UNIVERSITY FOR DEVELOPMENT STUDIES, TAMALE

TRAINING THE VISUALLY IMPAIRED ON ORIENTATION AND MOBILITY SKILLS: THE CASE STUDY OF GARU-TEMPANE DISTRICT IN THE UPPER EAST REGION OF GHANA

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DISSERTATION SUBMITTED TO THE DEPARTMENT OF EDUCATIONAL FOUNDATION STUDIES, FACULTY OF EDUCATION, UNIVERSITY FOR DEVELOPMENT STUDIES, IN PARTIAL FULFILLMENT OF THE REQUIREMENTS FOR THE AWARD OF MASTER OF EDUCATION DEGREE IN TRAINING AND DEVELOPMENT.

AUGUST, 2017

DECLARATION

Student's Declaration

I hereby declare that this action research is the results of my own original work except for the references which I have duly acknowledged. It has neither in whole nor in part been presented or produced elsewhere.

Student's Name: NANG ABDULAI PARIMAG

SIGNATURE:…….. DATE:……

Supervisor Declaration

I hereby declare that the preparation of this action research was supervised in accordance with the guidelines for the supervision of project laid down by the University for Development Studies.

Supervisor's Name: DR. ANTHONY K. DONKOR

SIGNATURE:…….. DATE:……

ABSTRACT

The purpose of the study was to investigate the effectiveness of mobility techniques in facilitating the movement of persons with visual impairments in and around their homes and communities. Its main focus is to explore avenues and strategies for effective training of orientation and mobility skills to these individuals with visual impairments in the Garu-Tempane District. An action research design was used to guide the study. A sample size of 10 people was involved in the study. The instruments used in gathering data were observation and interview. The data was analyzed to reflect the performance of the participants before and after the intervention. Appropriate graphs were used where necessary to clearly present data and conclusions were drawn with support evidence from reviewed literature. The study revealed that the skills acquired in sighted guide technique helped the visually impaired individuals to travel with the sighted persons without any difficulties. The sighted guide technique also helped the visually impaired person to adopt appropriate strategies to walk through narrow areas when carrying out their routine activities. The findings showed that the body protection technique helped the visually impaired to locate objects and to pick up an article, for instance from a shelf. The cane technique helped the people in the detection of any obstacles in front. It also helped the people in finding destination using the land marks. The skills acquired in cane technique helped the visually impaired people to cross streets by analyzing and identifying intersections and traffic pattern. The researcher recommended that persons with visual impairment should be introduced to basic orientation and mobility skills at the early stages in schools. Various strategies of pre-mobility skills should be taught to students with visual impairment in order to stimulate confidence for easy mobility and good physical development.

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DEDICATION

To the Almighty Allah, the Most Gracious and Merciful for His protection, guidance and care granted me throughout my years in this university. Also to my Dad, Sergeant YaroNang and my mum Hassan, my wife madam FauziaA. Musahand my children.

TABLE OF CONTENTS

Content **Page**

CHAPTER ONE

INTRODUCTION

Background to the problem

The education of the blind and individual started in Ghana far back in 1945. Despite the time that education of these persons started in Ghana, there are a lot of skills lacking as far as orientation and mobility are concerned.Generally, orientation and mobilityskills make persons, both the visually impaired and the sighted active and independent participants in their daily activities within the society in which they live. The impairment of vision poses difficulties both in their development and independence. Orientation and mobility is a process of using the senses to establish one's position in relation to all other significant objects in the environment (Ocloo, 2003). The visually impaired individual needs competency in developing awareness of things around him/her and this can be acquired through practice and concentration over a period of time to enhance their posture, gait and other physical attributes in mobility and independence around their homes and their communities. According to Ocloo (2001), the education of the blind and individuals with visual impairment has a very interesting history.

Most of these unfortunate individuals were killed or over protected, misdiagnosed and under-educated such that they led a life that was segregated and debased.The first formalized orientation and mobility program attempted with the blind people in the United States.Whatstick (1980) andRichard (1940)however developed a program of foot travel (utilizing the long cane) for blind veterans at Valley Forge army hospital.

Orientation and mobility training skills acquisition will help in the socialization process of the individuals as one will no longer be restricted to the environment in terms of movement. The outcome of orientation and mobility training to individual with visual

impairment will enhance the level of social integration among the sighted in the society and the individual with visual impairment. It also gives more Social Avenuefor the individuals to move to desireddestination including places of entertainment and training programmes involving career education and placement issues (Jacke, 1993). The fact that blindness imposes basic limitation on individuals does not mean that they should be restricted to one place. It is therefore imperative not to compromise orientation and mobility skills training to persons with visual impairment. Orientation and mobility is seen as the process of using the sense to establish one's position in relation to all other signification objects.

Statement of the problem

Orientation and mobility help persons with visual impairment in diverse ways in carrying out their daily actions and these skills can only be acquired by the visually impaired if they have in-depth knowledge of the environment in which they live. The skills can also be acquired through constant practice which will enable them to move, interact, control their environment and widen their experience (Ocloo, 2003).However, the researcher observed that persons with visual impairment in Garu-Tempane District had difficulties in mobility and independence, most especially moving around their homes and in and out of their community. This therefore prompted the researcher to investigate intervention activities to assist those individuals to improve their orientation and mobility skills.

Purpose of the study

The purpose of the study was to investigate the effectiveness of mobility techniques in facilitating the movement ofpersons with visualimpairments inand around their homes

and communities. Its main focus is to explore avenues and strategies for effective training of orientation and mobility skills to these individuals with visual impairments in the Garu-Tempane District.

Objectives

This Research is sought to:

1. To use the sighted guide technique to improve the orientation and mobility skills of persons with visual impairments in the Garu-Tempane District.
2. To use the cane technique to improve the orientation and mobility skills of persons with visual impairments in the district.
3. To use the upper body protection technique to improve the orientation and mobility skills of persons with visual impairments.
4. To use the lower body protection techniques to improve the orientation and mobility skills of the visually impaired in the district.

Research Questions

In gathering relevant data for the problem under study, the following research questions were formulated to guide the researcher.

1. How will the use of sighted guide technique improve the orientation and mobility skills of persons with visual impairments in the Garu-Tempane District?
2. To what extend can the use of cane technique improve the orientation and mobility skills of persons with visual impairments in the district?
3. How can the use of upper body protection technique improve the orientation and mobility skills of the visually impaired in the district?

4. How can the use of lower body protection technique improve the orientation and mobility ability of the visual handicapped person?

Significance of the study

As orientation and mobility is the bedrock of any meaningful rehabilitation programme,itis envisaged that the study will enable service providers or stakeholders and other non-government organization to establish orientation and mobility training centers at all district capitals and equip them with all types of training devices.

Also, it will be of great benefit to practitioners and curriculum developers in drawing up realistic curriculum with regards to orientation and mobility for persons with visual impairment.

Definition of terms

- **Locomotion**-The ability to move from one place to another
- **Lower body protection**-techniqueused to protect the lower abdomen with the hand by moving the dominant hand forward about 6 inches from the body.
- **Mobility**-is a skill which enable blind persons to walk about independently and competently through familiar and unfamiliar environment.
- **Orientation**-it istheuse of the remaining senses to establish one's position in relationship to all other significant objects in one's environment.
- **Sighted guide-technique**-itis when blind persons are guided by a sighted person who both walks in a designated position.

- **Touch technique**- technique which enable the blind person to detect drop offs and objects with the cane in the vertical plane in familiar or unfamiliar environment.
- **Visual impairment**-denotes a person's inability to a vision to what a sighted person can use eyesight for without stress.

Structure of the study

The work is put in five chapters. The first chapter highlights the background to the study, the statement of the problem and purpose of the study. Other segments under the introduction include structure of the study and the limitation of the study is all outlined to prepare the minds of the readers.

The second chapter is related to the literature review based on the topic. It emphasized the definitions of orientation and mobility, development of orientation and mobility, systems used in mobility training, importance of orientation and mobility and problems of orientation and mobility.

Chapter three describes the procedure used in gathering data. The results are analysed in chapter four. The last chapter is about the summary and conclusion of the research work and recommendations.

CHAPTER TWO

LITERATURE REVIEW

Introduction

In this chapter, relevant literature and what various writers have said about the topic under study are presented and discussed.The literature was reviewed under the following sub-headings:

- The concept of orientation and mobility
- The use of the sighted-guide technique
- The use of cane technique to improve orientation and mobility skills of the visually impaired.
- The use of upper body protection technique to improve orientation and mobility skills.

The concept of orientation and mobility

Movement is a building block for learning. As a child explores his/ her world and has physical contact with it, learning takes place. Persons with visual impairment typically need encouragement to explore their surroundings. To them, the world may be a startling and unpredictable place, or it may not be very motivating (Carolina, 1967).

Orientation is the ability to find one's way about in geographical space, whether familiar or unfamiliar but includes as well orientation of the persons with regard to immediate space (Leornard, 2000).

Hill and Blasch (2000) defined orientation as the ability to define position and direction for movement based on the use of all available senses. It is all about perception and knowing the world around you. It is the competency in developing awareness of the surrounding. Orientation is the process of using the remaining senses to enable a person

with blindness determine his/her focal point, and the spatial relationship between his/her own location and the location of important things in his/her environment.

Hill and Blasch (2000) noted that mobility is the ability to move safely, efficiently and effectively from one place to another, such as being able to walk without tripping or falling, cross streets, and use public transportation: All these skills can only be acquired through a well-structured activities plan by the orientation and mobility specialist to help develop or re-learnthe skills and concepts you need to travel safely and independently within your home and in the community (Fazzi&Petersmeyer, 2001).

