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The Practices of Teaching Orientation and Mobility Skills to Students with Visual Impairment in Selected Tanzanian Universities

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Abstract

The increased need for independence among individuals with visual impairment poses a deliberate prerequisite to equipping them with orientation and mobility skills. This study aimed to investigate the practices of teaching orientation and mobility skills among university students with visual impairment in Tanzania. Understanding the practices used, new and better policies can be developed to improve the training of orientation and mobility for students with visual impairments. The study employed an intrinsic case study design to generate in-depth information on training orientation and mobility for students with visual impairments. Purposively, 25 participants were selected to participate in the study, including students with visual impairment, orientation and mobility specialists and administrators. Inductive thematic analysis using NVIVO was employed to make sense of data generated from two selected universities using interviews, focus group discussions, observations and documentary reviews. The findings revealed that orientation and mobility are taught in an unstructured environment without proper guidelines to guide the teaching process. Based on the findings, it is recommended that orientation and mobility training should be incorporated into the university policy and curriculum to allow students with visual impairment to learn orientation and mobility systematically for proper mastery of the skills.

Keywords: Orientation; Mobility; Orientation and Mobility; Visual Impairment.

1. INTRODUCTION

The introduction of inclusive education has marked the escalating number of students with visual impairment enrolled in universities. In Tanzania, the first two students with VI were enrolled in 1978/1979 at the University of Dar es Salaam (Bhalalusesa, 2018). In the academic year 2023/2024, a total of 1539 students with disabilities were enrolled in higher education institutions, including 740 students with visual impairment (TCU, 2024), marking a substantial increase in access to higher education for students with visual impairment in Tanzania. It is the responsibility of all educational institutions to impart various skills to students with visual impairment to meet their unique needs (Griffin-Shirley et al, 2019; Iqbal & Ashiraf, 2023). The skills of Orientation and Mobility (O&M) are

essential for students with visual impairment to access the learning environment successfully (Bahtiyar & Can, 2021). The international policies, including the UN Convention on the Rights of Persons with Disabilities (2006) articles 20 and 24, support learning O&M skills to facilitate equal access to education (UN, 2006). Further, the National Policy on Disability 2004 and the Persons with Disability Act 2010 acknowledge the importance of skills training for people with disabilities (URT, 2004; URT, 2010). Consequently, the Tanzania National Curriculum Framework for Basic and Teacher Education 2019 emphasizes equipping trainee teachers with the knowledge and skills of teaching students with visual impairment (URT, 2019). Further, certificate and diploma special needs trainee teachers are equipped with the skills and knowledge to teach O&M to students with visual impairment at the lower levels of education (TET, 2019).

Orientation entails the ability of an individual with visual impairment to recognise their surroundings in relation to the position of objects (Idawati et al, 2020). Developing the ability to orient oneself in an environment requires a student with visual impairment to utilise other senses apart from the sense of vision. The senses of hearing, smell, taste, touch, and kinaesthetic assist in recognising landmarks and clues, understanding the indoors and outdoors, measuring distances, echo-locating, and self-familiarisation (Ferreira & Sefotho, 2020). This is achieved through understanding three principles of orientation: where the student is, where he/she is going, and the way to reach the planned destination (Heward, 2013).

Mobility involves actual movement from one point to another with the assistance of either a mobility cane, a sighted guide, electronic devices, or a dog guide (Ferreira & Sefotho, 2020). With mobility devices, a person develops the ability to travel in both familiar and unfamiliar environments safely and confidently (Ferreira & Sefotho, 2020). Thus, an individual with visual impairment needs to master the skills of orientation and mobility, because a person might know where he/she is but cannot move safely in that environment, and occasionally a person may be mobile but become disoriented or lost (Heward, 2013)

Orientation and Mobility denote a service provided to students with visual impairments by qualified personnel commonly known as orientation and mobility specialists (Kana & Regassa, 2024; Griffin-Shirley et al., 2019). The service is provided to students with visual impairment to acquire systematic O&M skills within their environment (home, school, university, community) to move safely and confidently without being dependent (Fast & Wild, 2018; Kaiser et al., 2018). Various scholars suggest that the skills should be introduced at the early stages of development by training body awareness, spatial awareness, environmental awareness, and movement (Malik et al., 2018; Sapp & Hatlen, 2010). Additionally, the literature indicates O&M as a lifelong process learned from early childhood to adulthood (Ferreira & Sefotho, 2020). Therefore, O&M is crucial for the inclusion of students with visual impairment in the education system to ensure easy access to the learning environment. Missing such access creates challenges for students with visual impairment by making them feel less valuable, involved, lacking confidence, and becoming more dependent on their peers. Thus, O&M skills play a vital role in developing a sense of belonging, independence, equality and participation; ignoring them means that inclusion is hollow.

