Interview, Teacher from School B).

... The physical learning environment is friendly for VI learners. The stairs leading to the classrooms are easily passable. The Government is bringing the necessary learning materials for VI learners. So, the physical learning environment is satisfactory. (Interview, Teacher from School D).

... In my view, the physical learning environment for VI learners in our school allows them to learn better, like their peers. ... I think there is no serious problem. For example, in the dormitories, there are friendly staircases for VI learners (Interview, Teacher from School G).

However, according to researchers' observation, most of the visited inclusive schools had an unfriendly physical learning environment, and some of them were exceptionally critical. What was learnt from some teachers is that they knew their schools' weaknesses, but feared making negative remarks because they thought they were jeopardising their employment.

Apart from teachers who had a positive view of the physical learning environment, some teachers (11%) perceived the physical learning environment for VI learners as unfriendly. The dissatisfaction with the physical learning environment was also revealed during interviews with teachers, and the following remarks were made:

... There are challenges about the physical learning environment of the visually impaired students in our schools. There are holes on the roads. Also, during the rainy season, this area is very slippery. (Interview, Teacher from School E).

... All I can say is that the physical learning environment is not friendly. We don't have books that are specifically tailored for VI learners. Some teachers lack the pedagogical skills to deal with VI learners. (Interview, Teacher from School K)

The teachers' remarks indicated that there was still much to be done to improve the physical learning environment in inclusive schools to support effective learning for VI learners.

Head Teachers' Perception of the General Physical Environment

The heads of school also provided their views regarding the suitability of the learning environment for visually impaired children. Sixteen out of 20 (80%) of the interviewed heads of school were not satisfied with the physical learning environment for VI learners. One of the head teachers in Iringa made the following comments regarding the school environment:

...The physical learning environment is not very friendly for inclusive education. The students with visual impairment are accommodated within the school, but the bedding materials, especially the mattresses and beds, are of poor quality. On the side of classrooms, the classrooms are well built and have good toilets specifically designed for them. However, the pathways are not well designed for children with disabilities. I think more must be done on creating a suitable learning environment. (Interview, Head of School D).

Another head of school added:

... To a larger extent, the physical learning environment is not good. The school infrastructure needs repair to accommodate visually impaired students. Pathways are bad, and toilets have problems. In terms of the classrooms, there is no problem. Visually impaired students use the ground floor. (Interview, Head of School B)

Ward Education Officers' Perceptions of the General Physical Environment

The researchers were interested in knowing the contribution of the Government in implementing inclusive education, especially in supporting visually impaired learners in primary schools. The education officers were asked about their views regarding the Government's contribution to the inclusion of visually impaired children in inclusive schools. The majority of education officers reported that the Government, through the Ministry of Education, Science, and Technology, provides teaching and learning materials such as books and equipment. The Government also provides food for VI learners. In addition, one of the education officers had this to say:

... Nationally, the Government provides support to schools with visually impaired children, amounting to 3.2 million Tzs every month. It also constructs infrastructure and supplies food. For instance, between 2015 and 2017, the Government provided 650 million TZS for infrastructure development in inclusive schools. The municipal councils also provide funding and recruit teachers specialising in special needs education. (Interview, Ward Education Officer).

Another education officer reported that:

... Although the Government trains teachers for special needs, the training is still insufficient, providing equipment such as braille machines, papers, and other requirements for students with other disabilities. (Interview, Ward Education Officer)

Parents' Perception of General Physical Environment

The parents were asked to air out their perceptions regarding the physical learning environment of their visually impaired children. The majority of the parents interviewed were satisfied with the physical learning environment for VI learners. During an interview with one of the parents, he made this comment:

...In my opinion, the teachers live well with our children, teach them well, love them and do not stigmatise them. (Interview, Parent)

When the parents were further asked if the children explained to them the nature of their learning environment, most of the parents admitted that the children reported their experiences at school. For instance, one of the parents interviewed reported that:

My child cannot explain the school's physical environment because he cannot see. However, he talks about teachers and fellow students and how they help him and protect other children with disabilities. He talks about his good relationship with fellow students, especially in the classroom and dormitories. (Interview, Parent).

Classroom Environment

The second research question examined how the classroom environment supported the teaching and learning for VI learners in inclusive schools. This research question was directed to teachers, VI learners, and sighted learners who regularly interact in classrooms.