Mobility is defined as physical "movement" and the negotiation of any obstacles and hazards. It is the aim of obtaining freedom of movement without coming to any harm, safety in travelling as well as minimizing the level of stress placed upon a person who is visually impaired. While Braille gives intellectual independence, a well-developed sense of mobility facilitates independent movement. It enables the person to detect hazards associated with travelling and to take evasive action (Hill &Blasch, 2000).

According to Gargiulo(2006), mobility refers to total physical movement which involves a change in spatial location accomplished in an upright position under one's own power. It describes all situations ranging from moving around within a single room in a house to travelling from one town to another or even between countries. It is the action of travelling, of going from one place to another. To be mobile, a person should be able to gather and use sufficient information from the environment to avoid hazards and to reach his destination safely. Thus it is the ability to move in the environment in relation to oneself from one place to another. In order to do this, a visually impaired person may use a long cane, a guide cane or just a bamboo stick. A locomotors handicapped person may use crutches, elbow crutches, calipers, tricycle,

wheelchair,ground mobility device etc. Both these groups may take the help of a human guide or an escort.

Orientation and mobilitystand for goal oriented and purposeful movement, knowing where you are, where you came from, and where you are going to. This therefore explained that, Orientation and mobility are processes of using the senses to establish one's position in relationship to all other significant objects in the environment. Orientation and mobility are professions specific to blindness and low vision that teach safe, efficient, and effective travel skills to people of all ages. Orientation refers to the ability to know where you are and where you want to go, whether you are moving from one room to another or walking downtown for a shopping trip (Gargiulo, 2006).

The professionof orientation and mobility began to develop during, and immediately after World War II, when soldiers who had been blinded in battle were sent to recuperate at Valley Forge Army General Hospital before entering Avon Old Farms Convalescent Hospital, the U.S. Army's former experimental rehabilitation center for the blind soldiers in Aron, Connecticut. In order to better serve the large soldiers who required special training and services, the military recruited Richard E. Hoover, an army Sergeant, who was assigned to the center for the treatment of blinded soldiers at Valley Forge Army Hospital in 1944. During the same year, Russell Williams, who was blinded by enemy action in France, receive medical rehabilitation at the Valley Forge Army Hospital, and in 1947. Warren Bledsoe joined the Hospital. Both Hoover and Bledsoe had previously worked at the Maryland school for the Blind.These three men made significant contributions to the development of a new profession: orientation and mobility.The blinded soldiers were highly motivated to be successful, and Richard Hoover believed that the traditional strategies taught and used to travel independently

were inadequate. In response, he developed a technique for using a cane that is lightweight and longer than support canes. This technique and cane revolutionized independent travel for blind people and are still used today (Lowenfeld, 1973).

Movement is a building block for learning. As a child explores his world and has physical contact with it, learning takes place. Equally persons with visual impairment need encouragement to explore their surroundings. To them, the world may be a startling and unpredictable place, or it may not be very motivating (Carolina, 1987).Orientation is the ability to find one's way about in geographical space, whether familiar or unfamiliar but includes as well orientation of the person with regent to immediate space (Leonand,2010). Hill and Ponder (1976) define orientation as the use of the mental ability of individual visually impaired person to visualize the surrounding and their temporal or spatial relation to themselves. It therefore suggests that this aspect of mobility deals with the ability to process cognitively or to visualize mentally where one is (present position) what one's objectives is where one is going (layout knowledge) and how to be there (spatial concepts).

According to Lowenfeld (1981), mobility is the capacity or facility of moving and has two components one is mental orientation and the other is physical locomotion. Mental orientation has been defined as the ability of an individual to recognize the surrounding and their temporal and spatial relation to him and locomotion involves moving of an organism from place to place by means of an organic mechanism. Leonard (2010) sees mobility as a group of skills which enable a blind person to walk about self-dependency and competency through familiar and unfamiliar environment.

Huebner and Wiener (2005), on the other hand are of the view that mobility is the capacity, readiness and facility to move about in one's environment. Welsh and Blasch (2010) saw mobility as the ability to move independently, safely and purposefully through the environment.Dogbe (2005) remarked that the visually impaired individual needs training in some skills to compensate for the effect of sight loss in order to function independently in society. These skills are known as compensatory or adaptive skills. The core among them is orientation and mobility and daily living skills. These skills are leaned. In order that individual with visual impairment become independent and gain positive self-image, teachers and parents must ensure that these skills are taught them adequately well.

With the definition of mobility, it is the techniques that make visually persons to travel safely, comfortably, gracefully and independently. Itcan be reduced from the aforementioned that orientation and mobility refer to the ability to use one's remaining senses to understand one's location in the environment at any given time.

It is paramount to teach the visually impaired the technique necessary for a person with visual impairment to travel safely, efficiently and gracefully through any environment and under all environment conditions and situation.

The use of the sighted guide technique to improve orientation and mobility skills

The sighted guide technique is a technique whereby the sighted personguides or leads visually impaired persons when moving about (Agbeke, 2003). This technique has a lot of skills or ways which need to be taught to the visually impaired person. Huebner and Wiener (2005) also states that sighted guide technique is the technique in which a seeing person leads a visually impaired person when walking or moving about.

Theseskills can also be used in contribution with other mobility system such as the cane and dog guide techniques.

Agbeke (2003) states that, “establishing contact with the visually impaired either verbally or physically is the most appropriate point to start with. Through this the visually impaired become acquainted with the sighted guide to promote trust. Thevisually impaired persons grasp the sighted guide’s arm lightly rust above the elbow. In the case of a child, or small person, the wrist or hand may be preferable (Agbeke, 2003).

However, there are some people who prefer, holding hands instead of grasping you just a little above the elbow. The guide’s arm can be across the body movement can be picked up easily by the visually impaired person. In setting off, the sighted guide should be half a step ahead of the blind person.As a guide or when teaching, check whether the client’s left shoulder is behind the guide’s own right shoulder (or vice versa).Walk on the flat or level area to be giving with and gave plenty of assurance. It is also important to walk at an appropriate speed for the blind person. When walking let the client gain information about the environment to instill confidence in the visually impaired (Carolina, 1998).The visually impaired person controls speed when led by a guide. This could be either by pushing or pulling back on the guide’s elbow. On the other hand the client can practice letting go off the sighted guide’s arm in order to stop.

Olukotun (2003), state that change sides is a daily routine in order to make with their guides. The visually impaired persons change sides with their guide. The visually impaired would have to move behind the sighted guide’s back. He then moves across to the other side to engage the other arm. The reason why the visually impaired person should move behind is that both of them are sure then is nothing behind which may pose a danger to the visually impaired person. But when changing sides, it is advisable

to slow down and make sure the visually impaired person maintains light contact through you and about to negotiate doors or when carrying some lead or bag (Gargiulo2006), state that the purpose of stair ways skills will enable the person and guide to safely and efficiently negotiate stairs by avoiding verbalization on the part of the guide such as informing the student of the vertical direction of the stairs, how many steps there are, etc. the guide takes the first step and the visually impaired follows at the guide's space remaining one step behind. The guide pause after completing the stair, indicating to the student she has one more step left to negotiate.Human Guide is one of the three primary modes of travel mentioned in the introduction. When performing human guide techniques, one person takes the lead and guides another person through an area. The guide's role is to identify obstacles and hazards in the travel path and to guide the other person safely around them.

In times past, this set of techniques was often referred to as "sighted guide" techniques based on the assumption that the guide would always be "sighted." However, because people who have visual impairments often serve as guides for others who have visual impairments, the term "Human Guide" has now been adopted.

The human guide techniques are often among the first mobility techniques taught to new travelers. Due to their cooperative nature, these techniques enable the new traveler to be mobile, but do not require the traveler to take full responsibility for safe or efficient travel. They also lay a foundation upon which the instructor and the traveler can develop a positive rapport and a relationship built on trust (Jacobson, 1993). Having said this, however, it must be emphasized that it is absolutely not necessary to teach human guide techniques before teaching other techniques of independent travel such as use of the long cane. In fact, many professionals who teach mobility feel that human guide techniques should be taught toward the end of a traveler's instructional

program. It is felt that, by sequencing instruction in this way, the immediate experience of free and independent travel reinforces new travelers' self-confidence in their ability to travel on their own.

Human guide techniques are also not limited to use between the instructor and the traveler. There are several additional aspects to effectively using these techniques. For example, the traveler must be able to travel with others in his or her life. It is important, therefore, to teach family members, teachers, and significant others in the traveler's life how to perform these techniques.

The human guide techniques are the primary means of travel for some people who are blind. This might be the case for some new travelers and/orfor those who, due to reasons other than visual impairment, lack the ability to travel using other techniques. Yet, even the most capable of travelers use the human guide techniques from time to time. Travelers who are experienced and skilled in the use of a long cane and/or a dog guide, for example, will often use the human guide techniques in situations when it is perhaps just more convenient to do so such as when trying to carry on a conversation with a friend while walking together.

Rather than implying a dependent mode of travel for people who are blind, the human guide techniques can be considered in themselves an independent means of travel. When traveling using human guide techniques, the guide does not pull the traveler passively along; the traveler is instead an active partner in the travel. The traveler takes on equal responsibility for safe and efficient travel by doing such things as properly grasping the guide's arm and proper positioning of her body in response to the guide's movement through different environments. Without equal participation of both partners, travel using the human guide techniques is far less effective.