Globally, there is no universally accepted format and content for teaching O&M skills (including teaching the use of a long cane) to students with visual impairments (Griffin-Shirley et al., 2019). This leads to inconsistency in training O&M skills among O&M specialists. Furthermore, the methods of teaching O&M are constantly evolving due to ongoing research on the best practices for training individuals with visual impairments (Kaiser et al., 2018). The advancement of technology generally influences the development and planning of O&M training programs (Deverell, et al., 2022) (Dove, et al., 2022). Therefore, the ability of students with visual impairments to master and apply O&M skills varies from place to place or country to country, depending on the availability or lack of O&M specialists, tools, devices, and the training approaches used to prepare O&M specialists to instruct students with visual impairments. (Griffin-Shirley et al., 2019; Griffin-Shirley et al., 2023)

Generally, O&M skills are taught by O&M specialists, also known as O&M practitioners (Qualified professionals who have studied at an accredited tertiary institution to learn how to teach students with visual impairment the skills of O&M (Ferreira & Sefotho, 2020). The orientation and mobility specialists teach students with visual impairment how to establish and maintain an awareness of their physical location through environmental features (landmarks and clues to determine where they are in the

environment), Sensory information (auditory, visual, or tactile input), and spatial orientation (understands the relative position and relationship of objects in space), (Kaiser et al., 2018; Sapp & Hatlen, 2010).

The orientation skills comprise clues, signs/landmarks, indoor/outdoor numbering systems, measuring, and compass directions (Kaiser et al., 2018). These skills are crucial for a student with visual impairment to move safely and efficiently (Bahtiyar & Can, 2021). Correspondingly, O&M specialists teach mobility skills, which include trailing a wall, self-protection techniques, sighted guide skills, and cane skills. Following the principle of effectiveness, each mobility technique is applied for a particular purpose. For instance, holding the sighted guide's elbow four fingers above and walking half a step behind makes it clear that they are climbing stairs, (Giudice & Long, 2024).

The study by Kana & Regassa (2024) in Ethiopia revealed that university students with visual impairment were taught O&M by well-trained specialists formally in classes with a regular curriculum through an active learning (practical) approach in grades one to six. The study reported that formal teaching increases their confidence, makes students with visual impairment independent, improves their social skills, and enables them to use white canes and sighted guides in a more meaningful way, while students who lack formal training were more dependent even when they reached at university level. Malik & Manaf, (2020) in Pakistan observed that students with visual impairment learnt O&M in a structured environment through teaching and instructions from their O&M specialists. Moreover, they applied the skills and moved independently after receiving the instructions. In Kenya, Randiki (2021) concluded that teaching O&M skills to students with visual impairment was ineffective due to inadequate O&M instructors and the omission of O&M training in the school schedule. In addition to inadequate resources and inconsistency in teaching O&M skills, students with visual impairment demonstrated insufficient mastery of the skills and were unsuccessful in accessing the learning environment. In Iran, Kamali & Ashor (2023) suggested that O&M training is crucial to students with visual impairment as it provides an opportunity to become aware of their environment, improve their confidence, well-being and in turn increase the quality of their life.

The ability of students with visual impairment to master and utilise O&M skills differs depending on the availability of O&M specialists, O&M tools and devices, and the mode of preparing O&M specialists responsible for training (Griffin-Shirley et al, 2023; Ferreira & Sefotho, 2020). Developing appropriate mastery levels of O&M skills among students with VI builds up the ability to access the environment efficiently and effectively (Heward, 2013). Similarly, attaining good mastery and applying independent travelling skills among students with visual impairment ensures easy participation in academic, non-academic, and extracurricular aspects of education, while increasing self-esteem and social and economic independence (Attia, 2020). Furthermore, good travel skills generated through O&M training expand students' employment opportunities and independent living. The study by Cmar (2015) reveals that students with visual impairment were employed after post-school completion; moreover, students with good travelling skills had higher employment rates than students with limited mobility skills.

