UNIVERSITY OF CAPE COAST

EFFECTIVENESS OF ORIENTATION AND MOBILITY TRAINING PROGRAMME FOR PUPILS WITH VISUAL IMPAIRMENT IN BASIC SCHOOLS IN GHANA

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BY

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DECLARATION

Candidate's Declaration

I hereby declare that this thesis is the results of my own original research and that no part has been presented for another master degree in this university or elsewhere.

Candidate's Signature……..… Date……..……

Name: ……...……

Supervisors' Declaration

We hereby declare that the preparation and the presentation of this thesis were supervised in accordance with the guidelines on the supervision of thesis laid down by the university of Cape Coast.

Principal Supervisor's Signature…… Date: ……..

Name: …….

Co-supervisor's Signature:…… Date: ……...

Name: ……..……

ABSTRACT

This study was carried out to assess the effectiveness of orientation and mobility (O&M) training programme for pupils with visual impairment in basic schools in Ghana with particular reference to Akropong and Wa Schools for the Blind in the Eastern and Upper West Regions respectively. The study employed qualitative approaches in getting the relevant data using the descriptive qualitative design to satisfy the purpose and objectives of the study. In all, 18 respondents were selected purposively for the study. In-depth interviews and observations were also conducted to elicit qualitative data Thematic analysis was conducted to analyse the data collected from the survey. The study revealed that O&M training programmes in the schools are not as effective as they are supposed to be and as a result, pupils of the two Schools for the Blind in Ghana are unable to use the white cane technique, the independent travelling technique and the sighted guide effectively. The major challenges in the Schools for the Blind include lack of teachers or specialist to train the pupils, lack of white canes, poor environmental conditions, stigmatisation and limited time for O&M training. Recommendation such as training of O&M specialists, ensuring improved environmental conditions in the schools for the blind, curriculum modification, provision of enough white canes, and public sensitisation on stigmatisation against pupils with visual impairment.

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DEDICATION

To my beloved wife, Juliana Lawaaba, my lovely children, Ivy and Brian and my late mother, Mama Christy

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CHAPTER ONE

INTRODUCTION

Background to the Study

There is a worldwide concern about the serious limitation imposed on individuals with visual impairments' ability to get around and confidently use their environment. The limitation on children's with visual impairment, cognitive and motor skills development can be even much greater without proper intervention, as a movement without vision requires the interpretation of information from the remaining senses for purposeful movement. A child with congenital visual impairment can encounter a number of developmental and educational challenges in his/her early years, including orientation and mobility (O&M), Lowenfeld (as cited in Nasiforo, 2015) indicates that blindness leads to limitations in one's (a) range and variety of experiences, (b) ability to get around, and (c) interactions with the environment. These three limitations are addressed through O&M training. Welsh and Blasch (as cited in Nasiforo, 2015) succinctly defined O&M as "independently, safely, and purposeful movement through the environment" (p. 1). Without efficient skills in O&M, children's with visual impairment access to and control of their environment can be limited.

World Health Organisation (WHO) (2014) states that there is an estimated 285 million people worldwide with visual impairment and 19 million of those individuals are children. In Ghana, the 2010 Population and Housing Census estimated the country's disability rate to be at 737,743 (which

represents 3% of the entire population). Visual impairment is the most prevalent impairment type in Ghana, affecting about 1.2% of the population (Ghana Statistical Services [GSS], 2012). This is a huge number and should not be taken for granted.

Learners with visual impairment depend on the use of the various techniques like the white cane in O&M in accessing the environment. In order to access the environment around them and gain purposeful movement, pupils with visual impairment must develop appropriate mastery levels in these skill areas. The acquisition of independent travel skills is essential for pupils' participation in academic, non-academic, and extracurricular aspects of education, in addition to fostering self-esteem, and social and economic independence (Riley, 2000). Self-efficacy, people's judgments of their abilities to control life events and outcomes, also play a role in the transition to adult roles, including post-school employment (Bandura as cited in Nasiforo, 2015). Ferrell (2007) emphasised the importance of developing age-appropriate O&M skills in the following statement:

> *If typical peers can walk down the block to visit a friend's house, a blind child should be able to do the same. When typical peers walk to school with their friends instead of their parents, a blind child should be able to do the same. When typical peers drive to school or to after-school jobs, a blind teenager should be able to take public transportation or arrange a ride with others. All too often, these skills are developed later or not at all, and they can sentence a child with visual impairment to a lifetime of dependency (pp. 4-5).*

Educational achievement for pupils with visual impairment concerns the whole concept of education, which are academic achievement, personal

development and independent living. The aim of special education is to narrow the gap between inability and ability, so that educational achievement can be measured through examining the output if pupils with disability who attend regular schools can achieve well and competitively, then teachers can adopt an assistive technology (D'andrea & Presley, 2009). To facilitate O&M training for children with visual impairment assistive technology may include the long cane, magnifiers and telescopes. These devices are necessary for an effective O&M. Individuals with visual impairment have for centuries relied upon the use of the white cane as an assistive technology and the various mobility techniques like the independent travelling technique to access information, travel independently, and participate in a variety of experiences (Smith, 2008). Smith further states that they have a long history of the successful use of assistive technology dating back to ancient civilisations that used types of the white cane for independent travel.