Because most travelers are unlikely to have the luxury of always walking with a skilled guide, the traveler should know how to perform the human guide techniques when walking with an inexperienced guide. She should even know how to teach human guide techniques, when necessary, to inexperienced guides such as friends, co-workers, or even the helpful person on the street. Doing so may call for teaching a wide range of techniques. For example, when dealing with the Good Samaritan, all that may be needed is to tell the Good Samaritan that the traveler can follow the person's movement by simply holding onto his elbow. When teaching human guide techniques to family members or close friends with whom the traveler walks frequently, she may choose to instruct these significant others how to perform many or all of the human guide techniques including those used to negotiate narrow spaces, stairways, and doorways.

When teaching human guide techniques, there are a few principles that all instructors should keep in mind. While these are not necessarily given in any specific order, they are some of the most common teaching tips and suggestions that have been handed down from generation to generation of Orientation and Mobility specialists.

Simple courtesies extended to the traveler should never be overlooked. For example, before touching a person who is blind to initiate physical contact for the BASIC HUMAN GUIDE technique, it is considered polite to ask the traveler if she would like to take your arm or to walk together using this technique. While this verbal introduction is sometimes omitted in familiar situations when the traveler expects contact to be made, it is always polite to ask when such an expectation may not exist.

When entering a room or area in which there is a person who is blind, it is polite to speak to the person to identify yourself and to let her know that you are there. Some people may feel that their privacy has been invaded when they later find that someone was present in the area unbeknownst to them (LaGrow&Weessies, 1994). Similarly, if

you or any guide need to leave a traveler alone momentarily, it is only considerate to tell the traveler when you are leaving and to leave the traveler standing next to a wall or similar physical object in the environment rather than in open space. Leaving the traveler in contact with an object can provide her with a point of reference for establishing her own orientation to the environment and will also avoid imposing upon her the uncomfortable feeling of standing alone in open space while waiting for someone's return.

It goes without saying that consistency in performing Human Guide skills is essential in order to build the traveler's trust in the instructor. It won't take more than a few bumps into a door frame or missed curbs to instill doubt in a new traveler's mind about the safety of traveling with the guide or perhaps about the traveler's own potential for safe travel alone later on.

In several of the human guide techniques, the guide gives verbal cues regarding relevant environmental features (e.g., telling the traveler on which side of her the door opens). This is almost always done in new teaching situations. As the traveler gains confidence and skill in responding to non-verbal signals and to the movement of the guide's body, these verbal cues are faded. Fading the verbal cues as soon as possible minimizes the traveler's dependency on verbal cues and shifts the focus to responding to non-verbal signals. The benefits of using non-verbal signals, whenever possible include making it easier for the guide and traveler to carry on a conversation without interruption;facilitating travel through areas where conversation might be disturbing to other people (e.g., when walking through a theater or through any area where it is important to minimize unnecessary noise); facilitating the traveler's skill at interpreting the movements of an unfamiliar or inexperienced guide.

The traveler should also know how to guide another visually impaired person. This is a very useful skill, and one that can also be used to facilitate the traveler's understanding of the guide's role. One effective way of teaching a traveler how to instruct others is using role play. Assuming the role of a naive guide, the Orientation and Mobility specialist provides opportunities for the traveler to receive guided practice in this very important skill.

Prerequisite technique in using stairs with a cane and guide

This will enable the visually impaired persons to ascend and descend stairs when carrying a cane while traveling with a guide.

Teaching environments

Begin in a quiet, familiar or semi-familiar area. The stairway should consist of the following features:

- A single set of stairs with a landing that is large enough to allow the traveler to take a few steps before she needs to perform another skill (e.g., negotiate a doorway or reverse direction).
- Steps that are consistent in depth, height, and width and that are not curved.Eight to 15 steps per set. This number is enough to achieve a comfortable rhythm with the guide while not being so many that most travelers will get tire quickly. When possible, the number of steps should not be too many for the traveler to count easily. It is important that the traveler not count stairs, but rather learn to focus on signals from the guide to indicate their arrival at the landing.
- A handrail (or not) depending on the traveler's need and preference. Initially, if a handrail is used, it should extend the entire length of the stairway rather than

start or end at the second or third step to avoid confusing the traveler about the location of the first step and the landing Hill & Ponder1976)

Ascending Stairs

The standard method of negotiating ascending stairs when carrying a cane while traveling with a guide. The guide and the traveler approach the stairs perpendicularly, when the traveler's cane tip contacts the first riser, he/she slides her hand down the shaft of the cane and "anchors" the cane against the riser using the CONTACTING & EXPLORING OBJECTS technique. He /She walks with the guide up to the first step.

If the traveler's cane has not located the riser of the first step, the guide can give an "arm pull" to bring the traveler closer to the first step, and/or he/ she can verbally indicate to the traveler that they are at the bottom of a set of ascending stairs

Modifications.

When walking with an experienced traveler who responds quickly to signals from the guide and who is not fearful of stairs, the guide may choose to not come to a complete stop before beginning to walk up the stairs. This modification saves time, but for reasons, it should only be used with proficient travelers.

If the traveler carries his/her cane using the handshake grasp, the guide may need to pause at the bottom of the stairs just long enough for the traveler to place his/her cane in the proper position to climb the stairs; less time is needed for travelers who hold their cane using a pencil grasp.

If the traveler has been carrying his/her cane in the vertical Positionhe/she can either position the cane as described above or keep the cane in the vertical position, with the cane tip next to the side of his/her foot, and maintain this position while walking up the

stairs.

The traveler maintains the cane in the vertical position, with the cane next to the side of his/her foot.

The traveler positions the cane tip against the riser of the second or third step (depending on personal comfort), 1 inch below the nosing (the horizontal edge on the front of each stair where the tread and the top of the riser meet). The traveler holds the cane either vertically or semi-vertically with her arm parallel to the ground.

It is important that the traveler maintain the cane in a vertical or semi-vertical position (no wider than her body width) so that it is out of the way of the guide's feet.

If the traveler is tall, has long arms, or just finds it more comfortable, she may decide to place the cane tip against the riser of the third step.

The traveler follows one step behind the guide as they climb the stairs; the traveler's cane tip contacts each riser lightly. As she walks, the traveler keeps her weight forward, and over the balls of his/her feet for balance.

Keeps his/her cane arm extended, allowing the forward and upward movement of her body to move the cane tip forward to lightly contact the riser of each successive stair;

If the cane tip bounces excessively as it contacts each riser, the traveler can correct this by applying slight forward pressure of the cane tip against the riser (but not so much as to move the cane out of its vertical or semi-vertical position). This does not let him/her arm drop (allowing the cane shaft to contact each riser rather than just the cane tip). Were this to happen, she would need to "lift" the cane to the next step, thereby decreasing the fluidity and ease of movement with which he/she can climb the stairs. Keep the cane in a constant position 1-2 steps ahead of him/her so that it does not get in the way of her feet as she climbs the stairs (Hill & Ponder 1976).

The traveler keeps the cane in a constant position 1-2 steps ahead of her.

To signal arrival at the landing, the guide may either give an "arm pull" as the traveler's first foot falls on the landing or may pause while the traveler climbs the last step. The traveler will also know that she has only 1-2 more steps to reach the landing when his/her cane tip no longer contacts a riser ahead of his/her.

As the traveler climbs the last step or two, she can "clear" the landing with the cane, if she desires, to detect any objects or other environmental features (e.g., additional stairs) in his/her path.

At the landing, the traveler resumes the CARRYING A CANE WHEN WALKING WITH A GUIDE position. Because the traveler has slid his/her hand down to the bottom of the grip when performing the CONTACTING & EXPLORING OBJECTS WITH A CANE technique, he/she will need to reestablish her grasp at the top of the grip. He/she can do so by quickly sliding the cane forward through her loose grasp and then grasping the grip firmly at the top of the grip as it slides through his/her hand.

The traveler reestablishes his/her grasp at the top of the grip by quickly sliding the cane forward through her loose grasp and then grasping the grip firmly at the top of the grip as it slides through her hand. Some travelers may need to finish ascending all stairs before they can manipulate the cane to return it to its original carrying (handshake) position. The guide may need to stop, pause, or slow his pace while the traveler does this (Jacobson, 1993).

Descending Stairs

The standard method of negotiating descending stairs when carrying a cane while traveling with a guide

The guide and traveler approach the stairs perpendicularly, stopping at the edge of the

top step.

The traveler locates the edge of the first step with the cane tip. She anchors her cane shaft in a midline position against the edge of the top step. This gives the traveler a reference point to know exactly where the edge of the step is located.

The guide pulls his arm forward ("arm pull") to bring the traveler up to the edge of the top step and then tenses his arm to prevent her from overstepping the edge. The traveler "anchors" her cane shaft against the edge of the top step and walks up to it.

The traveler places her cane into a DIAGONAL position in which the cane tip is held 1-2 inches above of the nosing of the first or second step below, depending on the length of the cane (LaGrow&Weessies 1994).

The cane tip is held 1-2 inches above the nosing of the first or second step below, depending on the length of the cane.

If the traveler has been carrying his/ her cane in the Vertical Position, he/she can either position the cane diagonally, or keep the cane in the vertical position, with the cane tip next to the side of his/ her foot, and maintain this position while walking down the stairs.

If he/she wishes, the traveler can use the Tread Method or Edge Method of using his/her cane on the stairs instead of holding the cane with the tip above the nosing of a lower step.