Students with visual impairment can apply O&M skills when moving to a new/unfamiliar environment, although orienting them is unavoidable to identify landmarks easily (Kana & Regassa, 2024). Aftab et al. (2024) observed that students with insufficient O&M training faced difficulties finding routes indoors and outdoors and felt difficulty in self-protection, resulting in hurting, falling and difficulty in moving freely. Furthermore, a lack of well-trained orientation and mobility specialists' results in failure to impart the skills to students with visual impairment, hence difficult to master and transfer skills (Aftab et al., 2024). Similarly, when O&M skills are mastered and applied, Kamali & Ashor (2023) and Kana & Regassa (2024) observed that it can promote the quality of life for students who are blind, increase confidence, social interaction and promote independent movement.

Mastering, transferring and applying O&M skills depend on the practices of teaching O&M among students with visual impairment. However, there is inconsistency in teaching O&M skills among O&M specialists due to the differences in technological development of countries (Kaiser et al, 2018). Few studies have been conducted regarding practices of teaching O&M like the study by Malik &Manaf, (2020) as well as Griffin-Shirley et al., (2019); thus, failure of the educational institutions and community to acknowledge the value of O&M training in developing independence among students with visual impairment. In Tanzania, no study has been conducted concerning O&M except for Lugome

(2018), who incorporated a part of O&M in his study titled "The Academic Performance Impediments among Students with Visual Impairment in Inclusive Secondary Schools in Tanzania". Thus, missing crucial data on how best students with visual impairment are taught orientation and mobility in Tanzania. For this reason, this qualitative case study was conducted to bridge the gap and add to the body of knowledge.

Both the National Policy on Disability 2004 and The Persons with Disabilities Act 2010 support the training of various skills to people with disabilities, including O&M to those with visual impairment (URT, 2004 & URT, 2010). Further, certificate and diploma special needs teacher trainees are equipped with the skills and knowledge to teach O&M to students with visual impairment at the lower levels of education (TET, 2019). Although these national documents acknowledge the need for training in various skills, syllabi are silent on incorporating the training in O&M both at lower levels of education (URT, 2019) and university level. Thus, it is unclear how O&M skills are taught to students with visual impairment in Tanzania, thus the reason for this study.

The study was guided by two research questions (1) what are the practices of teaching O&M to university students with visual impairment in Tanzania? (2) how capable are students with visual impairment able to master, transfer and apply the skill of O&M in unfamiliar environments?

2. METHODS

This study adopted a qualitative approach to investigate the practices of teaching O&M skills among students with visual impairments in the selected universities in Tanzania. The study employed the intrinsic case study design as it allowed the researcher to deal with the case, which is ''the skill'' of O&M among students with visual impairment in an embedded unit's denotation of the selected universities (Yin, 2014 and Mills & Gay, 2019). The design allowed the participants to share in-depth information about the phenomenon under study. Using purposive sampling, the study selected twenty-five (25) participants from two universities, involving students with visual impairment, O&M specialists and administrators who provided views on the phenomenon in their natural settings (Creswell & Poth, 2018). From university A campus X, eight participants were involved; from campus Y, nine participants, and; from university B, eight participants were involved.

Homogeneous purposive sampling was employed to select the participants with similar characteristics from each category (eighteen (18) students, three (3) O & M specialists and four (4) administrators). The interviews, Focus Group Discussions, observation and documentary review were used to generate data. The semi-structured interviews were administered to students with visual impairments, O&M specialists and administrators. First, students with visual impairment and O & M specialists were interviewed on what practices they use to teach O&M skills to students with VI. The other research question; question two was looking for information on the capability of students to mastering, transfer and apply O & M skills in a new/unfamiliar environment. This was administered to O&M specialists and administrators through interviews and three small focus group discussions with the students. An observation checklist was used to observe the environment, the mobility techniques and the application of O&M skills. All the interviews and FGDs were audio recorded with the participants' consent.

