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Teaching and Learning Mobility Skills as Tools for Independent Living among Individuals with Visual Impairment in Niger Special School, Minna

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Abstract
This study aimed to x-ray teaching and learning mobility skills as tools for independent living among individuals with visual impairment in Niger Special School. Cross-sectional research design was adopted for this study. The population was 6 teachers in primary 1 to 5 of Niger State Special Education School. The sample size for this study was the 6 teachers from the school. The study used purposive sampling technique in selecting teachers at Niger Special School. The study made use of self-made structured questionnaire titled: Teaching and Learning of Mobility Skills and Independent Living for Individuals with Visual Impairment Questionnaire (TLMSILVIQ) to collect data. The study used both descriptive and inferential statistics to analyze the data. The findings revealed that, white cane techniques, hand trailing, sighted guide techniques, and ascending and descending stairs were perceived different mobility techniques. The findings indicated that mobility training has a positive impact on various aspects of independent living skills, including social engagement, indoor movement, and outdoor movement. The study also identified barriers such as the lack of certified orientation and mobility specialists, inaccessible pathways, poor attitudes of sighted guides, and the absence of necessary equipment. It was recommended among others that, schools should invest in the training and certification of professionals who specialize in teaching mobility skills to individuals. Government should create awareness towards improving the accessibility of pathways and infrastructure in schools, public spaces, and transportation systems. Government should develop comprehensive and tailored mobility training programmes that encompass a range of techniques.

Keywords: Independent Living, Visual Impairment, Mobility Skills, Teaching, Learning

Introduction

Mobility is a profession that focuses on teaching people who are blind or visually impaired how to navigate their surroundings safely and effectively. The ability to know where you are and where you wish to go is referred to as orientation. "Mobility" refers to the ability to travel from one location to another in a safe, efficient, and effective manner. Nja et al. (2019) concurred that regardless of age or the presence of additional disabilities, the capacity to move with confidence is crucial to maximize independence. Orientation and mobility assist children and adults in developing and mastering the concepts and abilities required to move confidently and safely within their environment. Orientation and Mobility specialists teach individuals with visual impairments to walk safely, confidently, and independently in their environment, according to Nanjwan and Owojaiye (2019). They typically work one-on-one with newborns, children, and adults in their homes, schools, hospitals, or communities.

One of the primary goals of mobility training is to teach individuals how to living independently. They learn various techniques to detect obstacles, maintain a straight path, and cross streets safely. This is why Vermire, van Waelvelde and Verhoeven (2017) defined independent living as the ability of individuals with visual challenges to live and function independently in various aspects of their lives. It focuses on empowering persons

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with visual impairments to manage their daily activities, participate in society, and maintain a high quality of life. Developing adaptive skills is crucial for independent living for persons with visual impairment. These skills include orientation and mobility (navigating the environment using tools like canes or guide dogs), activities of daily living (such as cooking, cleaning, and personal hygiene), and accessing information through alternative formats like braille or assistive technology. Independent living also encompasses education and employment opportunities. However, individuals with visual impairment face unique challenges in navigating their environment and achieving independent living. The development of mobility skills plays a crucial role in empowering these individuals to overcome obstacles and lead more autonomous lives. In the context of Niger Special School, this study examines the teaching and learning of mobility skills and its impact on independent living among individuals with visual impairment. It explores various aspects such as mobility techniques, the impact of mobility training on independent living, and barriers hindering effective teaching and learning of mobility skills.

Statement of the Problem

Individuals with visual impairment encounter significant difficulties in independently navigating their surroundings, which can limit their participation in daily activities and hinder their overall quality of life. It is amazing to note that when teachers and mobility trainers fail to perform their role in the mobility skill training of persons with visual impairment, it makes them not to have the independent living skills, they depend on friends and mates to move them to their classes and social gatherings. The lack of mobility skills exacerbates these challenges and restricts their opportunities for independent living. There is a scarcity of research on the specific teaching and learning strategies required for individuals with visual impairment to acquire effective mobility skills, particularly in the Niger Special Education School.

Objectives of the Study

1. Determine the range of mobility techniques employed in teaching individuals with visual impairment to navigate their environment effectively.
2. Determine the impact of mobility training on the independent living skills of individuals with visual impairment.
3. Identify the barriers that hinder the effective teaching and learning of mobility skills among individuals with visual impairment in Niger Special School.