Before the Second World War, children with visual impairment were taught essentially in residential (boarding) schools. The predominant state of mind among the overall population appeared to be that people with visual impairment could not even take limited responsibility for their own safety. Society did not appear to consider the individual and his/her qualities, yet rather focused around the stereotyped shortcomings and limitations imposed by the condition. As a result, there was no systematic approach to independent travel programme being provided that would enable a child to be independent as an adult. Some children taught themselves to travel and shared their techniques with their peers, while others were taught by pupils with low vision.

Following the Second World War successfully rehabilitated veterans who were visually impaired and self-emancipated adults with visual impairment were having a positive impact on society's attitudes towards persons with the visual impairment. In addition, parents of children with visual impairment pushed local education programmes into providing services for their children (Nasimiyu, 2011).

Attention started to turn towards preparing children with visual impairment for integration. A research project done by the United States Office of Education in the 1960s showed evidence that children could benefit from formal O&M training during their school years (Nasimiyu, 2011).

In the United Kingdom, Douglas, McCall, McLinden, Pavey, Ware, and Farrell (2009) explained that children in inclusive education settings are supported by teachers of children with visual impairment who are required to have a mandatory qualification in the education of learners with visual impairment. These teachers are solely responsible for providing services to meet their basic O&M needs given the shortage of qualified O&M specialists. According to Pavey, Douglas, McCall, McLinden, and Arter (2002) and Douglas et al. (2009), the provision of O&M intervention within the United Kingdom education system is of concern. Pavey et al. (2002) conclude that there is a lack of clarity over the definitions of mobility and independence. According to Douglas et al. (2009), mobility and independence from the United Kingdom includes O&M, independent living skills, communication and social skills. However, in the United States, South Africa and Ghana the definition basically refers to the acquisition of O&M skills and techniques.

Pavey et al. (2002) recommended for the development of a mobility and independence curriculum framework, alternate methods of service delivery, and requirements for future training of professionals. Douglas, Pavey, McLinden, and McCall (2003) found many rehabilitation workers, whose training courses focus on adult intervention, felt unprepared and insufficiently trained to deliver mobility and independence skills to younger children or those with additional and complex needs. These challenges led to the establishment of the Mobility 21 project and the subsequent 2011 publication of a set of Quality Standards by Miller (Wall & Garner as cited in Scott, 2015).

A research conducted by the U.S. Office of Special Education that examined O&M skills and concepts revealed a set of functional cognitive skills were associated with improved academic outcome for elementary age pupils. Those skills include: reading common signs, telling time using a clock with hands, counting change, looking up telephone numbers, and using the phone. (Special Education, Elementary Longitudinal Study (SEELS) as cited in Anderson, 2010). However, pupils with visual impairment who participate in O&M may need direct instruction for completing these tasks. Anderson (2010) observed that in the United States, although there is evidence that supports the push for expanded core curriculum (ECC) which include O&M training for pupils with visual impairment, but no consistent data related to the results of pupils that are educated using the curriculum compared to those that are not.

Moore and Skinner (2010) argued that it is becoming increasingly challenging for service delivery providers to meet the needs of families and

their children. Scott (2015) acknowledged that significant hurdles need to be overcome. Skellenger and Sapp (2010) suggested creating awareness of the importance of O&M intervention and ensuring sufficient numbers of appropriately qualified O&M personnel are trained.

In South Africa, a study conducted by Mutuelle and Odeku (2013) showed that the appointment of an O&M instructor in a public university has drastically improved the lives of students with visual impairment. Students with visual impairment are now able to go to their different lecture halls independently. They further stated that the academic performance of these students is improving and this partly is as a result of the support of staff members who form part in planning disability awareness campaign by offering various assistance when the need arises.

During the course of training and after the pupils have settled in, there are many challenges that the instructor continues to face. They differ from one pupil to another and as such, the instructor treats them on a case by case basis and sometimes through group discussion and retraining (Blum, Kelly & Ireland, 2001). One of the notable challenges is to discover that after training, the pupil mobility has not improved (Soong, Lovie-Kitchin & Brown, 2001). This notwithstanding, Mutuelle and Odeku (2013) stated that in order to manage the situation, continuous provision of assistance is required to improve the condition of the pupil.

The training for persons with visual impairment has an extremely fascinating history. In Ghana, persons with visual impairment were viewed as liabilities in their communities. Thus, as a result, implied that no cause of action was given for their balanced growth and advancement. These

individuals were killed or overprotected or misdiagnosed such that they lived a life that was isolated and degraded (Ocloo, 2011).

Organised efforts to educate children with visual impairment in Ghana are of comparatively recent origin. It was not until 1945 that the first School for the Blind was established at Akropong-Akuapem in the Eastern Region through the benevolence of Presbyterian missionaries. The British colonial government gave it recognition the following year in a bid to give it the needed support. Subsequently, another initiative by the Methodist Church, led to the setting up of the Wa School for the Blind in 1958 in the Upper West Region to serve the northern part of the country.

In 1962, the Henderson Committee recommended that all special schools should be taken over by the Ministry of Education. In 1968, a resolution was adopted by the Conference of Teachers of the Disabled, demanding that a separate directorate was to set up to oversee the activities of all special schools in Ghana (Ocloo, 2011).