Data were analysed using thematic analysis following six steps: familiarizing with data, generating initial codes, searching for themes, reviewing themes, defining and naming themes, and reporting. After data collection, all the transcripts from interviews and FGDs were transcribed, followed by reading and rereading to obtain meaningful information. Then, the transcripts were coded into NVIVO version 10 for easy sorting categorisation and analysis. The participants' responses with similar meaning were categorised and assigned a code. Lastly, the categorised codes with identified underlying relationships were grouped, coming out with themes and subthemes.

3. RESULTS AND DISCUSSION

Practices of teaching O&M skills.

The first research question was: What are the practices of teaching O&M skills to university students with visual impairments? Students with visual impairments and O&M specialists responded to the question. The findings revealed that O&M skills were not taught in a structured manner because they were not included in the university documents, such as the university policy and curriculum. Moreover, the study identified two groups of students with visual impairments: those with a concept of O&M and those with no idea. Due to a lack of guidelines and directives, O&M was taught informally, while other students learned the skills from other sources, as well as personal efforts and initiatives. The research questions guided the presentation of the findings. Furthermore, the findings and discussion were presented simultaneously, as described by the participants. Two themes emerged regarding the practices of teaching O&M skills: informal teaching practices and informal learning practices of O&M skills.

Informal practice of teaching O&M

The study revealed different informal practices of teaching O&M skills because O&M training was not provided in a structured environment. Students demonstrated inadequate knowledge of using some devices and tools; thus, some O&M specialists provided training when students received white canes from the responsible offices in the university. However, this was done locally as not every student was trained, because only those who required the white cane and requested training from O&M specialists were trained on how to use white canes. Additionally, the study revealed that even the informal training was provided based on the personal willingness of the person who provided the white cane and the students with visual impairment. However, some students with VI were taught some O&M skills in an informal structure (informally) while others learned from various sources, including parents and their fellow students who were not knowledgeable enough about O&M. Two subthemes emerged: Informal teaching and recruiting guides.

Unstructured teaching of O&M

One practice that the study revealed was the informal practice of teaching some skills of O&M, such as using white canes. This is because the university had no structured guides to guide O&M specialists on what and how to teach O&M skills to students with VI. Teaching was based on the individual O&M specialist's willingness to help students know some O&M skills and their environment. Moreover, the O&M specialists decided whether to teach them or not, what to teach, where and how, as no special documents directed them. The following are some excerpts from the O&M specialist and students with visual impairment

> *OMSPY8: When we provide the white canes, we ask the students if it is their first time using such a cane. If it is their first time, we proceed with teaching important things, for instance, how to use it properly. We demonstrate how to unfold the cane (for folded canes), how to hold it correctly, and how to use it, sweep or tap in areas with obstacles. We do not simply hand them the cane without demonstration*

The O&M specialist's narration was supported by a student who said that

> OMSPX7: *The training was not professional because it was done informally. For instance, when moving here and there, a specialist observes that I incorrectly use a white cane, the specialist tells me, 'They do not move with it like that and demonstrates the proper way of using it. But it is not sitting in a class and being taught for two hours, no!*

Another O&M specialist added that,

> OMSPX7: *''We do not teach the skills of* O&M *formally unless we realize that the sighted guides somewhere are guiding students with VI in the wrong way, then we teach and demonstrate a proper way of holding and guiding a blind person.''*

Although students were trained informally, this study observed that O&M specialists taught some skills to the students to overcome a particular challenge they encountered. The participants revealed that due to limited time for practising, they failed to master the skill as intended. Furthermore, no assessment was conducted to evaluate whether students had mastered effective due to a lack of guidelines. This resulted in a lack of confidence in students using O&M skills to develop their independent mobility,

thus relying on guides and peers. This is in line with Kana & Regassa (2024), who observed that students with visual impairment who lack formal training in O&M skills often rely on assistance from friends or peers to navigate their environment. Moreover, some face challenges due to a lack of access to formal training.