Teachers' Perceptions of Classroom Environment for VI Learners

Teachers were requested to give their perceptions about the classroom environment and how the environment supported the learning of VI learners. The teachers had varied perceptions on the issue in question, as shown in Table 3.

Table 3: *Teachers' perceptions of classroom environment for VI learners*

S.N	Statements	Level of Agreement in Percent		
		Disagree	Not Sure	Agree
1.	The classroom environment is suitable for VI learners	33	13	54
2.	VI learners use similar learning resources to those used by every student	18	10	72
3.	VI learners use special learning resources designed for them	12	6	82
4.	VI learners have the necessary study materials	55	21	24

The survey results revealed that 82% of the teachers perceived that the classroom environment was appropriate for VI learners because they used special learning resources designed for them, even though they were in inclusive classes. However, 72% of teachers indicated that visually impaired students used similar learning resources to those used by sighted learners in the classroom. The sharing of similar learning resources suggests that the VI learners are disadvantaged in using learning resources, particularly those with visual images.

The results also revealed that a significant number of teachers (55%) perceived the study materials for VI learners as inadequate, while 24% perceived the study materials as adequate. The findings imply that there are deficiencies in terms of study materials in some inclusive schools, which in one way or another affect the effective learning of VI learners. Equipping inclusive schools with enough learning resources based on the needs of learners would be a viable means of helping learners with disabilities, particularly the visually impaired ones, to benefit equally from classroom lessons.

Another concern was the suitability of the sitting arrangement in the classroom, for which 54% of the teachers perceived it as suitable, whereas 33% perceived it as unsuitable for VI learners to participate effectively in the learning process. Principally, the VI learners need to sit where interaction between the learner and the peers and between the learner and the teacher is easily maintained. However, during interviews with teachers, a large number of learners in the classroom emerged as a significant barrier to proper seating arrangements, consequently negatively affecting VI learners' participation in learning. To describe this situation further, one of the teachers from school C had this to say during the interview:

... I think, to enable VI learners to get a good education, their classes need to have few students, if possible, not more than 20. (Interview, Teacher in School C)

In addition, a teacher from school A had the following remarks:

...Classrooms are few and overcrowded, while a class with special needs ought to have few students so that they can be taught effectively. (Interview, Teacher in School A)

The results imply that implementing inclusive education requires reconsidering the class sizes and the teacher-learner ratios in the classroom. For teachers to be able to reach every learner and attend to each learner's learning needs, the class should have a manageable number of learners.

Using the Mann-Whitney U test, further analysis was carried out to determine if there were any significant differences in male and female teachers' perceptions about the general physical school environment and classroom environment in supporting the teaching and learning of VI learners. The overall results indicated that there were no statistically significant differences in perceptions by gender. Table 4 shows such a trend. This finding implies that female and male teachers had similar perceptions about the general physical school environment and the classroom environment.

Table 4: *Mann-Whitney U Test for Gender*

S/No.	Statement	Gender	Mean Rank	p value
1.	Visually challenged learners can learn well in inclusive classrooms	Female	102.58	.889
		Male	103.38	
2.	Visually challenged learners learn well in a special school	Female	108.42	.091
		Male	99.04	
3.	Visually challenged learners can easily move around within the school compound	Female	107.58	.302
		Male	101.65	
4.	The classroom arrangement is suitable for visually challenged learners	Female	110.21	.112
		Male	98.31	
5.	Visually challenged learners use similar learning resources to those used by every student	Female	106.04	.290
		Male	99.23	
6.	Visually challenged learners use special learning resources designed for them	Female	98.68	.900
		Male	99.29	
7.	Visually challenged learners have the necessary study materials	Female	103.82	.468
		Male	98.52	
8.	School infrastructure has been designed to cater for the needs of visually challenged learners	Female	106.00	.393
		Male	100.25	

Note Significance level was at .050.

VI Learners' Perception of the Classroom Environment

During interviews and focus group discussions, the VI learners were also asked to air their views regarding the classroom environment and how it supported their learning. Since the learners belonged to different schools with diverse environments, their responses to this issue also varied. Some visually impaired students viewed the classroom environment as supportive to their learning because their peers assisted them, and the teachers were very friendly to them during lessons. This is evident from the statement of one of the visually impaired students from school F during the focus group discussion:

... Yes ... the teachers are teaching us well; they take care of us and they are ready to support us when we have problems with learning... (FGD, VI learner in School F).