The schools for the blind in Ghana have laudable goals. They are set out to educate all children with visual impairment by giving them knowledge of the realities around them, the confidence to cope with those realities, and the feeling that they are recognised and accepted as individuals. Curriculum of schools for children with visual impairment basically follows a similar pattern as curriculum for schools of regular education (Avoke, 2004). The syllabus, however, is modified and adapted to suit the educational needs of pupils who are visually impaired. O&M is one core component that is taught to all pupils in the schools. It seems that this special subject together with braille is taught

in these segregated schools to prepare them for the mainstream schools. O&M can play its indispensable role only if the programme is taken more seriously.

Other researchers have indicated that persons with visual impairment continue to have problems in using the white cane in their environment. Training for the use of the white cane is therefore paramount. Carol (as cited in Nasimiyu, 2011) stated that the cane is worse than useless without proper instructions. For instance, Nasimiyu observed that due to lack of effective training in the cane skills it is common to see a man with visual impairment holding a cane or a long stick at one end following a small boy, who walks ahead of him holding the other end of the cane. The study confirmed an observation by many, including the researcher.

It is unclear whether pupils at Akropong and Wa Schools for the Blind are trained in the independent travelling technique. For instance, Ocloo (2011) argued that instruction of O&M techniques is in deplorable state. The situation is not limited to Ghanaians alone. In a study conducted by Wolffe, Sacks, Corm, Huebner and Lewis (2002), concerns were raised that students with visual impairment were completing their education lacking skills of independent living and O&M which include independent travelling skills. Concerns have also been raised by other researchers about the difficulty persons with a visual impairment encounter in using the sighted guide technique. For example, Ocloo (2011) indicated that many individuals with visual impairment are being dragged along the streets with the wrong notion of using the sighted guide technique. A significant percentage of people who are blind are adept at travelling, either alone, using a white cane, or with a guide dog, yet many appreciate assistance in an unfamiliar environment. Even the

most proficient travellers use sighted guides on occasion to become better acquainted with new areas, to cross unfamiliar streets or to manoeuvre around the obstacle. However, the question to be examined is: How effective do pupils in schools for the blind use the sighted guide technique?

Orientation and mobility as part of the expanded core curriculum is a model of successful instruction designed to meet the unique needs of pupils with visual impairment, and is incorporated into pupils' schedules and Individualised Education Plans (IEP; Sacks & Rothstein, 2010; Sapp & Hatlen, 2010). But to what extent is O&M needs of pupils with visual impairment at Akropong and Wa Schools for the Blind addressed? It is in the light of this that Bischof (2008) suggested a documentation to determine appropriate mastery levels in these skill areas to promote effective training and pupil demonstration of safe and efficient O&M techniques.

According to the Ghana Association of the Blind (GAB), O&M training is done theoretically through discussion and a practical demonstration of the skill until the person with visual impairment becomes perfect. Major areas of consideration in the curriculum include the following activities: Sensory training (indoor and outdoor) room familiarisation, use of landmarks, and clues, introduction to the use of a white cane technique, route travel with white cane, sighted guide techniques appropriate at various locations, market, farm, school among others, independent travel techniques and protective methods (GAB, 2014).

Pupils with visual impairment could attain the full benefits of O&M skills if they are equipped with the needed competencies and dispositions in the use of the white cane and the other techniques. This would enhance their

confidence as well as access to the environment and also improve their quality of life. However, it appears that graduates of the Schools for the Blind have not mastered control of the environment. It is against this background that the researcher is assessing the effectiveness of the O&M training programme for pupils with visual impairment in basic schools.

Statement of the Problem

Researches conducted on O&M training programme for pupils with visual impairment in basic schools appear not to have focused on assessing the effectiveness of the O&M training programme for pupils with visual impairment in the basic schools. In Florida, Bischof (2010) conducted a study to determine the provision of O&M instruction for students with visual impairment and the results indicated that lack of accountability within programmes and educational programming based on teacher judgments in place of evaluation. Chen (2012) sought to investigate O&M of students with visual impairment in a blind baseball training method in Taiwan. This study found out that 10 weeks of blind baseball training for the students showed significant improvement in O&M. Cmar (2014) sought to conduct a longitudinal study on O&M skills, outcome expectations, and employment for youth with visual impairment in the United States of America and it was discovered that youth expectations scale indicated that youth with visual impairment held relatively high expectations for the future. Also, the study found out that youth with total blindness and youth with additional disabilities may need additional support during their transition to adulthood. Although more youth with visual impairment were employed during Wave 5 than Wave 4, low employment rates persist for this population. Scott (2015) explored the

development of O&M intervention with children in Australia, discussing the influence of the philosophies and pedagogies emanating from both the United Kingdom and the United States. Findings indicated that, for parents and teachers' perspectives toward O&M intervention changed over time as young children demonstrated competent and responsible white cane mobility techniques.