The traveler follows one step behind the guide as they walk down the stairs. As he/she walks, the traveler maintains his/her trunk erect (not leaning backward), placing his/her weight over his/her heels for optimum balance. Leaning the trunk backward does not improve one's balance and doing so can elevate the arm, altering the proper position of the cane; holds his/her cane firmly in position allowing the cane tip to rise while walking down stairs can delay the tip's contact with the landing and can position the

cane to interfere with other people on the stairs; allowing the cane tip to drop while descending can cause it to contact a lower stair (which can be mistaken for the landing) and can interfere with the momentum of the guide and traveler as they descend the stairs.

When the cane tip contacts the landing, the traveler can, if he/she chooses, "clear" the landing with the cane as he/she walks down the last step or two. At the landing, the traveler resumes the CARRYING A CANE WHEN WALKING WITH A GUIDE position.

"Clearing" the landing detects any objects or other environmental features (e.g., additional stairs) in his/her path.

The guide may also pause or give a slight "arm pull" at the moment that the traveler places her first foot on the landing to give additional confirmation that she is at the landing (Jacobson ,1993).

Using the Handrail

After walking up to the first step, the traveler transfers the cane to her hand that is grasping the guide's arm, placing the cane between her thumb and the guide's arm.

When ascending the stairs, the cane tip should be positioned 8-10 inches above the ground so that it does not catch on the steps.

The traveler locates the railing by reaching her free arm forward and to the side in an arc from thigh to mid-chest height with her arm fully extended.

The traveler frees his/her cane hand to grasp the railing by transferring the cane to her other hand and placing it between her thumb and the guide's arm. The traveler then locates the railing by reaching her free arm forward and to the side in an arc from thigh to mid-chest height.

Railings, however, are not present on all sets of stairs. Unless the traveler needs the railing or physical support or for another reason, it is important to encourage the traveler to have confidence in his or his/her ability to negotiate stairs without using the railing in order to avoid developing any unnecessary dependence on railings.

After negotiating the stairs, the traveler removes the cane from his/her grasp hand and resumes CARRYING A CANE WHEN WALKING WITH A GUIDE position.

It is also important to keep in mind that railings are often irregular—sometimes stopping short of, or extending beyond, the stairs (LaGrow&Weessies 1994)

The use of cane technique to improve orientation and mobility of the visually impaired persons in the center.

According to Blasch (2010), the techniques and the cane itself also changed in those early years of orientation and mobility training.For example, the canes that Hoover had taught the soldiers to use were less than 44 inches long; the Hines instructors began to use longer canes and also individualized the length of the cane to suit the height of the user (prescribed canes).These devices originally developed by Dr. Evereft Hill at Vanderbilt University are useful for pre-school children. These resemble the mobility devices used by seeing toddlers when they start walking with the help of a support. These devices are suitable for visually impaired children to use as soon as they start walking with confidence (Blasch, 2010).

In another example of evolving training techniques, Hoover introduced Williams and the other soldiers to the cane only after they had learned to travel indoors and were starting outdoor travel. Williams taught the Hines instructors to introduce the cane and its use at the very beginning of their instruction. They were to use the touch cane technique indoors as well as outdoor, except for crossing narrow streets, when the

diagonal cane technique was to be used. After teaching this way for a while, however, the instructors realized that the diagonal cane technique doesn't prevent travelers from hitting their knee against the bumper of parked cars, so they started teaching people to use the touch technique during all their crossings.

In teaching the cane techniques, motor skills must be broken down into their components and each component must be built on previous ones until the entire skill is achieved (http. II books Google.com), in doing that, the task has to be broken down into sub-tasks and teach the sub components one after the other until the client learns the whole task.Olukotun (2003) 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:

- Grasping the cane in a prescribed manner
- Holding it at mid-line and waist height and
- Swinging it so it sweeps to cover the widest part of one's body from side to side

When one is walking the cane lightly touches down at the further points of the arc on either side of the body.As each foot touches the ground, the respectful heat touches at the same time as the cane tip. Likewise the cane next foot placement approximately will be (in step). In teaching the skill grasping the cane, the instructor then introduces the hand position in relation to the client middling and waist height. Facing the client, the instructor may gently hold the client's wrist to place it in the correct position until she no longer feels resistance from the client.As the client pushes the cane from side to side the instructor lets, him/she tap the insides of her feet with the cane, tip, his/her feet are placed to approximately the widest part of the arc width of the cane arc. As the

client gains proficiency, he/she will lightly touch the instructor's feet with the cane tips and his wrist will not press against the instructors. When these skills are learnt, the instructor backs away from and provides verbal feedback as the swings the cane.The touch technique allows the traveler to defect drop offs and objects in the vertical plane in familiar or unfamiliar environments. During touch techniques training, the cane is held in the midline the body and swing from side to side in a form of an arc. The rationale behind the touch techniques is for the traveling to clear the areas with the cane for his next step (http://books.Google.com).

There are several types of canes available for visually impaired travelers. These are various orthopedic canes, folding canes and long canes. These canes have been made out of materials such as wood, various metals, fibre glass, Darion and plastics (Fazzi&Petersmeyer, 2001).

These canes are either rigid or collapsible canes are normally used for identification of the client. They are not strong enough for mobility.Researchers have indicated that the rigid canes are very useful to the client because it's living enough to give prior information to the client. However, studies revealed that, the cane should be rigid, durable, light weight and relatively attractive and inexpensive (Fazzi&Petersmeyer, 2001). This suggests that, a good mobility cane should have high visibility to motorist and pedestrians and it must also make minimal noise.

The travel techniques used by visually impaired people are eclectic in their range, constituent elements and origins. Therefore, it is crucial for an understanding of the studies and participant responses presented in this thesis that a definitive account of the technique most well-known within the rehabilitation worker profession is offered to the reader.

In what is generally regarded to be the seminal text in Orientation and MobilityTechniques, Hill and Ponder (1976) (Jacobson, 2008; Wiener *et al*, 2010) describe the range of techniques that can be used to promote safe travel without sight as orientation, sighted guide, self-protection, cane skills (diagonal and touch technique), outdoor unit/residential and outdoor unit/commercial. The development and origins of many of these techniques is ambiguous, with anecdotal accounts ranging across centuries and continents (Franks, 2000; Pavey, 2011; Bledsoe, 1997, 2010; Dodds, 1996). In contrast, the one technique that has an undisputed traceable origin is that of the two-point touch long white cane Technique (also documented as touch technique).

Described by Thornton (1968) as more "superior to any other method…[he]…had experienced of helping blind people get about alone" (p.204); this form of travel is considered a specialism of the rehabilitation worker. There is some variation but as Penrod (2012) reports, in general professionals are in agreement that there are seven distinct but interrelated components required for two-point touch long cane technique. Based on the key texts by Hill and Ponder (1976), Jacobson (2008) and Penrod (2012), these seven elements are described as:

Position of the cane

When holding the long cane the arms should be relaxed with the grip of the cane held at waist height or above with the cane held in the Centre of the palm. Arms relaxed but slightly bent at the elbow (Hill and Ponder, 1976; Jacobson, 2008).

The index finger

The fore/index finger is positioned to extend along the flat edge of the long cane grip,pointing towards the tip when placed on the ground. The remaining fingers cup under the grip with the thumb hooked over the top of the grip (Penrod, 2012; Jacobson, 2008; Hill and Ponder, 1976).

Wrist action

The cane is positioned at the cardinal mid-sagittal plane (body midline) of the body and held forward of the body. Using flexion, extension and hyperextension the wrist is flexed to move the cane from left to right (Penrod, 2012; Hill and Ponder, 1976)

Arc height

As the cane tip is moved from side to side (left to right) at the apex of the arc the tip should be 1 inch (Hill and Ponder, 1976); no more than 1.5 inches (Penrod, 2012); or 1.5 to 2 inches (Jacobson, 2008) off the ground.

Arc width

The tip of the cane should touch the ground on either side of the traveler, either slightlybeyond (Jacobson, 2008) or at a distance of approximately 1 inch (Penrod, 2012; Hill andPonder, 1976) beyond the widest part of the cane user.

Rhythm

The tip of the cane touches the ground ahead of the traveler in time with the heel strike (Penrod, 2012; Jacobson, 2008; Hill and Ponder, 1976).

The use of lower body technique to improve orientation and mobility of the visually impaired

The body protective technique (hand and forearm skill and training) are primarily utilized. In familiar indoor environment, protective technique is utilized selectively and one that is generally not used for traveling great distances (Gargiulo, 2006). The

purpose of this skill is to locate and provide protection from the waist level objects such as kitchen counters, table edges, nightstands and the back of chairs.It is important to remember that this technique will only partially protect your stomach or groin area and it will not warn you about approaching drop-offs, such as step and stairs. For maximum protection, you should use a combination of up and lower body protective technique.

- Position your hand either your palm in frontpointing at floor and facing the opposite t approximately 10-12 inches from your body (you can estimate this distance by visually a shoe box or meter placed length wise between your thigh and your palm).
- Curl your fingers, spread them slightly apart, and keep your wrist straight with your palm facing your body so that the back of your hand will make contact with any object you encounter. Try to keep your finger relaxed while walking.
- It is important to maintain your hand and arm in this position so that your lower body is partially protected initially, you may be able to hold this position for only a minute or two but with repeated practice you will be able to maintain this position for longer period of time (if your arms becomes tired, you may choose to use your other hand).
- Remember to use visualization when moving about a room or a specific area of your home in combination with the lower body protective technique. By so doing maximum feedback will be received from the surroundings (Carolina, 2013). Kelly and Vergason(1985) states that the hand is held extended forwards and diagonally across the body as low as possible. The palm this time faces towards the client and the finger points downwards and lightly could a used to check that the protecting arm is covering the extreme side of the body.