O&M specialists attempted to provide informal O&M training to students with visual impairment; however, a lack of a structured approach limited its effectiveness. The university's failure to allocate time for O&M training and the absence of authorised guidelines resulted in each specialist teaching what was considered important at a particular time, using their strategy in a chosen environment. This inconsistent and unstructured instruction created gaps in students with visual impairments' ability to navigate their environments independently. These findings align with Lugome (2018), who noted that students with visual impairment who receive no or informal O&M training struggle to navigate their environment and face difficulties in celebrating their independence. In contrast, the findings contradict those of Kana & Regassa (2024) and Blake (2018), who observed that O&M specialists delivered formal O&M training to students with visual impairment in classrooms, following authorised guidelines and using a practical approach with a white cane.

Recruiting the guides (non-specialists)

Another practice identified was recruiting and assigning the guides to students with visual impairment. Although each university has different criteria for obtaining the guides, all the universities under investigation had the guides. The guides were fellow sighted students or other recruited persons by the university; however, all were responsible for the O&M of students with visual impairment (Orienting and guiding). The participants reported that owing to lack of expertise in O&M among guides, they only considered a part of orienting them to the environment and guiding while train them few things that they knew and skipped an essential aspects of O&M. The O&M specialists intervened only when the guides were observed to perform their responsibilities incorrectly as they were not teaching O&M to students with visual impairment in a formal way. In the interviews with students with VI, O&M specialists, together with administrators, the participants narrated,

> *SWVIB3: My guide (fellow student) oriented me to the environment when I arrived at the university for the first time. He assisted in identifying some landmarks that would make it easy to master and move around the university*

In the same issue, an O&M specialist said

> *OMSPY8: When students with VI report to the university for the first time in their first year, the guides employed by the university are responsible for orienting them to the university environment.*

Similarly, the administrator supported

> *ADPB8: The O&M is handled by their fellow students, who guide and orient them with the environment*

The participants' narrations demonstrate that the responsibility of orienting and guiding students with visual impairment in the university environment was in the hands of guides (sighted students or recruited guides). Although they performed their responsibilities, they were not competent to provide information about the environment to ensure students with visual impairment gained the intended information to master, initiate, and maintain independent movement. This was because when students with visual impairment reported to the university for the first time, the guides oriented them to identifying landmarks that can be used for quick mastery of the university environment. Although the guides oriented and guided students with visual impairment, they were not trained. Below are the participants' excerpts,

> SWVIX3*: Yes! We have a guide, but they are not professionals; they are our friends. Like the one I have is my friend from our class is not trained, and we move without knowing the best way to guide a blind person.* SWVIY4: *Yes! The university employs guides, but most of them do not know how to orient and guide a blind person.*

The O&M specialist also narrated,

> OMSPB6*"Without training, the guide will not orient these students as required, and if they are oriented, they do so by experience, and unfortunately, it might not fulfil the needs of the blind person.*

The presence of guides responsible for O&M of students with visual impairment was perceived as significant; however, the participants revealed that they were not trained after being recruited on how to train and guide students with visual impairments. Hence, the guides demonstrated limited knowledge and skills in O&M; consequently, they failed to impart some skills to students with visual impairment to master the environment and attain independent movement. Moreover, the O&M specialists intervened only when they observed sighted guides providing incorrect guidance. This reactive approach was insufficient for students with visual impairment to acquire mobility skills systematically. Bahtiyar & Can (2021) highlighted that some O&M skills and tools (white canes) require systematic teaching to be effectively used. Malik et al. (2018) and Kaiser et al. (2018) clarify that, for successful and effective guiding in mobility, both the blind student and the guide must be trained on the rules and tips of mobility and demonstrate the skills as a team. The study by Arslantekin (2015) observed that a lack of training for both blind students and guides resulted in incorrect guiding, where sighted peers guided their fellow blind students by pulling on their arms, holding them by the shoulders or walking side by side. Thus, students with visual impairment remain more dependent on guides or other students and miss the required degree of independence and freedom as mature students.