In Ghana, a number of studies have been carried out for assessing O&M for persons with visual impairment (Adu, 2015; Owusu-Amoako, 2015). In spite of these studies there appears to be none on effectiveness of O&M training for pupils with visual impairment in the basic schools. Adu (2015) sought to assess the competency of students with visual impairment in familiarising themselves in their learning environment at the Wenchi Senior High School. This study found out that comparatively students' competence in the use of the white cane was higher than the use of the independent travelling technique. Owusu-Amoako (2015) sought to assess the support services and adaptations for pupils with visual impairment at Bechem St. Joseph Practice Inclusive Basic School in the Brong Ahafo Region of Ghana. The study revealed that the school has an environment that is partially adaptable to the visually impaired. From the above, it is deduced that it seems no research has been conducted to assess the effectiveness of the O&M training programme for pupils with visual impairment in the basic schools in Ghana. Therefore, the researcher is motivated to conduct a research to assess the effectiveness of the O&M training programme for pupils with visual impairment in the basic schools in Ghana with particular reference to the two main Schools for the Blind at Akropong and Wa.

Despite emerging evidence that O&M skills are associated with a positive post-school outcome (Cmar, 2015; McDonnall, 2011; Wolffe & Kelly, 2011), few studies have focused on O&M for children and adolescents in Ghana. Most researches on the effectiveness of O&M focused on the white cane and its techniques and has been conducted on adults with visual impairment or blindfolded university students (e.g., Bongers, Schellingerhout, van Grinsven, & Smitsman, 2002; Kim, Wall, Emerson, & Curtis, 2009; LaGrow, Blasch, & De l'Aune, 1997; Ramsey, Blasch, Kita, & Johnson, 1999; Rodgers & Emerson, 2005; Wall & Ashmead, 2002). The ultimate question however is: How effective are pupils with visual impairment in using white cane and other O&M techniques?

Despite the key role O&M skills play in the lives of pupils with visual impairment for independent movement and social integration, pupils with visual impairment in the Schools for the Blind in Ghana seem to have difficulty in mastering control of the environment. In order for pupils with visual impairment to successfully master control of the environment, proficiency is required in appropriate O&M skills. Anthony, Bleier, Fazzi, Kish, and Pogrund (2002) indicated that they depend on the use of the various techniques in O&M, that is either the use of the white cane, independent travelling technique, dog guide and sighted guide in both indoor and outdoor environments. However, it appears these pupils have difficulty in these skill areas.

Training in O&M is critical if pupils from schools for the blind are to function independently once they complete school and have to survive in their home areas or in the inclusive environment (Nasimiyu, 2011). O&M is

expected to form an integral part in the education of pupils with visual impairment in the basic school in Ghana. Pupils' ability to master control of the environment depends to a certain extent on the quality of training programmes undertaken. However, this is not the case; criticisms have been levelled against pupils with visual impairment who graduate from our educational institutions.

It is unclear whether or not pupils at Schools for the Blind in Ghana receive instruction from teachers who possess the required knowledge with respect to the various O&M techniques. Ocloo (2011) observed that apart from the University of Education, Winneba which offers a course in basic O&M training, no other institution provides services for O&M training. This could be traced to lack of infrastructure and personnel to handle O&M issues for individuals with visual impairment. Ocloo further stated that our environment in terms of topography, roads and open gutters provide barriers to easy mobility.

These concerns raised obstruct effective O&M training programme for individuals with visual impairment and do not only pertain to developing countries like Ghana. As indicated by Ravenscroft (2012), teachers of children with visual impairment, lack the training and qualifications to teach O&M techniques, noting they "do receive some training in sighted guide techniques, but this is not commensurate with fully qualified orientation and mobility instructors" (p. 205).

Deverell and Scott (2014) also pointed out that there is a shortage of qualified O&M specialists which impact on the delivery and quality of education supported for pupils with visual impairment**.** This finding supported

a previous finding of an Australian study by Brown and Beamish (2012). Another challenge regarding an effective training programme is found in the lack of confidence among teachers in understanding how expanded core curriculum techniques can be taught (Lohmeier, Blankenship & Hatlen, 2009; Sapp & Hatlen, 2010), highlighting an area of concern for personnel preparation programme.

In addition, research has also indicated that there is a difficulty when it comes to making adequate time for O&M training. For instance, Wolffe, Sacks, Corm, Huebner and Lewis (2002), identified that teachers spend a significant amount of time teaching general academic skills rather than these specialist skills. More recently, the same sentiment by Lohmeier et.al.., (2009) affirmed that many teachers of pupils with visual impairment indicate they have difficulty finding time to teach the skills of the expanded core curriculum which includes O&M. According to Ker and Karen (as cited in Lohmeier et al.), one significant finding found was that among both parents and educators also shows that the issue of time to teach O&M is a major hindrance to an effective training programme.

It must be noted that effective O&M training remains an ongoing challenge despite many efforts made to address this problem. It is in this respect that Long (2009) recommended the need to assess the effectiveness of any educational or rehabilitation intervention for this is perhaps the most neglected areas of O&M. It must be emphasised that these issues raised exist in Ghana and especially in the schools for the blind.

This has created a gap on the effectiveness of O&M training. These difficulties may affect effective O&M skills training for pupils with visual

impairment and this may have a continuing negative effect on the quality of life, social integration and the effective implementation of the inclusive education programme. It is from this backdrop that this research attempts to answer the question: How effective is the training of O&M for pupils with visual impairment in the basic schools in Ghana?