  Hill and Ponder (1976) state that the hand is held extended forward and diagonally across the body as low as possible. The palm faces forward the client and the fingers pointed downwards and highly curled inwards. The free hand can be used to ensure

that the protecting arm is covering the extreme side of the body. Lower body protection is used to defect lower obstacles such as chairs and tables. These techniques facilitate easy movement to visually impaired persons and also it is significant for every person who is blind to be conscious with these skills and use them properly. Both upper and lower body protection should be taught separately and them totally together. This will enable visually impaired person to apply the two methods effectively and efficiently.

The use of upper body technique to improve orientation and mobility of the visually impaired person

Most at times when the visually impaired walk about freely without fear; the reason being that we see dangerous objects ahead when moving.In the case of the visually impaired persons dangerous objects are out of vision. There is the need, therefore to device a way by which visually impaired person can protect themselves from danger and collision with object especially when they are indoors. The technique helps visually impaired persons to detect objects which may be encountered by the upper region of the body (Hill, 1988). In fact either hand can be used for protection of the upper region of the body particularly the face and head. In teaching visually impaired persons this techniques tell them that the upper arm should be held at shoulder level and made parallel to the floor, and the elbow fixed so that forearm comes across the body. The palm of the hand should be facing outwards to protect the face and head. The palm of the hand and the forearm, therefore, first serves as a shield in the event of any collision with an obstacle. It helps to give prior information to the visually impaired person, for that reason, in training, make sure the palm and the forearm is good enough, ask the one to use the free arm to check that the protecting arm is

covering the face and the head. This technique when follows correctly, your forearm will act as “bumper” to protect your head and the upper part of your body from handing plants, open cupboard ajar. You can also use these techniques when bending down to pick up objects or when checking a chair seat before sitting down.It is important to remember that this technique will only partially protect your shoulder and chest area, and will not protect you below the waist or warn you about approaching drop-offs, such as steps and stairs. For maximum protection, you should use a combination of upper and lower body protective techniques and/or a long white cane. It must be borne in mind that the technique is for walking short distance only where there might be obstacle at head height (Fazzi and Petersmeyer, 2001). This implies that it is used when bending down to pick up dropped articles or for sitting down where there might be an obstacle at head height hears the seat. The techniques are usually modified by moving the elbow in to the side of the body and spreading the fingers to protect the wholeface(www.visiouawre/org/info/everyday-living/esseantical-skills/anintroduction and-mobility-skills/using the trailing-technique/123518 18/12/16 3:45pm).

Other techniques in teaching orientation and mobility

The training technique can help you locate a door, walk in a straight line, or detect the position of objects in front of you on the same side of your body as you extend your arm.This technique can provide you with useful information about everyday objects, obstacles, and potential hazards that you may encounter as you move about your home.It can also provide you with a feeling of security while you walk, by allowing you to remain in contact with walls, counter tops,desk, tables, or other types of stationary surfaces.It is important to remember that this technique will not warn you

about drop-offs, such as steps and stairs. Technique in combination with either the upper lover body protective technique, depending upon your needs in a particular environment: the technique is as follows:

- Begin along a straight stretch of wall in an uncluttered area. Stand with the side of your body about 6 inches from the wall.
- Extend your hand in front of you at approximately hip level and angled downward toward the floor, about 12 inches from your body.
- The back of your hand should be in contact with the wall, with your fingers slightly cupped toward your palm.
- This will prevent you from injuring your fingers if they make contact within object. Your fingers will also act as “bumpers” to warn you about objects you may encounter.
- Walk forward slowly while holding your arm in this position, veering the backs of your fingers, especially the knuckles of your ring and “pinky” fingers, in contact with the wall
- Make sure that the back of your hand is always in contact with a surface while you are moving.
- When you make contact with or locate an object, take a few moments to examine and identify it.
- If you come to a door way, walk across the opening and resume trailing on the other side.
- For maximum protection, when crossing the door opening, it is recommended that you use either the upper Body protective technique or lower body protective technique, depending upon the particular environment.

Importance of Orientation and Mobility

According to Richard, cited in Gargiulo (2006) any programme designed to meet the total needs of an individual or visually impaired should emphasis training in orientation and mobility or fails to be a complete or comprehensive programme. This means that orientation and mobility is an important programme that can help visually impaired person to perform their activities. Orientation and mobility skills gradually expand the restricted world to persons with visual impairment and improve upon their quality of lives as they gain confidence in the skill (Jackle, 1993). Orientation and mobility help the client to receive his/her basic need for service.

According to Welsh and Blasch (2010), orientation and mobility instruments can contribute positively to theself-concept and help in exercising the body. It increases the cardiovascular endurance in persons with visual impairment. It also enhances all other form of gross motor and fire motor skills. Orientation and mobility assist persons who are blind to move to places make friends, and learn new things and ideas that are found within the environment. According to Suterko (1974), mobility means “skills which are achieved by the visually impaired persons, which can enable the person to perform daily routine activities or more about independently and competently in familiar and unfamiliar environment. The person is therefore only mobile if the individual is able to gather and use sufficient information in the environment in order to avoid hazards and reach a desire destination.

The ability to move in and around the environment is critical and many a times inability to do so affects the individual psychologically, socially, emotionally, economically and physically (Gargiulo, 2006). One of the main effects or impacts of blindness is in the ability to move around.A restricted movement of individuals may influence their

development, understanding of concepts and quality of life considerably. It would also restrict their exposure to the environment and the knowledge of the world around them would be limited. Training in OrientationandMobility would enable them to avail a variety of real experiences and enhance their understanding of the concepts, give them more confidence and all these would result into personal development.

The loss of power to move about freely and safely is arguably the greatest deprivation inflicted by blindness (Jacke, 1993). As being able to travel freely is very important for the sense of independence, Orientation and Mobility training is an important pre-requisite for the integration of visually impaired persons into the community and working life. It enables them to become more independent in indoor as well as outdoor mobility. It allows them more freedom and makes them less dependent on family and friends. It sharpens remaining senses through sensory training, develops coordination of movement and improves posture. That results into better acceptance of the individual in the community and by the peer group.

Stone (1995) noted that mobility enables an individual to perform daily activities like going to a grocery shop, temple, common place, venues of social activities, houses of relatives, neighbours and friends etc. Through such movement, individual is able to interact with others and to develop inter-personal relations. It would enhance the quality and quantity of social contacts and integration in community. The extent of social interaction would be enhanced further if the individual is able to use the public transport and go far off places and other towns.

When an individual is not able to travel around freely, it has devastating effect on his/her self-concept (Stone, 1995), self-confidence and desire to compete and progress. Most people with visual impairment remain confined to their homes, live a solitary life and accept visual impairment as fate accomplished.Such individuals have to depend

upon others even while moving in a familiar environment. They have to depend upon the convenience of others for their movement, daily activities and participating in social activities. While independence in movement would develop self-confidence and enable them to perform these activities at their own convenience and pleasure, it would enhance their movement outside home and encourage community participation.It enhances the safety of the individual and his fellow beings. It is essential for correcting gait and postural defects. It is not just an overcoming of practical difficulties, but it is also a step towards developing and maintaining one's own self-image. Mobility education will also be one way to get young people fit and the improved fitness will lead to an ability to undertake more intensive training (Stone, 1995).

To be able to move independently within an environment is one of the pre-requisites for employment (Blasch, 2010), gainful occupation, economic rehabilitation or income generation. It is a step toward comprehensive rehabilitation, self-confidence and liberation from the solitary home confinement of a person. The success of the vocational training as well as community based rehabilitation programmes also further proves the importance and necessity of independent travel. It also helps in changing public attitudes towards visual impairment.

There is close inter-action between mobility and sports. Training in Orientation and Mobility is a pre-requisite for promoting sports among the visually impaired. At the same time, participation in sports enhances understanding of the environment, enables a person to overcome fear of movement in the unknown space and improves concentration which in turn results into better mobility.

Hindrance to effective orientation and mobility

In Ghana, there are many hindrances that prevent effective orientation and mobility training. 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. Avokeetal. (1990), Hill and Ponder (1976) and Lowenfeld (1981), visually impaired persons 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 were illiterates who did not have information or service that were available for them.

There are also lack of education and commitment on the parts of the clients and their families toward orientation and mobility. Inadequate availability of mobility canes and collapsible ones were problems to effective orientation and mobility (Avokeetal., 1990).

However, many sighted persons did not have any knowledge on how to guide visually impaired persons. Sighted guide travel, use as the only way of mobility many foster dependence instead of independence (Blasch and Welsh, 2000).

Electronic Travel Aid (ETAS)

Electronic travel aids are relatively new devices in comparison to the cane or dog guide system of mobility. Hurbner (2005) stated that the electronic travel send out

signals to sense the environment within a contain range or distance processes the information receive, and furnishes the user with certain relevant bits of this information about the immediate environment. In the 1970s electronic travel aids received a great deal of attention as a supplemental orientation and mobility system for blind adult travelers. Cane travelers for example can use an electronic obstacle in the travel path without making physical contact with the obstacle. Besides the obstacle detection capabilities of electronic travel aids, some as environmental sensing devices because they provide information about the surface properties of objects in the environment. Therefore, in recent year's attention has been focused on using electronic travel aids to teach environmental and spatial concepts to congenitally blind children.Although examples of electronic travel aids can be found as easy as 1897, very few of 30 prototypical devices have survived the rigors of field testing (Hurbner, 2005). The devices discussed in this section (pathsounder) Mowat sensory, sonicguide and laser cane are the most widely used and represent the state of the art in electronic travel aid technology for blind persons.