Research Questions

1. What is the range of mobility techniques employed in teaching individuals with visual impairment to navigate their environment effectively?
2. What is the impact of mobility training on the independent living skills of individuals with visual impairment?
3. What are the barriers that hinder the effective teaching and learning of mobility skills among individuals with visual impairment in Niger Special School?

Review of Related Literature

Mobility Skills

Mobility skills are important in the day-to-day life of a person with visual impairment such as being able to walk without tripping or falling, cross streets, and use public transportation. Mobility skills refer to the set of abilities and techniques that individuals with visual impairment develop to navigate their environment safely and independently. These skills may include orientation, spatial awareness, route planning, cane techniques, and the use of auditory and tactile cues (American Foundation for the Blind, 2022). Mobility skills, specifically for individuals with visual impairment, encompass the knowledge, strategies, and motor skills required to move confidently and efficiently in various environments, including indoor and outdoor settings. These skills involve understanding spatial relationships, using sensory information, employing mobility aids (such as canes or guide dogs), and adapting to different travel situations (Blasch et al., 2016).

Mobility Techniques for Training Individuals with Visual Impairment

a. **White Cane Techniques:** White cane techniques involve the proper use and manipulation of a white cane, a mobility aid used by individuals with visual impairment to detect obstacles, navigate the environment, and gather information about their surroundings (Peck & O'Mally, 2011). These techniques include cane sweeping, diagonal cane technique, touch technique, and constant contact technique.
b. **Auditory Techniques:** Auditory techniques rely on sound cues and auditory information to assist individuals with visual impairment in navigating their environment (Blasch et al., 2016). These

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techniques involve using auditory landmarks, sound shadows, echoes, and environmental sounds to determine direction, maintain orientation, and locate points of interest.

c. **GPS and Wayfinding Technologies:** GPS (Global Positioning System) and wayfinding technologies have become increasingly popular tools for individuals with visual impairment. These technologies provide audio instructions, turn-by-turn navigation, and real-time location updates, allowing individuals to independently navigate unfamiliar environments. Mobile apps, wearable devices, and specialized GPS systems are commonly used in conjunction with auditory feedback to support wayfinding.

Impact of Mobility Training on Independent Living

Independent living for individuals with visual impairment refers to the ability to manage and carry out daily activities, tasks, and responsibilities without relying heavily on others. It encompasses the skills, strategies, and adaptations necessary for individuals with visual impairment to live and function autonomously in various aspects of life, including personal care, household management, employment, education, social participation, and community involvement. The importance of mobility training for independent of individuals with visual impairment cannot be over-emphasized. It is pertinent that they need it day-to-day activities. Without this skill, they cannot know their environment. This is one of the reasons why Ibrahim (2019) stated that mobility training prepares students who are blind to know where they are in relation to their environment and with confidence to move independently and safely. Ibrahim (2019) went further to say that, orientation and mobility touches all segments of quality life of individual with visual impairment, beginning from ability to move and awareness of the present position to daily living activities which include knowing oneself, participating in the society and economic participation.

Mobility training is an indispensable skill for individuals with visual impairment. The person who masters it, develops confidence and self-esteem in himself. As explained by Dabet (2012), mobility programmes allow persons with visual impairment to develop realistic concept about their environment and thus enables them to participate more fully in learning experiences with sighted children. Socially, it helps to dispel the notion that they can fully participate and contribute to the society. Jurmang (2015) gave the importance of orientation and mobility as follows: (1) It enables the blind person to Living independently rather than being dependent on the sighted guide (2) It enables the blind client to perceive things in the environment (3) Mobility enables the acquisition of more knowledge about the environment. (4) The blind client develops self-confidence. Jurmang (2015) concluded that mobility is the key to all success in the life of the blind person including their daily living skills.