Purpose of the Study

The purpose of the study was to assess the effectiveness of O&M programme for pupils with visual impairment in basic schools in Ghana with particular reference to the schools for the blind at Akropong and Wa.

Specifically, the study:

1. Determined how effectively pupils with visual impairment use the white cane in the basic school.
2. Determined how effectively pupils with visual impairment employ the use of the independent travelling technique in the basic school.
3. Ascertained how effectively the pupils employ the use of the sighted guide technique in the basic school.
4. Ascertained factors that obstruct the effective orientation and mobility training programme in the basic school.
5. Identified measures that can be taken to improve orientation and mobility training for pupils with visual impairment in the basic school.

Research Questions

The following questions guided the study:

1. How effectively are pupils with visual impairment utilising the cane technique?

2. How effectively do pupils with visual impairment employ the independent travelling technique?
3. How effectively do pupils with visual impairment utilise the sighted guide technique?
4. What factors obstruct the effective orientation and mobility training programme for pupils with visual impairment in the basic schools?
5. What measures can be adopted to improve orientation and mobility training for pupils with visual impairment in the basic schools?

Significance of the Study

The study would provide useful information which can be used by practitioners in education. Particularly those in the Special Education Division of Ghana Education Service to modify and adopt measures to achieve an effective O&M training to assist pupils with visual impairment to function independently. The study would add to the body of knowledge as it would reveal the O&M training programme available to pupils with visual impairment. Again, the findings of the study might assist the Ministry of Education to establish centres to train mobility specialists. It is also hoped that the study would help the curriculum developers and other stakeholders stress on O&M as a very important subject to be taught to pupils with visual impairment. The results would therefore prompt the government hopefully to provide more funds for schools for the blind to purchase enough white canes for the pupils.

Delimitation

The study was delimited to only Akropong and Wa Schools for the Blind in the Eastern and Upper West Region respectively. The final year

pupils were chosen because the researcher perceived that they might have attained some degree of mastery in the use of the white cane, independent travelling technique and the sighted guide technique.

Limitations

Every study conducted is characterised by limiting factors and this study was no exception. The study suffered a few setbacks. In the first place, the respondents were skeptical about the purpose of the study. In ensuring that accurate responses were elicited from the respondents, the purpose of the study was explained to the respondents. However, because the interview used was a self-report measure, there is the likelihood that some of the responses from the pupils might not reflect the actual situation on the ground and it could affect the validity of the data obtained from them. To address this, the respondents were observed. Again, language barrier made the data collection phase of the study quite tedious. However, the researcher employed the services of an interpreter to facilitate the interviews.

Definition of Terms

Orientation and mobility (O&M): The process of using the senses to establish one's position in relationship with all other significant objects in one's environment.

Visual impairment: This is an umbrella term used to describe those with low vision and those who are totally blind. Those with low vision have perception of light and those who are totally blind have no perception of light.

Independent travelling technique: This is one's ability to use his or her arms and in order to establish him or herself successfully in his or her environment without the use of assistive device or a sighted guide.

Cane technique: One's ability to use the white cane to demonstrate the skills successfully in relation to obstacles in his or her environment.

Sighted guide method: The ability of a person with visual impairment to move together safely and comfortably with sighted person in his or her environment.

Effectiveness: The extent to which targeted problem is solved.

Basic school: The two special basic schools for the blind: Akropong and Wa. Schools for the Blind.

Organisation of the Study

The study is presented in five chapters. Chapter one comprises the background to the study, statement of the problem, the purpose of the study, research questions, significance of the study, delimitation of the study, limitation of the study, operational definition of terms and general layout of the study. Chapter two focuses on the literature review taking into account the research objectives, the theoretical framework of the study, empirical review and a conceptual framework. Chapter three deals with the methodology including sampling procedure, research design and population. The fourth chapter presents results and discussion, while the fifth chapter deals with the summary of research findings, conclusions, recommendations and suggestions for future research.

CHAPTER TWO

LITERATURE REVIEW

Introduction

The purpose of the study was to assess the effectiveness of orientation and mobility training programme for pupils with visual impairment in basic schools in Ghana with particular reference to the schools for the blind at Akropong and Wa. This chapter reviewed literature related to the concept of O&M, the concept of visual impairment, the impact of visual impairment on learning and movement, O&M services, the benefits of O&M skills to persons with visual impairment, O&M techniques, hindrances to effective O&M training and factors that make O&M training effective. The literature covers theoretical framework, conceptual framework and empirical studies.

Theoretical Framework of the Study

The social model of disability

Scholars, including Oliver (1996), have said that disability is something imposed on individuals' impairment, by the way society unnecessarily isolate and exclude them from full participation in society. In the social model, disability is seen as a social problem rather than solely an individual one. Proponents of this theory argue that disability is a socially constructed form of exclusion in which society disables individual with physical impairment through failure to make reasonable adjustments to their needs. According to the theory, people with impairment are disadvantaged or excluded from participation not as a result of the impairment, but because of a

number of factors, including the nature of buildings, legislation, attitudes, and language and culture.