Furthermore, the study revealed that the universities under study prioritised the development of computer skills for students with visual impairment over O&M because it was not stipulated in the university documents, including the policy and curriculum. This left students with visual impairment with no necessary skills to navigate their environment confidently. This contradicts the principles of inclusion, which embrace the accessibility of all students to essential places and services. The Social model of disability requires the university environment, curriculum, methods and materials to be adapted to suit the unique needs of each individual with special needs. Thus, prioritizing computer skills over O&M for university students with visual impairment opposes the social model of disabilities (Barnes & Mercer, 2004; Oliver, 2013) and the principles of inclusion (UN, 2016). To empower independence for students with visual impairments, O&M training should be prioritised to increase their confidence, self-esteem, social interaction and accessibility to essential places and learning environments (Kana & Regassa, 2024; Kamali & Ashor, 2023), which provide equality in education.

Informal Practices of Learning O&M

The study revealed that due to a lack of proper training in O&M skills, students with visual impairment learned some O&M skills on their own from different sources to manage their daily lives. Students with visual impairment learned the skills locally in different unstructured environments. The participants claimed to have learned travelling skills, physical space familiarisation, self-protection, and so forth. Three subthemes emerged from this theme: learning O&M from parents and other people, from fellow students with and without visual impairment and through their efforts and initiatives.

Learning O&M from parents and other people.

The study findings revealed that students with visual impairment learned the travelling skills from their parents (Informally). However, they did not consider their actions deliberate skill-building; rather, they perceived them as part of life without deliberate knowledge that they were imparting the skills required by students with visual impairment in their lifetime. This was to manage their daily lives, including attending school and other places. The excerpts from the participants narrated,

> SWVIY3: *I learned travelling skills from my mother. Initially, I started travelling with her, and for everything concerning the journey, she was responsible. She gave me instructions for travelling tips. She insisted I interact with a passenger near my seat for easy assistance whenever necessary. Later on, I started travelling independently using her instructions. To date, I am still applying her instructions when travelling.* SWVIX5: *My parents taught me the travelling skills. They taught me to inform and show the bus conductor all my luggage to ensure good security. Also, I learned to have a good relationship with the bus conductor and other passengers because sometimes I may need their assistance*

The participants demonstrated that parents played an incredible role in equipping their children with the necessary travelling skills, though unintentionally. The participants revealed that they mastered the tips when travelling and declared to travel independently from home to the university and other places they were supposed to travel. This aligns with the broader understanding that parents serve as primary

socialisation agents, teaching critical life skills through lived experiences rather than formal instruction (Malik & Manaf, 2020). Early exposure to travel under parental supervision provides students with visual impairment with essential navigation skills. The findings revealed that parents initially provided verbal instructions to ensure safety measures and gradually encouraged independence. This practical learning was significant for individuals with visual impairment as it allows them to develop confidence and familiarity with their surroundings. This informal instructional method proves its effectiveness as students with visual impairments continue to apply their parents' teachings, interact with passengers, and travel independently to date, although challenges are unavoidable. The study by Cmar (2015) noted that good travelling skills generated through mastering the skills of O&M expand students' employment opportunities and independent living. Furthermore, the study revealed that students with visual impairment were employed after post-school completion; moreover, students with good travelling skills had higher employment rates than students with limited mobility skills. The parental efforts to continue reinforcing and encouraging students with visual impairment to build travelling skills, develop self-reliance, self-esteem, and good interaction and socialization skills.

Personal initiatives and efforts.

Another practice revealed was learning O&M skills through personal initiatives and efforts. Due to a lack of formal training in O&M skills, the participants claimed to use an alternative to ensure they learned some crucial O&M skills to master and manage the university environment. Students with visual impairment familiarised themselves with the environment without waiting for the O&M specialists' or guides' assistance. The following are the excerpts

> SWVIY1: *I learned and mastered indoor and outdoor environments through personal efforts because we were not oriented,* SWVIY5: ‘‘. *When I reached the university (a new environment), I explored the place indoors and outdoors my room because there was no avenue to be oriented with the environment. It reached a time when I needed freedom, and to obtain it, I used my initiative to familiarise myself with the environment’’* SWVB1: *Mmm! Most of the time, I like to learn to familiarise myself with the environment by trying, especially in a new area. Usually, I move for the first and second times with a guide, but the third time, I must try moving independently to master the route.*

Regardless of the personal efforts employed, students with visual impairment managed to move mostly in their hostels around the university. Although they tried using their efforts mastering the environment varied from one student to another due to different backgrounds. Similarly, students with visual impairment employed self-developed techniques such as mapping out rooms and counting stairs to familiarise themselves and manoeuvre their environment to promote independence. This demonstrated the resilience and adaptability of students with visual impairment to the new environment. Moreover, students with visual impairment cautiously explored new environments, learning through trial and error. While the approach was effective for some students, it posed significant challenges for others who struggled with independent movement.