Barriers that Hinder Effective Teaching and Learning of Mobility Skills

There are many hindrances that prevent effective mobility training for individuals with visual impairment. In Ghana, apart from the University of Education, Winneba which offer courses in basic orientation and mobility training no institution or centre provides place for orientation and mobility training and these could be attributed to lack of infrastructure and personnel to handle visual impairment (Nang, 2017). Persons with visual impairment fail to move about independently because of one or combination of the following factors: Fear, lack of confidence, lack of knowledge of the environment, too many routes leading to a place or object, topography, intelligence of the client, physical environment, improper sensory development and emotional or additional handicap. As a result of these problems, most visually impaired persons always stay in their shells or corner. On the other hand most of the clients are illiterates who do not have information or service that are available for them.

The worldwide shortage of specialised personnel to provide training and to advocate mobility training is a major difficulty. It has been suggested by Attia (2018) that mobility is an area that requires the services of specially trained professionals other than the qualified teacher for persons with visual impairment. Some environments cause serious orientation problems to persons with visual impairment. Persons with visual impairment depend on well-defined paths and memorable landmarks to find their way; poorly defined environment may be difficult to orient in. Similarly, because persons with visual impairment depend on their cognitive maps, environment that are hard to represent mentally are also hard to orient in. A simple building plan, such as a square, is likely to be understood and is generally simple to form a mental picture. A complex building with many turns or curves may be very difficult to orient in (Ocloo, 2011).

Another major barrier preventing mobility training to individuals with visual impairment in Nigeria and in inclusive setting is curriculum content. According to Attia (2018), the factor of the curriculum had been a very big hindrance to effective teaching of O&M for persons with visual impairment. The rehabilitation centre must develop a curriculum that is a general blueprint from which the O&M teachers would work with most persons. There are also lack of education and commitment on the parts of the clients and their families toward orientation

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and mobility. Inadequate availability of mobility canes and collapsible ones are problems to effective orientation and mobility.

Methodology

The study employed survey descriptive or descriptive survey (cross-sectional) research design. Cross-sectional research design allows for collection of information at one point in time, from a selected sample of respondents. The design was considered favourable because of its potential in providing data with limited time and fiscal resources for data collection. In addition to that, quantitative approach was also adopted in this study. The population for this study is 6 teachers of 13 individuals with visual impairment in primary 1 to 5 of Niger State Special Education School. The sample size for this study was six (6) teachers. The sample size for this study took the inspection of all identified teachers of individuals with visual impairment in Blind Unit. This study used purposive sampling technique in selecting teachers of individuals with visual impairment at Niger Special School. In this case, teachers were selected because they are got experience in teaching mobility skills to individuals with visual impairment. These teachers have first hand experience in implementing effective instructional strategies and overcoming challenges related to teaching mobility skills for independent living. The study made use of self-made structured questionnaire to collect data from the respective participants. The questionnaire developed questionnaire was titled: Teaching and Learning of Mobility Skills and Independent Living for Individuals with Visual Impairment Questionnaire (TLMSILVIQ) which contained 15 items using Likert's four-point scale of Strongly Agree, Agree, Disagree and Strongly Disagree. When the mean of the respondent was put at 2.50, the statement was accepted and term valid and when it was below 2.50, it was rejected. The study used both descriptive and inferential statistics to analyze the data. Tables, Mean and were the statistical tools used in the analysis of the data.

Results

Research Question One: What is the range of mobility techniques employed in teaching individuals with visual impairment to navigate their environment effectively?

Table 1: Mean summary of mobility techniques employed in teaching individuals with visual impairment to navigate their environment effectively.

S/N	Items	SA (4)	A (3)	D (2)	SD (1)	Mean
1	White cane techniques.	2	4	0	0	3.33
2	Auditory techniques	0	1	4	1	2.00
3	Hand trailing	3	2	1	0	3.33
4	Sighted guide techniques	4	2	0	0	3.00
5	Ascending and descending stairs	3	2	1	1	3.50
	Overall mean score ($\bar{x}$)					3.03

The analysis of items 1, 3, 4, and 5 with the mean scores of 3.33, 3.33, 3.00 and 3.50 above the criterion mean score of 2.50 in Table 1 revealed that white cane techniques, hand trailing, sighted guide techniques, and ascending and descending stairs were generally perceived as effective mobility techniques for teaching individuals with visual impairment to navigate their environment. The respondents rejected item 1 with the mean score 2.00 less than the criterion mean of 2.50 as Auditory technique was not part of mobility techniques use in teaching individuals with visual impairment. However, the overall mean score ($\bar{x}$ =3.03) for these items indicated a generally positive perception of the techniques.