In order to understand this, it is important to comprehend the distinction between impairment as a physical fact and the social construct. The theory argues that persons with disabilities are an outcast social group. The social model of disability further distinguishes between the impairment that people have and the oppression which they experience. Most importantly, it defines disability as the social oppression, not the form of impairment (Shakespeare & Watson, 2002).

Disability is viewed as negative interactions, a lot of which are created by the society. Therefore, the management of the issue requires social action, and it is the collective responsibility of the society to make the environmental modification necessary for full participation. This requires an attitudinal or ideological social change, which at the political level becomes a question of human rights (Vayrynen, 2008). While disability remains a social problem to be eradicated by societal change, barriers such as prejudices and stereotypes, inflexible organisational procedures and practices, in accessing information and inaccessibility to public places including transport, which have nothing to do with individuals' disabilities, can be changed. These barriers are created by people, which mean that it is possible to remove them (Gibbs, 2004).

Relating the social model of disability to the current study, pupils with visual impairment in the Schools for the Blind in Ghana need effective training in order to attain equal access to the mainstream society. Pupils with visual impairment require support services to enhance their social, psychological, emotional and academic potentials. An effective O&M training

is one critical educational component that pupils with visual impairment need to enable them to adjust effectively and independently travel in their environment.

Concept of Orientation and Mobility

The concept of O&M is concerned with the abilities that empower one to safely and effectively get about through the environment, in both well-known and new settings in and outside. Orientation involves the organisation and analysis of relevant sensory input for the purpose of planning and executing movement. It incorporates three standards: (1) cognisance of one's present area, (2) comprehension of the area of one's goal, and (3) origination of the activities important to achieve one's goal. In simple terms, orientation implies knowing where you are, the place you are going, and how you will arrive; to accomplish this development freely and without vision, it more often than not requires the utilisation of a mobility aid, for example, a white cane, the strategies of which are educated by an O&M expert (LaGrow, 2010). The concept of orientation can also be described as a process of using the available environmental information to select and follow the correct road.

The second fundamental element of O&M is mobility. The term mobility refers to a person’s ability to move from a particular position in his environment to another. As a general term, mobility refers to the act of moving through space in a safe and efficient manner (Wiener, Welsh & Blash, 2010). With regard to O&M, mobility entails the execution of purposeful movements that are planned using the orientation process. For successful O&M to occur, efficient and purposeful movements are vital.

The key objective of O&M services is for people with visual impairment to go in any condition as freely as could reasonably be expected. To achieve this objective, people with visual impairment must be trained from the earliest age (Pogrund & Fazzi, 2002). In the wake of getting a medical diagnosis of a visual impairment, early intervention services should be given in a timely manner (Huebner, Merk-Adam, Stryker, & Wolffe, 2004). According to Anthony (2002), the early years are a time to confirm the developmental possibilities of a growing child with the parents and to reinforce O&M concepts and skill development within daily care and play routines. Anthony asserted that an O&M specialist on an early intervention team can make an important difference in the early precious years that will set the stage to last a lifetime. Anthony further stated that O&M specialists have a vital role to play with young children with visual impairment based on an attitude of willingness, early childhood training and the understanding of families and other team members about their importance on the early intervention measures.

Anthony, Bleier, Fazzi, Kish and Pogrund (2002) succinctly defined orientation as knowing oneself as a separate being, where one is in space, where one wants to move into space, and how to get to that place. Lowenfeld (as cited in Nasiforo, 2015) stated that O&M terms had been used to describe the competency which enabled the child to achieve safe, efficient and graceful movement through the environment. She added that the individual needed to be effectively oriented before he or she could achieve purposeful mobility. It is important to note that O&M instruction was originally developed for adults

(blinded soldiers) and has been adapted and expanded to meet the unique needs of children who have visual impairment.

The Concept of Visual Impairment

The term visual impairment can be used to portray people whose visual capacities extend from having a limited vision to total blindness. It is a continuum that includes complete blindness and low vision or partial sight. Different terms are utilised to portray people with visual impairment. As indicated by the Individuals with Disabilities Education Act [IDEA], 2004), visual impairment, including blindness implies hindrance in vision that, even with correction, adversely affects a child's educational performance. Blindness, referring to the absence of usable vision, is often used to describe individuals who may be able to perceive light or images, but are not able to use residual vision for functional purposes.

Although the term defies a universally accepted definition, low vision is often reserved for a condition relating to one's difficulties accomplishing visual tasks, even with the use of prescribed corrective lenses, but who can enhance his or her ability to accomplish these tasks with the use of compensatory visual strategies, low vision and other devices, and environmental modification (Corn & Koenig as cited in Nasiforo, 2015).

As indicated by Scholl (as cited in Avoke, 2004), meanings of visual impairment and blindness shift from discipline to discipline or organisation to organisation contingent upon administrations to be given. In general, visual impairment can be defined along medical, legal and educational lines. Medically, a child is depicted as having a visual impairment if the retina or other associated structures cannot transmit light impulses to the brain. Citing

Goldstein, Avoke (2004) defined legal blindness as central visual acuity of 20/200 or less in the better eye with corrective glasses or central visual of more than 20/200 if there is a visual field defect in which the peripheral field is contracted to such an extent that the widest diameter of the visual field subtends an angular distance not greater than an angle of 20 degrees.