*Learn from their fellow students***.**

Another practice of learning O&M skills was learning informally from their fellow students. Sighted students-oriented students with visual impairment to the university environment and assisted them whenever required. In the FGD with students with visual impairments, they narrated that,

> FGDB3 ‘‘*My fellow students oriented me to the environment when I arrived at the university for the first time. They assisted in identifying some landmarks that would make it easy to move around the university’’* SWVIB5, *‘‘I have never been oriented to the university environment by an O&M specialist… although, in the blocks/hostels, I had a chance to be oriented by my fellow students….’’* SWVIY4: *My fellow students taught me how to use the stairs. I remember when I joined secondary school… I was allocated to an upstairs class. Then my fellow student told me that my class was upstairs and there was no way I could change the class, then he said, ‘train yourself to cope with the environment. He held up my hand and we started going upstairs while counting, I practised that until I was used. It reached a time when I managed to run when moving up and down stairs,*

The participants' responses revealed that they learned O&M skills from their fellow students, not as formal training but as an act of goodwill. Sighted students assisted students with visual impairments to

identify crucial clues and landmarks for easy mobility and guided them to access learning environments and materials. Additionally, sighted students assisted students with visual impairments as they moved to different places within the universities and not to gain the skills and knowledge that were supposed to be mastered for their lifetime. However, its effectiveness varied as the level of mastery between students with visual impairment differs from one student to another.

The ability to master, transfer, and apply O & M skills

The second research question was how capable students with visual impairment were at mastering, transferring, and applying O&M skills in a new or unfamiliar environment. Students with visual impairment, O&M specialists, and administrators responded to this question. The findings revealed that, mastering, transferring, and applying O&M skills varied among students with visual impairment. The variation of findings may be accounted for from factors such as the level of vision, historical background, age of onset of vision loss, student readiness, environmental conditions, and the mode of training or learning of O&M, among others.

Mastering the skills.

The findings revealed that although O&M was taught in an unstructured manner, some students with visual impairment mastered the skills introduced easily, whilst others struggled, depending on their readiness and historical backgrounds. In the interview with O&M specialists, administrators, and students in focus group discussions, the participants narrated

> The specialist in her views said, OMPY8; *'They are capable of mastering the environment, and sometimes they move themselves'*, another administrator added ADPX8 *''others until they accomplish the university, they are unable to move independently even in a short distance, for instance, we had one blind student (a postgraduate), he cannot move anywhere independently, he was too dependent.*

In the FGD, the participant added

> FGDY6: **'***Any person who is blind for easy mastery of the environment, their mind should be ready to learn.* FGDB5; *'Mastering depends on the ability of individual students because students with visual impairment differ in the level of mastery'.* FGDY3: *'Mastering the environment depends on the readiness of the blind student him/herself'*. FGDY2: *'We blind students differ in capturing/ mastering the environment because others can spend a short time, while others spend a long time. Some students, until they complete school, still cannot move independently.*

The participants' responses revealed that students with visual impairment can master the environment, although inconsistencies are unavoidable. They claimed that for students to master the environment, identifying landmarks and clues is crucial to provide proper direction. A lack of clear landmarks complicates and confuses them, thus prolonging the mastery process and understanding. Some reasons for the failure to master the environment were extreme fear, lack of readiness, lack of training on O&M, unclear landmarks, the severity of the impairment, and the age of onset of visual impairment, among other affected students with visual impairments.