Research Question Two: What is the impact of mobility training on the independent living skills of individuals with visual impairment?

Table 2: Mean summary of impact of mobility training on the independent living skills of individuals with visual impairment.

S/N	Items	SA (4)	A (3)	D (2)	SD (1)	Mean
6	It can increase their ability to attend social gathering.	2	3	0	1	2.83
7	They can easily do indoor movement by themselves.	4	2	0	0	3.67
8	They can do out-door movement confidently.	3	2	1	0	3.33
9	It cannot reduce the fear of moving about.	0	1	3	2	1.83
10	It cannot facilitate their ascending and descending stairs.	0	0	3	3	1.50
	Overall mean score ($\bar{x}$)					2.63

In summary, the analysis of items 6, 7, and 8 with mean scores 2.83, 3.67 and 3.33 above 2.50 in Table 2

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suggested that mobility training had a positive impact on the ability of individuals with visual impairment to attend social gatherings, perform indoor movement by themselves, and engage in outdoor movement confidently. However, items 9 and 10 which related to reducing the fear of moving about and facilitating ascending and descending stairs, received low mean scores (1.83 and 1.50) below 2.50 as the criterion mean were rejected. This indicated disagreement among respondents regarding the effectiveness of mobility training in these specific areas. The overall mean score ($\bar{x}$ = 2.63) slightly above the criterion mean revealed how relevant mobility training is on the independent living skills of individuals with visual impairment.

Research Question Three: What are the barriers that hinder the effective teaching and learning of mobility skills among individuals with visual impairment in Niger Special School?

Table 3: Mean Summary of barriers to effective teaching and learning of mobility skills among individuals with visual impairment.

S/N	Items	SA (4)	A (3)	D (2)	SD (1)	Mean
11	Lack of certified orientation and mobility specialist	6	0	0	0	4.00
12	Inaccessible pathways	3	1	1	1	3.00
13	Poor attitude of sighted guide	3	2	1	0	3.00
14	Lack of long cane	2	4	0	0	3.33
15	Parental full support.	0	0	3	3	2.00
	Overall mean score ($\bar{x}$)					3.07

The analysis of items 11, 12, 13, and 14 with mean scores ($\bar{x}$ = 4.00, 3.00, 3.00 and 3.33) was greater than the criterion mean score of 2.50 in Table 3 indicated that the lack of certified orientation and mobility specialists, inaccessible pathways, poor attitudes of sighted guides and the lack of long canes are perceived as significant barriers to effective teaching and learning of mobility skills among individuals with visual impairment. However, item 15 which relates to parental full support, received a low mean score ($\bar{x}$ =2.00) below the criterion mean of 2.50 and was rejected, indicating disagreement among respondents regarding its significance as a barrier. The overall mean score (3.07) showed that the respondents agreed with the majority of the items as barriers to teaching and learning mobility skills to individuals with visual impairment.

Discussion

Research Question One revealed teaching and learning mobility skills as tools for independent living among individuals with visual impairment in Niger Special School. Table 1 provided insights into the effectiveness of various mobility techniques employed in teaching individuals with visual impairment to navigate their environment effectively in Niger Special School. The analysis of this table suggested that there are several techniques that were perceived as effective in this context. White cane techniques, hand trailing, sighted guide techniques, and ascending and descending stairs were commonly recognized as effective mobility techniques for individuals with visual impairment. These techniques likely play a crucial role in enhancing the mobility and independent living skills of individuals with visual impairment. The findings highlighted the importance of using techniques such as white cane techniques, hand trailing, sighted guide techniques, and ascending and descending stairs in mobility training programmes. The finding therefore agrees with the finding of Willings (2019) whose finding shows that the O&M skills will teach persons with visual impairment to move safely and efficiently through their environment. The O&M may instruct the person in how to get around in special situations (halls, stairs, doorways, curbs, restrooms, restaurants, banks, hotels, pools, parks, etc) and may also instruct the student in special techniques (trailing, "squaring off," protective technique, sighted guide), and dealing with unusual environmental encounters (ice, snow, gratings, escalators, revolving doors, elevators, trains, plains, taxis, etc). Movement concepts (go, start, stop, fast, slow, push, pull, scribble, draw, trace, bend, close, open, slide, roll (roll-up), fold, hold, insert, place (put), put together, reach, sit, squeeze, turn, take apart, follow). The study of Seesurrun (2015) is similar with the present study which states that, start the cane technique by teaching the client how to give the cane using the two-point-touch cane techniques, build each of the following aspects of the skills on the next to ensure that the client consistently detects cards or stair drop-offs or obstacles in path.