Advantages of the sighted guide technique

- When the sighted guide technique is used correctly with a proficient sighted guide, travel is very safe and efficient.
- The guide can be a constant source of information about the environment.
- The sighted guide's skills can be used to develop and reinforce such skills as kinesthetic awareness, orientation concepts.

Disadvantages of sighted guide technique

- Many sighted persons are not knowledgeable in how to guide visually handicapped persons.
- Sighted guide travel used as the only mobility system may foster dependence rather thanindependence.
- Some handicapped travelers may not pay attention to environmental information and orientation when traveling with a sighted guide.

Dog Guides

According to Whitstick (1980), systematic training of dog guides for the visually handicapped began sometime in the 18th Century.During World War I, the first dog guide to train blinded veterans of the German Army. The first dog guide school in the United States, the SeeingEye, was established in 1929 (Putnam, 1963). Although the dog guide as a method of mobility has been well publicized, less than 2 percent of visually handicapped persons use it for the following reasons, first, the majority of the visually handicapped persons have good travel vision, second, most dog guides walk between three to four miles per hour, a speed which eliminate many elderly and physically handicapped. Visually handicapped persons as a dog guide candidate, third, most dog guide training schools require that applicants be at least 16 years of age because of the responsibility of caring for a dog; finally, some visually handicapped persons do not like dogs or sample prefer another system of mobility. A well trained dog guide will circumnavigate objects in the travel path, including overhanging objects at head level, so physical contact is avoided.

CHAPTER THREE

METHODOLOGY

Introduction

This chapter described and explained the methods used in gathering relevant data for the study. Focus was on the research design, a description of the population, the sample and sampling techniques, instrumentation, data collection procedures and data analysis.

Research design

This was an action research design through which the researcher developed activities for improving orientation and mobility skills of visually impaired persons in Garu Rehabilitation Center. Gender (1996) cited inAvoke (2005) shares the view that action research is a form of self-reflective enquiry that is now being used in school based curriculum development, professional development scheme and as such, it actively involves teachers as participants in their own education process. Avoke (2005) citing Mill (2003) explain action research as any systematic inquiry conducted by teacher researchers to gather information about the ways information gathered aims at gaining insight, developing reflective practice, effecting positive practice or changes in the school environment and on educational practices in general and improving mobility outcome.

Population

Population refers to a group of people of interest to the researcher (Avoke, 2005). The researcher's target population was made up of ten (10) visually impaired persons. These people were totally blind and therefore had difficulty in orientation and mobility, limited the range and variety of experience and as well limited in exploring the environment. They therefore needed conscious efforts and assistance in order to

move about safely within their vicinity. This population holds key position in the dispensation of effective functioning of persons with visual impairment especially in enhancing their orientation and mobility skills. The estimated target population was ten (10) persons.

Sample

Sample is usually the subset of the entire population of interest to researcher (Avoke, 2005). The sample involved eight (8) visually impaired persons, two (2) caregivers in the center. In all, the sample size was ten (10) respondents.

Sampling technique

The researcher used purposive sampling technique to select the sample size for the study. Avoke (2005) citing Cohen, Manion and Morrison (2003) sees purposeful sampling as hand picking the cases to be included in the sample on the basis of their judgment of the typicality. This means choosing a simple for a specific purpose. The ten(10) persons were chosen because they availed themselves for the training.

Instrumentation

The instruments used in gathering data were mainly observation and interview.

Data collection procedures

This is basically looking at what is happening. According to Morrison (1993) cited in Avoke (2005) observation enables the researcher to gather information on physical setting, and on programme to study. The observation took two different forms (a) Non-Participatory observation. In this context, the status of the observer is not known and makes no attempt involving him in the activities of the observed. It is non-participatory in the interest of being non-reactive. A naturalization observation was

used by the researcher during mobility activities with the persons to find out and consolidate the evidence of the problem and the student's level of comprehending basic orientation and mobility skills. This is consistent with the concern of Gay (1992) cited in Avoke (2005) that some characteristics of behavior like interaction between teacher and pupils can be observed naturally as they occur.

(b) participatory observation- in participant, the observer is aiming to become part of a group of persons being observed Robson (2003) cited in Avoke (2005) noted that it involves not only a physical presence and a sharing of life experience, but also entry into their social and symbolic world through learning their social convention and habits, their use of language and non-verbal communication. This was used during orientation and mobility practices with the personsto elicit difficulties involved in orientation and mobility by students with visual impairment. This was done in the form of interaction with the persons to look out for evidence of the problem and for any development change that would come out during and after interaction. This is consistent with action research which aims at effecting significant changes and improvement at the end. The researcher employed situational observation guide.

Interview

Interview is a way of verbally interaction with participants or respondents in conducting research. It can also be described as a form of conversation between two people. It can be fully structured, semi-structured or unstructured (Avoke, 2005).The researcher used the conversational approach or semi-structured with the persons and the caregivers involved in the research. This was to confirm the presence of the problem and also to see whether the strategies used for the intervention has brought a change or improvement in the persons in terms of improving orientation and mobility skills among them. The visually impaired persons were engaged in oral conversation

and practices in and outside the classroom to ensure that what was obtained was reasonably fair and accurate. Oral and practical activities were used before the intervention to establish the fact that students had orientation and mobility difficulties as well as during and after intervention to establish the fact that the ability to explore his world and has physical contact with it could ease orientation and mobility difficulties and improve orientation and mobility skills of persons with visual impairment.

The special educator at the rehabilitation center was engaged in the interview to seek his opinion on the problem of the persons with visual impairment cases in mobility as well as to identify intervention strategies to overcome such problems. The interview took place in the staff common room during play time and lasted for 5minutes for each of the two days used. The headmaster and mentor were also engaged in 20 minutes each in interview to identify how best students with visual impairment could be assisted in mobility practice. This took place in the morning since during the rest of the school hours they would be busy. These interviews were semi-structured.The specific problems observed with regards to orientation and mobility skills were:

- Visually impaired persons' difficulty in walking with a sighted person.
- Visually impaired persons' difficulty in walking in a narrow passage way.
- Difficultvisually impaired persons' using the cane.

CHAPTER FOUR

INTERVENTION DESIGN, DATA ANLYSIS AND DISCUSSION OF FINDINGS

This chapter discussed the intervention designed and analysis of the results obtained from the use of the instruments in gathering relevant interventional strategies to solve the problems identified.

Intervention and implementation

Orientation and Mobility Strategies and Techniques for people with visually impaired.

It is commonly suggested that the ability to move and travel is integral to all activities and essential for an individual's wellbeing and development (Blasch*et al;* 1997). However, for those people experiencing visual impairment, moving around their environment and travelling further afield undoubtedly exposes them to a risk of physical injury from collision with obstacles and falls (Nazroo&Gjonca, 2005). In addition, the "social isolation and lack of human contact" that can occur as a result of not being able to travel has been highlighted as presenting "major problems for people with sight loss" (Hanson *et al*; 2002, p.1). This "loss of the power to move about freely and safely" (Koestler, 2004, p.336) permeates the findings of Pavey, Dodgson *et al* (2009) and Pavey, Douglas *et al* (2009) who suggest that for older visually impaired people with the ability to be mobile is fundamental for successful social, communication and daily living activities.

Within the field of visual impairment, the term orientation and mobility describes the range of skills and training required for a person to travel safely and effectively without sight. Individually, orientation describes the use of the senses (auditory, gustatory,

kinesthetic, olfactory, tactile and visual) to understand the spatial relationship between a person and their environment (Long &Giudice, 2010; Jacobson, 2008; Hill & Ponder, 1976). Commonly this is where they are, where they have been and where they want to go.

Mobility on the other hand encapsulates the capacity, willingness and ability to physically move; this includes a range of techniques, systems and equipment (including the white cane and sonic aids) which can be employed to improve the safety and effectiveness of movement without sight (Farmer & Smith, 1997; Jacobson, 2008; Dodds, 1988; Hill & Ponder,1976).The value of these techniques for improving the safety and effectiveness of movement without sight can also offer a challenge to the key barriers presented by visual impairment.

In addition to the loss of sight, three main barriers to travel for visually impaired people from across the age spectrum (working age to retirement age) were identified by Pavey, Dodgson *etal.* (2009): poor health, mobility and confidence. Although there appears to be very limited empirical research into the value and use of the O&M techniques that challenge the implications a sight loss has on movement and travel, it has long been recognized by professionals working with visually impaired people that these rehabilitative techniques not only provide travel know-how but also promote physical wellbeing and support the development of an individual's self-esteem and confidence (Ponchillia&Ponchillia, 1996; Weiner *et al;* 2010, Miyagawa, 1999).

This value of Orientation and Mobility training appears to have been missed in the scathing critique by Smith (1996) discussed earlier, who includes Orientation and Mobility training as an example of the limited value of the training offered to people with visual impairment.

The intervention phase was where step by step procedures were employed in trying to solve the visually impaired orientation and mobility difficulties identified. The intervention was implemented to improve upon the visually impaired person mobility skills and abilities, especially in learning concepts such as sensory awareness, spatial and independent movement all of which are mobility skills. The intervention design and implementation lasted for two months.