When they were asked about the availability of teaching and learning materials, one of the visually impaired learners from school B explained this during the focus group discussion:

...Yes ... our school has adequate teaching and learning materials and equipment such as braille machines, typing papers and printers. The problem we have is an inadequate number of teachers. (FGD, VI learner in School B)

Another visually impaired learner from school J was impressed by the collaboration and passion he received from peers while they were in the classroom. During the interview, this learner made the following remarks:

... I am very happy to study in a mixed classroom because my friends who do not have a visual problem like mine always help me when I need their support, especially in doing assignments and other activities assigned by the teacher. ... I do not face any discrimination. (Interview, VI learner in School J).

Although many VI learners had positive views about the classroom environment in relation to support for their learning, some learners felt that the classroom environment was not adequately supportive. For instance, during one of the focus group discussions, a VI learner in school K complained:

... Some teachers come to class with diagrams or pictures, and they do not explain them well enough so that we who are visually impaired can also understand what the picture is about.... Worse still, the teacher asks the class about what the picture is about as if all of us can see... This is very disappointing. (FGD, VI learner in School K).

The complaint from the VI learner implies that some teachers lack the skills to teach VI learners. Therefore, teachers need regular training on how to teach in inclusive classrooms.

Sighted Learners' Perceptions of Classroom Environment

The sighted learners studying with visually impaired peers were asked to narrate their experiences regarding the supportiveness of the classroom environment for VI learners to learn effectively. This question was asked during the interview and focus group discussions, and there were mixed responses from the learners. While some sighted learners viewed the classroom environment as supportive to VI learners, others viewed the environment as very challenging. For instance, when asked how they felt studying in one class with VI learners, one of the sighted learners from school E had this to say during the interview:

... I feel good to study in one class with VI learners because we learn a lot from them, and we must love each other... (Interview, Sighted learner in School E)

In response to the same question, another sighted learner from school L had this to say during the interview:

... I am happy to study in one classroom with VI learners because I learn the way they write using braille machines and I help them too... (Interview, Sighted learner in School L)

Another question asked during the focus group discussion was on the classroom environment in terms of teaching and the challenges visually impaired students face in classrooms. In response to this question, some sighted learners were concerned about how some teachers teach a class with VI learners. During one of the focus group discussions, one of the sighted learners from school D had this comment:

... One of the challenges is that some teachers teach with a very low voice, and therefore, a visually impaired learner cannot hear the teacher and fails to understand what is being taught. Worse enough, these teachers often do not write well on the chalkboard and the learners with mild visual impairment cannot read. (FGD, Sighted learners in School D)

In the same focus group discussion, another sighted learner from school D added this comment about teaching:

... Sometimes, teachers use diagrams to teach in the class, and the VI learners cannot understand the drawings because they do not see. Even when they ask teachers to explain the diagrams, they cannot explain them clearly... (FGD, Sighted learner in School D)

Another sighted learner was concerned with the discrimination against VI learners in the classroom. During one of the focus groups in school H, one of the sighted learners had this story to tell:

... Some teachers tend to teach without involving VI learners, and they cannot even ask whether they have understood. They are being ignored. Moreover, some sighted learners are not willing to help the VI learners because they see it as a waste of their time ... (FGD, Sighted learner in School H)

The overall impression of the sighted learners' experiences on the classroom environment and how it supports learning of VI learners shows that although there are positive efforts made by teachers and sighted learners to support VI learners to learn, there are still challenges that need to be addressed. For instance, teachers require continuous training on how to teach in inclusive

classes, including those with VI learners. In contrast, sighted learners need continuous education about how and why they should help their peers with visual impairment. Sighted learners need to be aware that loss of sight can happen to anybody at any time.

Discussion Of The Findings

This study assessed the learning environment for VI learners in inclusive primary schools in Tanzania. Specifically, the study focused on answering two major research questions: How does the general physical environment support learning of VI learners in inclusive schools? How does the classroom environment support the teaching and learning of VI learners in inclusive schools? The discussion is based on the two research questions.

General Physical Environment

The first research question assessed how the general physical environment supported learning of VI learners in inclusive schools. Answers to this research question were sought from teachers, VI learners, sighted learners, head teachers, ward education officers, and parents. The findings related to the general physical environment of the schools and how it supported the learning of VI learners were of a mixed nature. For instance, while some VI learners perceived the general physical environment as friendly and supportive to their learning, others perceived it as unfriendly and unsupportive to their effective learning. The findings agree with the results of the study on disability and barriers to education conducted by Lamichhane (2013) in Nepal. This study revealed that people with visual and hearing impairments received inadequate support systems in schools. In contrast, participants with physical impairment largely encountered challenges related to physical barriers such as inaccessible buildings and a lack of safe and accessible roads. However, it is important to note that the differences in perceptions might be due to variations across schools; that is, some schools are more resourceful than others.