Research Question Two delved into the impact of mobility training on the independent living skills of individuals with visual impairment. The results of the analysis demonstrated a clear and positive correlation between mobility training and various aspects of independent living skills. Specifically, the study indicated that

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mobility training contributes to an improved capacity for individuals with visual impairment to participate in social events, navigate indoor spaces autonomously, and engage in outdoor movement with confidence. These findings underscore the crucial role of mobility training in empowering individuals with visual impairment and enhancing their overall quality of life. The findings of Ibrahim (2019) supported the present study indicating that O&M training prepare students who are blind or VI to know where they are in relation to their environment and with confidence to move independently and safely. In the same vein, Ibrahim (2019) added that mobility touches all segments of quality life of individual with visual impairment, beginning from ability to move and awareness of the present position to daily living activities which include knowing oneself, participating in the society and economic participation. Interestingly, the findings of Jurmang (2015) concluded that mobility skill is the key to all success in the life of the blind person including their daily living skills. Many blind people especially in the advanced countries are sports men and women. This has been possible through systematic mobility training.

Research Question Three focused on the barriers to effective teaching and learning of mobility skills among individuals with visual impairment. The analysis of this table highlights various barriers that hinder the learning and teaching process. Some of the identified barriers include the lack of certified orientation and mobility specialists, inaccessible pathways, poor attitudes of sighted guides, and the absence of necessary equipment such as long canes. These barriers can significantly impact the effectiveness of mobility skills training and should be addressed to ensure optimal learning outcomes for individuals with visual impairment. The finding of Nang (2017) is similar with the present study which revealed that training institutions lack infrastructure and personnel to handle mobility training for children with visual impairment. Persons with visual impairment fail to move about independently because of one or combination of the following factors; Fear, lack of confidence, lack of knowledge of the environment, too many routes leading to a place or object, topography, intelligence of the client, physical environment, improper sensory development and emotional or additional handicap. On the other hand, the finding of Attia (2018) revealed that O&M is an area that requires the services of specially trained professionals other than the qualified teacher for persons with visual impairment. The teacher of learners with visual impairment is not necessarily qualified to teach such advanced skills as the long cane, and this skill needs to be taught in conjunction with, not separate from, other O&M skills and techniques.

Conclusion

The effectiveness of different mobility techniques such as white cane techniques, hand trailing, sighted guide techniques, and ascending and descending stairs were identified as effective methods. These techniques play a crucial role in enabling individuals with visual impairment to navigate their environment effectively. Furthermore, the findings examined the impact of mobility training on independent living skills. The findings indicated that mobility training positively influences aspects such as social engagement, indoor movement, and outdoor movement. This highlighted the importance of incorporating comprehensive mobility training programmes to enhance the overall independence and quality of life for individuals with visual impairment. Additionally, that there were problems in the course of teaching and learning for individuals with visual impairment include lack of certified orientation and mobility specialists, inaccessible pathways, poor attitudes of sighted guides, and the absence of necessary equipment were identified as significant barriers affecting effective teaching and learning of mobility skills for individuals with visual impairment. It was concluded that these barriers affect mobility skills that influence the independent living of persons with visual impairment.

Recommendations

1. Schools should invest in the training and certification of professionals who specialize in teaching mobility skills to individuals with visual impairment by increasing the number and expertise of specialists.
2. Government should create awareness towards improving the accessibility of pathways and infrastructure in schools, public spaces, and transportation systems for individuals with visual impairment.
3. Government should develop comprehensive and tailored mobility training programmes that encompass a range of techniques, including white cane techniques, hand trailing, and sighted guide techniques for individuals with visual impairment.

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