Interventions Strategies

The main interventions strategies for the study were:

- The use of the sighted guide technique
- The use of pre-mobility skills
- The use of lower body protection
- The use of upper body protection
- The use of touch technique (cane technique)
- The use of diagonal technique (cane technique)

Phase one- the use of the sighted guide

During the first week, the researcher explained to the visually impaired individuals how to grasp the sighted guide's arm. This is done just above the elbow with the thumb to the outside and the four fingers to the inside of the guide's arm. This grip must be firm yet comfortable for the guide. The researcher further demonstrated to them that the visually impaired upper arm should be positioned parallel and close to the side of the body forming approximately ninety degrees with the lower arm. The shoulder of the visually impaired gripped arm should be directly behind the shoulder of the guide's arm. The visually impaired should be positioned one step behind the guide. The researcher advised that in case of small children, it is appropriate to grasp the guide's

wrist instead of just above the elbow. This activity went on for one week to allow for enough practice. They were most at times left alone to practice. Intermittent practice conducted during this period brought about improvement with the movement of a guide by the visually impaired.

Phase two –walking in narrow passage ways using the sighted guide.

As visually impaired continued with the movement of sighted guide, the researcher introduce them to walking in narrow passage ways. This was the second week. In this, teaching them to walk along narrow passage ways, between blocks, tables, chairs were activities used to negotiate narrow paths. The visually impaired was verbally cautioned of the narrow path while the instructor asked the visually impaired individuals to straighten the arm and move directly behind the guide. The trainees are informed that stretching the arm the visually impaired is holding backwards, means the path is narrow. In doing that, make sure that you use your free arm to check and see whether the blind person is centrally positioned behind you (the guide). When this is well done the visually impaired person will follow you through without knocking tables, and chairs which will draw the attention of others in and around the classroom. After you have finished traversing the restricted area, return your arm to normal position of the sighted guide.

These activities went on throughout the second week coupled with sighted guide movement. Verbal description practice during this period showed that, the visually impaired individuals were fast, getting so acquainted with walking in narrow path way since they could detect narrow path by way of stretch of the guide's arm as well as their ability to fall behind the guide without stepping the guide heels.

Phase three-using the cane technique

Since activities for sighted guide lead to walking in narrow path ways, the researcher introduced the visually impaired persons to the use of the cane which then provides them with information about objects and the walking surface. It also identifies the user as visually impaired in case of approaching vehicle. The researcher explained to the visually impaired persons that, the mobility cane are of different kind for uses; these areorthopedic cane, folding canes, wooden canes and long canes. The researcher used the long cane and folding canes in carrying out these interventions. In satisfying the principle of concreteness of experience, the visually impaired individuals were made to touch and manipulate with the various canes. The researcher explained that wood, metals, and plastic were used in manufacturing the various canes.

The researcher guided them on how to hold the cane by way of holding their hand to hold at mid-line of the cane to enable the visually impaired to swing the cane from side to side in a low, flat arc. The cane tip contacts the walking surface at a point one inch, outside the widest part of the body. The researcher used the visually impaired hands to demonstrate hand on hand techniques as a guide to the practice so that they can grasp the concept and use in correctly.

Phase four -Upper Body Protective Technique

To use Upper Body Protective Technique correctly, your forearm will act as a "bumper" to protect your head and the upper part of your body from hanging plants, open cupboard doors, and room doors that are partially ajar. You can also use this technique when bending down to pick up objects or when checking a chair seat before sitting down. Even if you have some usable vision and think you are safe, don't take the risk--never, bend over without using this safety technique.

It is important to remember that this technique will only partially protect your shoulder and chest area, and will not protect you below the waist or warn you about approaching drop-offs, such as steps and stairs. For maximum protection, you should use a combination of upper andlower body protective techniques and/or a long white cane**.**

The technique:

- The study guided the visually impaired to raise their stronger arm to shoulder height and extend it out in front of their body, as if they were pointing straight ahead.
- They were asked to bend their arm so that their forearm is across their chest, and touch the opposite shoulder with their fingertips.
- They were led to move their hand approximately 10-12 inches away from the shoulder.
- Estimatethe distance by visualizing a shoebox or ruler placed lengthwise between the shoulder and the hand.
- They were led to curl their fingers, spread them slightly apart, and keep the wrist straight as they turn the palm outward so that it faces away from the body.
- They were asked to keep the elbow chest high while they raise the forearm diagonally across the body until the hand is about ten inches in front of the face. They were further guided through the following:
- Turn your palm outward with your fingers pointing at a slight angle back toward your face to protect them from injury and allow the forearm to serve as a buffer.
- Maintain your hand and arm in this position, so that your upper body is partially protected.

- Initially, you may be able to hold this position for only a minute or two, but with repeated practice you will be able to maintain this position for longer periods of time. If your hand and arm are "floppy," they will not be as effective in protecting your head and upper body.
- If your arm becomes tired, you can switch and use your other arm, repeating the previous steps to maintain the correct position.

11. If you are unable to raise your arm due to conditions such as arthritis, stroke, or Parkinson's, try wearing a visor to protect your face.

Phase five

In the fourth and final period of the implementation of the intervention design, demonstration and verbal description were adopted to consolidate the skills learnt by the visually impaired with regard to orientation and mobility. The activities on the use of sighted guide, walking in narrow path and activities for using the cane were repeated. This was done to make the visually impaired become more conversant with walking alone in the physical environment.

Data Analysis

The major instruments used in gathering data for the study were observation and interview. Data obtained from the application of these instruments were analyzed using baseline recording of the occurrence of the visually impaired difficulty level in walking with a sighted guide, walking in a narrow path and using the cane in orientation and mobility practices. The analysis and discussion of results were based on the observations and the pre and post interventional activities put in place to improve the visually impaired orientation and mobility skills. Analysis of data is

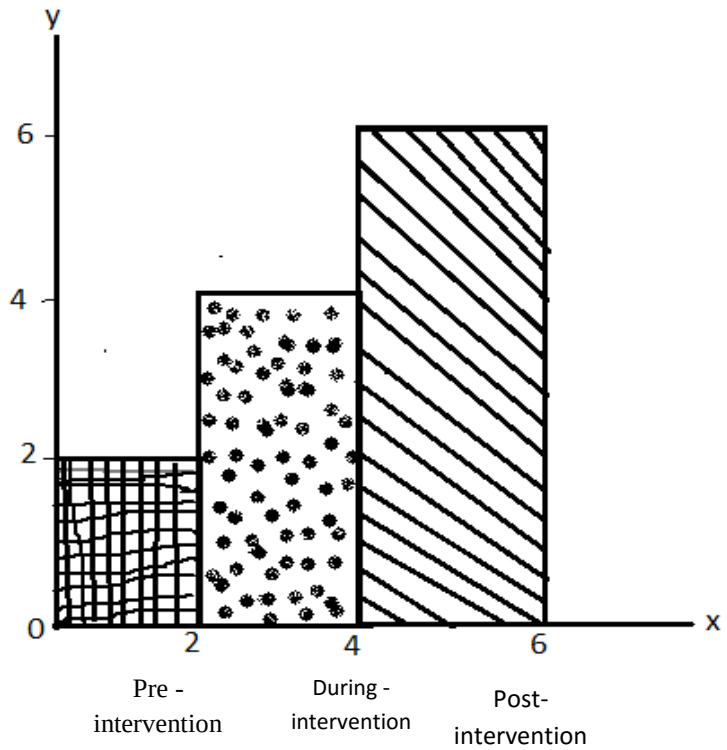
organized and presented (research question after research question) and discussion of finding made according to the key issues that emerged from the research questions.

The focused areas of the researcher to improve orientation and mobility skills capabilities were:

1. Ability to walk with the sighted guide
2. Ability to walk with the long cane

The data gathered from the usage of the instruments are displayed on simple graph.

Figure 4.1: The graph below shows the pre-intervention, during intervention and post- intervention scores obtained by people in using sighted techniques in basic orientation and mobility skills.



Source: Fieldwork (2017)