Sighted learners were dissatisfied with the general physical environment for VI learners, partly because of the limited qualifications of teachers to teach in inclusive schools. The need for teachers to have required qualifications and competencies to teach in inclusive schools is also cited in the literature. Davis and Hopwood (2002) argue that for teachers to facilitate learning for VI learners in inclusive schools, they need skills to promote the holistic development of learners and provide equal access to opportunities. This is also evident from the study by Miyauchi and Paul (2020), who found that inaccessible didactics used by teachers, such as rapid *chalk and talk* and visual materials such as movies without sufficient auditory explanations, posed challenges to VI learners.

From the perspectives of the VI learners and sighted learners, the findings suggest that the learning environments in many inclusive schools were relatively friendly to them. Some teachers' positive attitude towards inclusive education is likely to increase VI learners' satisfaction with the general physical environment. Matsie and Stofile (2021) and Saloviita and Schaffus (2016) argue that a positive attitude of teachers is essential for successful inclusive education. Additionally, for teachers to function well in the context of inclusive education, Pantić and Florian (2015) point out that they must build appropriate professional relations with learners and other stakeholders to accommodate the diverse needs of learners. If these conditions are not met, VI learners may not benefit from the learning environment.

The teachers also had varied views regarding the general physical environment and how it supported the learning of VI learners in inclusive primary schools. While none of the teachers were in favour of the idea that VI learners can learn well in inclusive schools, the majority of them perceived that VI learners learn well in special schools. This implies that the majority of teachers lack the necessary knowledge and skills to teach in inclusive settings and are probably unprepared to teach in such an environment. These findings are consistent with the study by Luque et al. (2018) and Omer (2015) who found that teachers had inadequate knowledge of inclusion and were unprepared to teach in inclusive schools

While some teachers perceived the physical environment as supportive to VI learners, others perceived it as unsuitable due to poor infrastructure, inadequate teaching and learning resources, and a shortage of teachers with pedagogical skills to teach in inclusive classes. These findings align with the study by Omer (2015) in which most teachers admitted that they had not taken enough pre-service and in-service training, which enabled them to teach VI learners effectively.

Interviews with heads of school revealed that although there were efforts by the Government to improve the facilities in inclusive schools, there is still a lot to be done to improve the situation. The classrooms, dormitories, and the general surroundings of the inclusive schools need improvement. The findings from heads of school suggest that the school environment needs to be improved so that they can benefit from schooling. This should include restructuring the learning environment so that VI children enjoy studying in inclusive schools just like sighted ones. Similar findings were reported by a study in Ghana, which indicated that the environment for most inclusive schools was poor and less accessible to learners with disability; consequently, to accommodate the diverse needs of learners, there was a need to modify

and redesign the schools' physical landscape (Ackah-Jnr & Danso, 2019). The arguments by heads of school also align with the findings of the study by Wilson (2016) on challenges facing children with VI in accessing inclusive primary education, in which she found a mismatch between the number of facilities and the total number of students.

The parents and ward education officers perceived the general physical environment as supportive of the VI learners. According to the parents, many were satisfied with how their children attended school. This perception of the parents may implicitly attract other parents with children with disabilities to send their children to school. However, an alternative interpretation could suggest that some parents were unaware of the optimal learning environment required for VI learners. Some parents regarded the enrolment of their children with disabilities in school as a major relief to them. Therefore, they do not bother very much about the condition of the school.

The Ward education Officers further acknowledged the efforts by the Government to improve the learning environment in inclusive schools. Responses from the education officers show that they are working hard to create a conducive learning environment for VI learners and other children with disabilities in inclusive schools. However, much is yet to be done to ensure that all children with disabilities, including the VI learners, can access and benefit from school learning.

The perceptions of parents and WEOs can partly be influenced by their limited involvement in daily school activities. The heads of school, teachers, and learners are more informed about the effect of the physical environment on the learning of VI learners than parents and WEOs.