Transfer and apply the skills

The study revealed that students who learned one or a few skills managed to transfer and apply them in a new environment. The participants claimed that mastering the new environment was key to transferring and applying the skills. For example, the participants declared moving freely and confidently in areas that were oriented and well-mastered. In the FGDs with students with visual impairment, the participants narrated,

> FGDX3: *'I can move in areas where I am familiar and master the environment, but where I am not oriented and mastered, it's difficult for me to move.* FGDY5: *'When I arrived at the university, it was not easy to apply the skills because it was a new environment. It was mandatory to be oriented again in this new environment to capture and use my cane to move around.'* FGDB3: **'***Yes, it is possible to transfer the skills, what is required is to be oriented with the environment, thereafter it becomes easier to apply the skills.*

The O&M specialist and administrator added that,

OMSPY8*: 'For those with good skills in O&M, it's not difficult to apply here in the university, but some students who lack enough O&M skills find it difficult, and these are the ones waiting to be assisted everywhere and every time.'* ADPX8: *We have a student who has mastered the environment and moves independently. She used to go to the administration block independently without a guide.*

From the observation data, some students with visual impairment were observed to move without white canes and a sighted guide, claiming they had mastered some environments, while others called and waited for guides to assist them. This was observed after the interviews, when some were unable to leave until the guides came to pick them up.

The participants demonstrated mixed views on transfer and applying the skills attained to an unfamiliar environment. Students with visual impairments insisted on being oriented in every new environment before they apply the skills mastered in the previous context. Most students with visual impairment applied the skills they acquired before joining the university. The study by Aftab et al. (2024) observed that students with insufficient O&M training were unable to apply the skills. For instance, they faced challenges finding routes both indoors and outdoors, difficulty in self-protection resulting in hurting and falling, and difficulty in moving freely. In addition, a lack of well-trained O&M specialists worsened the challenges students faced in becoming independent concerning mobility. Kana & Regassa (2024) noted that students with visual impairment applied O&M skills after identifying the landmarks and available. Malik & Manaf (2020) underscored that to attain independence, students with visual impairment should utilise effectively the skills acquired.

4. CONCLUSION

Based on the findings, O&M is not taught in a structured way because it is not incorporated in the university's documents, including university policy and curriculum. Thus, O&M skills are taught informally, while other students learnt the skills in an unstructured environment to manage everyday activities. Based on the findings, informal teaching of O&M resulted in a lack of sufficient knowledge of O&M for effective utilisation of the skills. Variations in teaching and learning O&M skills developed differences in the mastery of O&M skills among university students with visual impairment. Additionally, a lack of O&M training, guidelines, trained instructors, and the approaches employed to teach and learn O&M skills contributed to the difference in mastery of the skills. Other factors observed included extreme fear, lack of readiness, unclear landmarks, the severity of the impairment, and the age of onset of visual impairment, among others affected students with visual impairments.

The study suggests that regardless of mastery discrepancies, students with visual impairment need to be oriented in every new environment to easily master, transfer, and apply the skills learned in previous contexts. Failure to orient them consequently affects the transfer and application of skills in unfamiliar environments. The study noted that although students with VI were trained in O&M skills informally, some students mastered, transferred, and applied the skills in an unfamiliar environment successfully. Thus, proper training of O&M skills can empower them to be independent individuals in the university environment and later in life. This improves their confidence and independence as mature students. Moreover, lack of freedom and autonomy resulted in a lack of confidence, reduced social interaction skills, low self-esteem, and fear of moving independently. Thus, this study suggests that students with visual impairment should be oriented in every new environment for quick transfer and application of O&M skills.

Based on the findings, several recommendations were made to different groups of stakeholders: First, the universities may acknowledge the position of O&M training and integrate O&M skills training into the university documents, such as university policy, and curriculum to be taught formally as a course or be provided as a support service to ensure students with visual impairment acquire adequate knowledge of O&M from O&M specialists and utilise the skills effectively to become independent individuals in the universities and later in life. Second, training O&M skills to students with visual impairment requires well-trained and skilled specialists. Thus, due to inadequate O&M specialists, universities in collaboration with MoEST should ensure the availability of O&M specialists at the universities and perform their responsibilities of teaching O&M. Third, for successful transfer and application of O&M skills to universities environment, the Centre for Disability Service (CDS) and

special unit offices responsible for students with visual impairments should orient students with visual impairments as soon as they report to the university to create awareness of the university environment.

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