This implies a man with visual impairment can see an object at 20 feet while a normal eye can see at 200 feet. A legal definition considers a man with low vision as having visual acuity of 20/70, implying that a man with low vision can see an object at 20 feet, though a man with normal vision can see at 70 feet (Spungin, 2002). For educational purposes, the primary focus is on the child's ability to use vision as an avenue for class work such as reading, writing, colouring and drawing. One is educationally blind if his or her vision is defective to an extent that modification in curriculum content and adaptation is required. Visual impairment is likewise recognised as blind and low vision, and it ranges from mild to profound.

Pupils with visual impairment ordinarily meet all requirements for special education services when their visual issue meddles unfavourably with their educational progress (Allison & Sanspree, 2006). Assessment information is used as a basis by the students individual educational programme by the Individualised Education Plan (IEP) team to decide whether they are qualified for a special education including related services, for example, O&M. Pupils with visual impairment and those with additional disabilities need an O&M assessment conducted by an O&M specialist to determine their eligibility for O&M services.

Pupils ordinarily meet all requirements for O&M the training programme when their visual issue meddles with their capacity to learn body, spatial and environmental ideas; to use O&M devices like white cane, electronic travel devices, telescope, magnifiers, use of their senses for orientation and travel; and how to move safely and/or remain oriented at home, in school or the community. For those pupils who have qualified for O&M services, an O&M specialist should provide training in this important area.

Impact of Visual Impairment on Learning and Movement

Visual impairment affects several aspects of the development of a child born with it. Children with visual impairment may develop some skills in a different sequence and at a different pace compared to their sighted peers (Pogrund, 2002). Children with visual impairment lack incidental learning,thus through imitation and observation unlike, their peers with sight. The capacity of a child with a visual impairment to learn can be influenced over the interrelated domains of development because of the absence of visual sensory information and conflicting encounters with the environment. Cognitive, social and emotional, daily living, career and vocational, sensory and motor, and O&M skills, as well as the development of concepts, have been identified as areas of concern when a child has a visual impairment (Lewis, 2007).

Cognitive Skills

The impact of blindness on the cognitive development of a child, including language and concept development has been well established in the literature, including a study done by Fazzi and Klein (2002). Sensory input

facilitates the learning of body awareness, environmental awareness, and spatial concepts (Rosen, 2010). Sighted children often gain knowledge about the world through incidental learning, as many human behaviours and skills are acquired through visual imitation and modelling (Pogrund, 2002). Many children with congenital visual impairment use their remaining senses to interact and understand their environment and may have difficulty learning behaviours and skills that are typically acquired incidentally through visual observation. Children also develop an understanding of the world by moving through various environments (McAllister & Gray, 2007). Since most of this movement is visually directed, children with visual impairment have difficulty developing understanding of the concepts needed for independent movement.

Without active participation in specific learning experiences targeted to develop these concepts, children with visual impairments may not develop the abstract thinking skills that lead to the understanding of their own influence and control over their environments (Ferrell as cited in Bischof, 2008). Additionally, the presence of a visual impairment can impede the understanding of particular ideas including identification of objects, the relationship of objects in the environment, auditory comprehension and analysis skills, the use of language and communication, and the academic skills learned in school, such as literacy and mathematics.

Social and Emotional Skills

According to Kekeli (as cited in Bischof, 2008), the child develops social and emotional skills through his/her interaction with others. The learners' lack of personal experiences and participation with family and peers can negatively affect the development of social and emotional skills,

particularly for a child with a visual impairment. This deficit includes development in the areas of knowledge of self, including human sexuality, knowledge of others, interactions with others, self-advocacy, and recreation and leisure. A child with visual impairment may avoid initiating contact with others or engaging in social situations, resulting from an unawareness of social cues and decreased opportunities for social engagement (Ferrell as cited in Bischof, 2008).

Many children with visual impairment are socially affected by the limited experiences available for interaction with peers (Huurre & Aro, 2000). For children with visual impairment, acceptance from peers can be hindered as a result of unusual behaviours or mannerisms, such as rocking and eye poking (Wolffe, 2000) and the absence of social engagement by the child who is visually impaired. This circumstance can prompt further disconnection and diminishment in the likelihood of chances for practice which is social and emotional.

Motor Skills

A number of researchers have documented different patterns of motor development in a child born with blindness, which includes domains of gross motor skills, fine motor skills, and early reaching (Brambring, 2007; Levtzion-Korach, Tennenbaum, Schnitzer, & Ornoy, 2000). In emphasising the importance of movement, Rosen (2010, p. 138) stated that: “for children, movement is also the natural learning medium. It is the means by which they explore the environment, learn how it functions, and interact with it”. According to her, vision plays an important role in the children’s sensorimotor development, sensory input and motor output. Purposeful movement is

important for motor skill development, and this self-directed, self-initiated movement allows children to explore the world and develop knowledge about what exists beyond their own bodies (Pogrund et al., 2012; Rosen, 2010).