Since Education officers know the real situation, an alternative interpretation can suggest that political reasons influenced their satisfaction with the learning environment because they work under the minister, who is a political appointee. Government support, among other things, in terms of financial support, is important for inclusive education. A study in the Netherlands revealed that a decrease in funding can lead to higher dropout rates and a decline in participation rates in special education (Gubbels et al., 2018).

Classroom Environment

The second research question examined how the classroom environment supported the teaching and learning of VI learners in inclusive schools. This question featured in the teachers' questionnaire was posed during interview and focus group discussions with VI and sighted learners. The teachers' questionnaire on classroom environment focused on four main items:

suitability of the classroom environment for VI learners, VI learners' use of similar learning resources with sighted learners, VI learners' use of specially designed learning resources, and the availability of necessary study materials for VI learners. Regarding the suitability of the classroom environment for VI learners, although more than half of the teachers perceived it as supportive to VI learners, a significant number of them perceived it as unsupportive. This finding suggests that teachers had diverse perspectives regarding the inclusion of VI learners in inclusive classrooms. The teachers who viewed inclusive classrooms as supportive to VI learners might have considered bridging the discrimination gap between children with disabilities and those without disabilities. Moreover, research has indicated that teachers who are more knowledgeable about inclusive education are more likely to be positive and prepared to implement inclusive education (Krischler et al., 2019). Additionally, Haug (2017) affirms that the quality of teaching greatly influences students' learning outcomes.

On the other hand, the teachers who viewed the inclusive classroom environment as unsupportive to VI learners might have also considered the time they need to spend with the VI learners during the lesson versus the completion of the syllabi. These findings are supported by a study by Asamoah et al. (2018), who found that many teachers believed that the VI learners would learn better in special schools compared to inclusive classrooms. In such a study, the teachers complained that VI learners, because of their slow learning pace, delayed completion of their syllabi, and the noise made by the braille machines disturbed their sighted counterparts.

Regarding VI learners' use of similar learning resources with sighted learners, most teachers agreed that VI learners shared similar learning resources with their sighted peers. Principally, VI learners should learn the same content as their peers without disabilities (Miyauchi & Paul, 2020). Teachers need to modify the content into accessible formats. This implies a shortage of teaching and learning resources for VI learners in many inclusive primary schools. It also implies that teachers do not provide proper support for VI learners in the classroom, a situation that may deter effective learning for them. The findings are concurrent with a study by Revelian (2022) who found that teachers in inclusive public primary schools preferred to use lecture, discussion, and question-and-answer methods due to insufficient teaching and learning resources. Essentially, teachers teaching in inclusive classes with VI learners must be able to choose, develop and/or apply teaching and learning resources that are suitable for them.

On VI learners' use of specially designed learning resources, most teachers agreed that the learners use the resources meant for them. This finding may

seem to contradict earlier findings, which showed that most of the teachers agreed that VI learners use similar resources with sighted learners. However, in this case, the teachers acknowledged that although VI learners shared some teaching and learning resources with their sighted peers, other resources were specifically meant for them, such as braille machines, papers, printers, and recorders, which were not shared with sighted learners. It should also be noted that VI learners will benefit from the general education if they use instructional materials that are appropriate for them. This is also argued by Acula et al. (2024) that for equal access to the core and specialized curricula, as well as to give them the best chance of competing with their peers in the classroom and, ultimately, in society, VI learners must have access to specialized services, books and materials with appropriate instructional resources such as Braille, specialized equipment and technology.

The response of teachers to the question whether the classrooms had the necessary study materials for VI learners indicated that more than half of the teachers disagreed. The findings imply that there is a shortage of teaching and learning materials for VI learners in many inclusive primary schools. These findings are similar to those of Revelian (2022), that revealed that many inclusive public primary schools in Karagwe, Tanzania, had insufficient teaching and learning resources for VI learners. Concurrently, a study by Negash and Gasa (2022) in Ethiopia, found that inclusive schools had inadequate teaching and learning resources, such as books in Braille, reading software, and audio-recorded materials for VI learners.

The visually impaired learners have also expressed concerns about the classroom environment in inclusive primary schools and how it supports their learning. Their responses during interviews and focus group discussions showed that they had different perspectives. Some VI learners viewed inclusive classrooms as supportive to their learning, as it enabled them to receive academic and social support from their sighted peers and teachers. These findings are consistent with the findings by Asamoah et al. (2018), who found that VI learners felt that by studying in one class with learners without disabilities, they could develop their potential as they measure their academic achievements with their counterparts. However, some VI learners viewed the classroom environment as unsupportive and hostile to them. This perception was partly contributed to by their teachers' lack of pedagogical knowledge and skills about teaching in inclusive classes, and lack of learning resources for VI learners. These findings are in line with the study by Miyauchi and Paul (2020), who found that due to a lack of teachers' knowledge of visual impairment, many VI learners in inclusive classrooms are excluded from participating in activities.