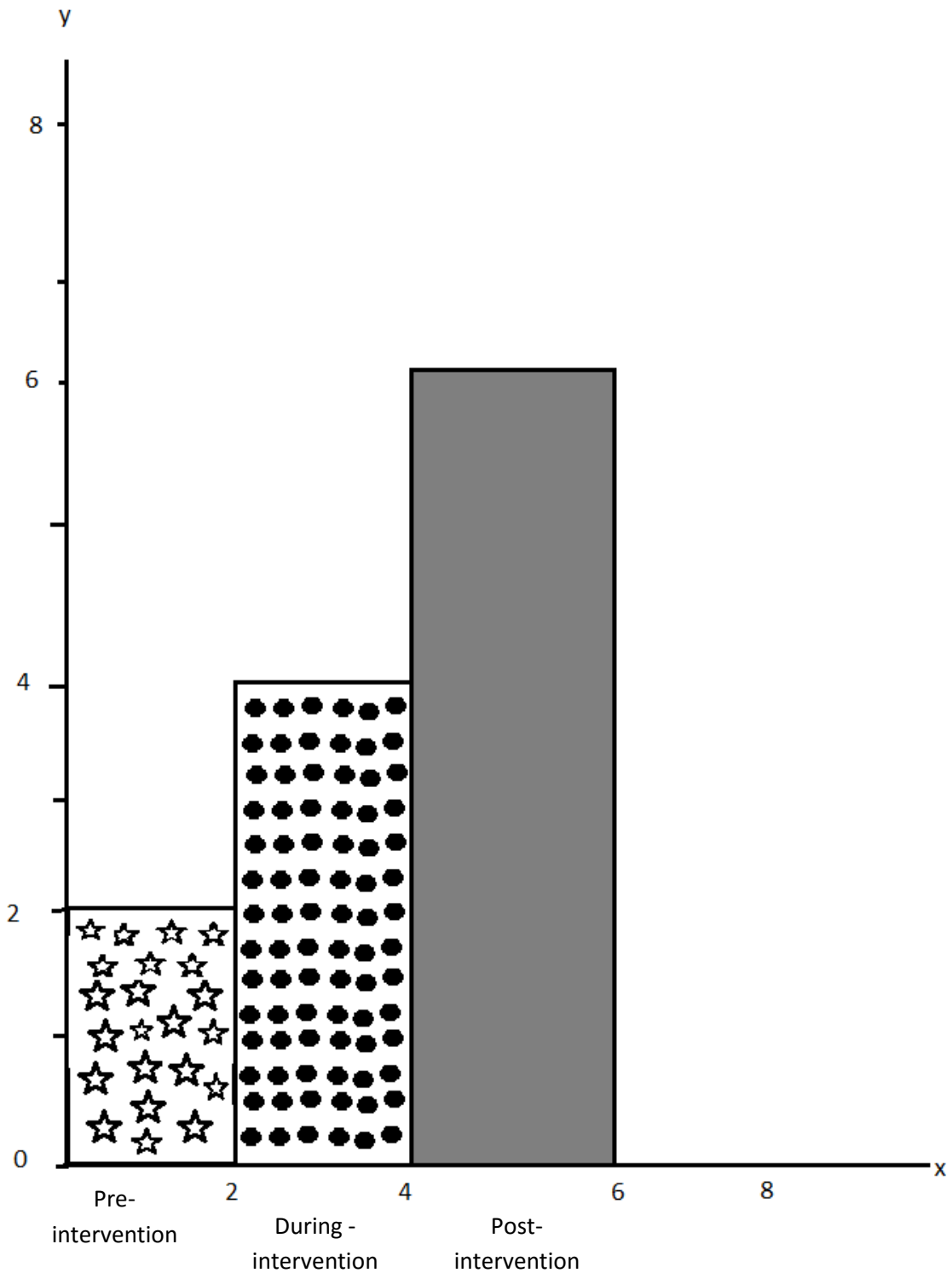
The graph above indicates that before visually impaired were introduced tosighted guide techniquein basic skills in orientation and mobility, their performances were very poor as the estimated ability in percentage was 10%. However, when they were introduced to the final activities in cane technique their estimated ability rose significantly during the intervention and post intervention to good and very good respectively.

This was realized through measuring the performances of the participants in the sighted guided techniques, they were allowed to demonstrate the following;

- The arm technique
- The hand technique
- The elbow technique
- The shoulder technique
- Passing through narrow spacing while using the elbow technique
- Using the sighted guide technique to sit on chair
- Using the sighted guide technique to open and close door.

The participants were able to demonstrate competency in each of the above

Figure 1:4 the graph below shows the pre-intervention, during intervention and post- intervention scores obtained by people in using the cane techniques in basic orientation and mobility skills.



Source: Fieldwork (2017).

The graph above indicates that before visually impaired were introduced to cane techniques in basic skills in orientation and mobility, their performances were very poor as the estimated ability in percentage was very low. However, when they were introduced to the final activities in cane techniques their estimated ability rose significantly during the intervention and post intervention to good and very good respectively.

In measuring the participant competent level in using the cane technique, they were asked to walk independently while using the cane to walk along a straight edge.

They were also able to demonstrate the one-point touch, two-point touch and three-point touch technique which is illustrated in the graph above.

Discussion of findings

Research question 1:How will the use of sighted guide technique improve orientation and mobility skills of persons with visual impairment?

In finding answers to research question, the researcher personally interacted with the visually impaired individuals in the form of verbal discussions and observation of their movement. It revealed that the visually impaired persons had no basic orientation skills with regards to moving with a sighted guide. The researcher then moved in by taking them through various activities such as grasping the guide arm above the elbow, and demonstrating how the upper arm should be positioned parallel. These and many activities resulted in improvement in the orientation and mobility skills of the visually impaired with the help of sighted guide.

The skills acquired in sighted guide technique have helped the visually impaired individuals to travel with the sighted persons without any difficulties.

Training in sighted guide techniques also has helped the visually impaired person to adopt appropriate strategies to walk through a narrow area when carrying on with their routine activities.

The sighted guide techniques have also help in giving constant information about the environment from the guide which boost the confidents between them.

Research question 2:How can the use of upper and lower body techniques improve orientation ability of the visually handicapped?

What seemed to emerge from the responses by visually impaired persons to research question suggested that there was a need for the technique to be taught separately. This proved that the client had acquired the skills and was using the technique properly. It was discovered that teaching them, the techniques helped them in protecting the lower and upper region of the body from any obstacles. This is in agreement with Hill (1986), who stated that the techniques help visually impaired persons to detect objects which may be encountered by the upper region of the body. The provision of these skills assure visually impaired individuals of some amount of safety when they are bending to pick dropped articles or for sitting down where there might be an obstacle at head height near the seat.

Research question 3:To what extent can the use of cane technique improve orientation and mobility of the visually impaired individuals in Garu-Tempane district?

In finding answer to research question, the researcher had an interaction with the visually impaired and their responses called for introduction of various mobility canes

through adoption of a consistent approach. It also revealed the need for more stimulation for the visually impaired to be motivated and the need for the use of cane in teaching orientation and mobility to the visually impaired persons.

- The need for constant demonstration on how to handle the cane. This is necessary because constant practice will make them perfect in the use of cane hence the difficulty in the use of cane by persons with visual impairments will be limited.
- The need for instruction to be done in a direction of some obstacle for them to identify. In training them in the directions obstacle gives them an impression that the environment is full of impediments and in travelling care must be observed to avoid bumping on objects which will attract the attention of on lookers.
- The need for officers of rehabilitation centers to occasionally review selected routes with visually impaired individuals and to extend the distance to cover to ensure the ability to move with the aid of long cane. This will give them the opportunity to adapt to the changing situations they find in their daily travelling routes.

CHAPTER FIVE

SUMMARY OF FINDINGS, RECOMMENDATIONS AND CONCLUSION

In this chapter, the researcher presented the results of the study on using pre-mobility strategies to improve orientation and mobility skills of persons with visual impairment in Garu-Tempane District. The research questions that guided the study were descriptively analyzed. The research sample size was eight (8). Purposive sampling technique was used to select the sample for the study. Observation and interview were the instruments used in gathering data for the study.

Analysis of the data was organized and presented considering research question after research question. Findings were made and conclusion drawn from the finding and presented with some recommendations to the use of pre-mobility strategies to improve orientation and mobility among person with visual impairment in Garu-Tempane district.

Summary of the findings

The researcher made a number of findings that have been outlined under the theme developed from the research questions used for the study. Some mobility difficulties among persons with visual impairment revealed by the study include difficulty in walking with a sighted guide, difficulty in walking in a narrow passage way and the use of cane. However, after the introduction of the techniques after the interventions, the visually impaired persons orientation and mobility skills improved.

The use of sighted guide technique to improve orientation and mobility skills for the visually impaired

The study revealed that establishing contact with the visually impaired either verbally or physically is the most appropriate as far orientation and mobility is concerned. The study also revealed how sighted guided techniques have helped in improving on the orientation and mobility skills. These are:

The skills acquired in sighted guide technique have helped the visually impaired individuals to travel with the sighted persons without any difficulties.

Training in sighted guide technique also has helped the visually impaired person to adopt appropriate strategies to walk through a narrow area when carrying on with their routine activities.

The sighted guide technique have also help in giving constant information about the environment from the guide which boost the confidents between them.

The use of lower body protection technique to improve orientation and mobility of the visually handicapped

It came to light that both the upper and lower body techniques can only be used in traveling short distance where there might be obstacle at head and waist level. The two skills could also be usedwhen bending down to pick up an article or for sitting down where there might be an obstacle at head height near a seat, for instance a shelf.

The use of cane technique to improve orientation and mobility of the visually impaired persons

The study identified that the cane should be grasped in a prescribed manner, hold it at mid-line and waist height and sweeps to cover the widest part of one's body from side to side. The cane technique helped the people in the detection of any obstacles in front.

It also helped the people in finding destination using the land marks

The skills acquired in cane techniques helped the visually impaired people to cross streets by analyzing and identifying intersections and traffic pattern.

It has also helped the visually impaired to be able to use the public transport and transit systems.

The cane technique has helped minimize frequent accident that the visually impaired people sometime get involved with other travelers.

Conclusion

The study has helped immensely in revealing the causes of the inability of the visually impaired persons in Garu –Tempane district to walking with sighted guide, walking in narrow passage ways and the use of both the lower and upper body techniques in movement. This is due to their lack of basic training in orientation and mobility.

The study brought to light the strategies of pre-mobility skills through the use of the long cane, and how to follow a sighted guide and the movement in narrow path way with the aid of a sighted guide.

Recommendations

In view of the findings made from the study, the following are recommended for improving orientation and mobility skills among persons with visual impairment.

- Persons with visual impairment should be introduced to basic orientation and mobility skills at the early stages in schools by teachers and special education coordinators.

- Various strategies of pre-mobility skills should be taught to persons with visual impairment in order to stimulate confidence for easy mobility and good physical development by their parents at home and their teachers at school.

- Special education coordinators of the rehabilitation centers should make the teaching of orientation and mobility practical for the said persons to have a feel of it.
- The persons with visual impairment should be encouraged to move about on their own but not to be sympathized with or overprotected.
- Persons with visual impairment should be trained orientation and mobility

Skills using the sighted guide and the canetechniques.

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