The sighted learners also showed differing perspectives regarding the inclusive classroom environment and how it supported learning for VI learners. During interviews and focus group discussions, some sighted learners argued that an inclusive learning environment supported VI learners because there was high collaboration among them and that sighted learners could learn from their VI counterparts. These findings align with the study by Asamoah et al. (2018) in which sighted learners felt that inclusion allowed them to help their VI peers catch up with their studies, who otherwise might have lagged in most subjects. However, some sighted learners perceived the classroom environment as unsupportive to VI learners. One of the main arguments was that the teachers were using teaching strategies and learning materials that were not friendly to VI learners. In addition, some sighted learners were unwilling to help VI learners because they considered it a waste of time. These findings are in line with the findings of a study by Asamoah et al. (2018), who found that some sighted learners were against the practice of inclusive education because the learning style of VI learners was different from theirs, and therefore, having them in their classes delayed learning and completion of the syllabus. Moreover, a study by Gariba and Awini (2023) in Ghana found no positive peer relationship between sighted learners and VI learners and that some sighted learners were hostile and discriminatory to VI learners. These findings imply that some learners without disabilities have not yet embraced inclusive education practices. Therefore, they need awareness-raising education in schools in order to develop a sense of acceptance and collaboration among students in inclusive classrooms.

Conclusion

This study focused on assessing the learning environment for VI learners in inclusive primary schools in Tanzania. Based on the findings from this study, it can be concluded that active learning for VI learners is far from being realised in Tanzania. The study's general findings reveal that inclusive learning environments face numerous challenges, including unfavourable general physical environment, inadequate teaching and learning resources for VI learners, lack of inclusive pedagogical knowledge and skills among teachers, and discriminatory tendencies against learners with disabilities. To ensure effective learning for VI learners within inclusive settings, there is a need to modify the general physical environments, improve teaching and learning resources, train teachers on inclusive pedagogies and raise awareness for learners without disabilities.

Recommendations for Improvement of Inclusive Schools

From the findings of this study, several recommendations are made to the Government, teachers, and other stakeholders.

Recommendations to the Government

Since the findings have revealed a shortage of learning resources for VI learners, it is the responsibility of the Government to increase such learning resources.

Similarly, fencing the school compounds is mandatory for the security of learners. In inclusive schools, there are learners such as people with albinism. Given the attitudes towards people with albinism in Tanzania, inclusive schools need to be secured not only with fences, but there should also be matrons, patrons, and guards to take care of these learners, particularly after school hours.

The current practice regarding inclusive education in Tanzania is that learners are taken to specifically designated schools as inclusive schools. In this case, VI learners are distanced from their environment, including parents, guardians, and siblings. In this regard, it is suggested that the Government should ensure that there are necessary facilities and teachers for VI learners within their vicinity. In this case, VI learners may not feel alienated from their environments.

Finally, the Government needs to ensure that inclusive schools are inclusive because currently, these schools seem not to be inclusive in terms of the physical infrastructure and qualified personnel to handle inclusive classrooms. There is a need to have friendly infrastructure and qualified teachers for VI learners.

Recommendations to Teachers

The Government alone cannot solve the problems related to VI learners. Teachers have roles to play, too. In terms of facilitating active learning in inclusive schools, teachers need to be more creative in classroom arrangements that foster interaction. The arrangements should be in such a way that learners can easily interact with each other as well as with the teachers.

Teachers must also be aware that it is their responsibility to teach in inclusive schools. They need to develop professionally so that they can teach well in inclusive schools. Finally, filling up identified pits within the school compound is the responsibility of the teachers. This does not need attention from the central Government.

Recommendations to Other Stakeholders

Other stakeholders, such as parents and non-governmental organisations, can support inclusive schools with the resources the Government has failed to

provide. Parents need to love and care for their children who are visually impaired. They should not perceive that it is a burden to have such children.

Area for Further Research

Further research can focus on intervention and longitudinal studies on teachers' training on inclusive pedagogies and how inclusive practices are being improved in Tanzania. This will likely give more insights into how inclusive education is being implemented in the country.

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