Vision enables individuals to acquire information about the environment and assists them in the synthesising information received from their other senses for interpretation of environmental cues. Through visual feedback elicited from movement, children are motivated for further movement. This inspiration to move happens because of reinforcement from a variety of sources, which may include parents' facial expressions of encouragement or worry, sensory feedback interpreted by the body, and the information obtained incidentally by watching others perform movements. Body movement, including the development of fine and gross motor skills and locomotion, develops in the course of repeated practice and refinement through the adjustment of movement. Without frequent opportunities for practice and the possible reluctance of a child who cannot visually make judgments to move through an unfamiliar environment (Ferrell as cited in Bischof, 2008), a child with a visual impairment can fail to learn skills in the area of motor development.

Daily Living Skills

The area of daily living skills consists of activities related to self-help and routines of life, including personal hygiene, dressing, food preparation, housekeeping, money management, and use of community services. Typically, a sighted child begins to develop these skill areas of growth in their early years of life as they participate in the act of watching and imitating the actions and behaviours of their parents, siblings, and others. In children whose vision

develops typically, information gathered incidentally through vision is used to plan and execute movements and routines of daily life, such as brushing one's hair or spreading butter on toast.

As a result of their disability, children with visual impairment often have decreased incidental opportunities to gather information about the processes of completing daily living skills, and may routinely be offered only limited opportunities for involvement in household or personal routines (Wolffe, 2000). Consequently, children with visual impairment who do not receive adequate direct instruction in daily living activities may demonstrate deficits of skills in this area (Lewis & Iselin, 2002), including tying shoes, buttoning a shirt, washing dress or laying a bed.

Career and Vocational Skills

Sighted children acquire career and vocational awareness with little effort, since this information is readily available through observation. Children with visual impairment, however, may be limited in their understanding of the career and vocational skills apparent to their peers. Through the probable exposure to only those careers personally encountered through one's daily life, development in this area may include only knowledge of the careers of family members, school personnel, and direct service providers. Limited access to the environment reduces the learner's awareness and opportunities for gathering knowledge of a variety of job possibilities, the association and contrast between play and work, and the age-appropriate awareness of a job application process (Wolffe as cited in Bischof, 2008).

Orientation and Mobility Services

Orientation and mobility services are defined in IDEA (2004) as services provided to children with visual impairment by qualified personnel to enable those pupils to attain systematic orientation and safe movement within their environments in school, home, and community. O&M services also involve one-on-one, individualised training to facilitate monitoring of safety in complex learning environments such as busy intersection (IDEA, 2004).

The services includes teaching pupils the following, as appropriate: (a) Spatial and environmental concepts and use of information received by the senses (such as sound, temperature and vibrations) to establish, maintain, or regain orientation and line of travel (using sound at a traffic light to cross the street); (b) To use the white cane to supplement visual travel skills or as a tool for safely negotiating the environment for pupils with no available travel vision; (c) To understand and use remaining vision and distance low vision aids; and (d) to be aware of other concepts, techniques and tools. The components of an O&M curriculum include sensory, concept and motor development (fine and gross motor skills); environmental and community awareness; formal O&M skills; safety issues; the use of community resources; the use of assistive technology; and purposeful and self-initiated movement (IDEA, 2004).

Com (as cited in Nasiforo, 2015) observed that any programme for visually impaired children ought to emphases training in O&M and any educational programme intended to meet the aggregate needs of each child with visual impairment ought to incorporate O&M or it is not a programme. The techniques accessible to persons with visual impairment might be

classified as: Independent travel without the use of an aid or device for those having low vision, use of a sighted guide, use of a dog guide, the use of the white cane and use of electronic mobility aids.

Orientation and mobility training for children with visual impairment covers a range of concepts, skills, and techniques, depending upon the child's age and developmental needs (Pavey, Douglas, McLinden, & McCall, 2003). The exact nature of O&M training depends largely on the age and development of each child, and O&M specialists must consider individual differences when planning instruction (Pavey et al., 2003). Early O&M services include instruction in body awareness, spatial awareness, and social and emotional development (Pavey et al., 2003). Later O&M services include basic travel skills instruction in the home and school settings, and advanced training in residential, light-business, and business environments (Pogrund et al., 2012).

Benefits of Orientation and Mobility Skills to Persons with Visual Impairment

Existing literature on persons with visual impairment revealed that "mobility is an important part of everyday life and that impairment of mobility greatly affects the quality of life" (Lahav & Mioduser 2002, p. 13). The inability to move about negatively affects one psychologically, socially, emotionally, economically and physically.

Possessing good O&M skills could lead to personal development. Restriction on one's ability in movement of individuals may negatively impact their development, understanding of concept formation and quality of life considerably. It would also limit their exposure to the knowledge of the world

around. Training in O&M would empower them to acquire a variety of real experiences and enhance their understanding of the concepts which make them confident and could lead to personal development.

According to House and Davidson (as cited in Anderson, 2010), a connection between participation in O&M and improved academic outcomes has been suggested by experts, but the association and the size of the contribution has not yet been tested empirically. In the area of language development for pupils with visual impairment, citing House and Davidson, Anderson (2010) stated that O&M instructors "are in a prime position to provide the direct sensory experience about many concepts that can effect meaningful positive changes in the understanding and subsequent language development of children with visual impairment" (p. 151).

Enhanced knowledge and understanding of the world can be a benefit of participation in O&M. The best way to remember the relationship between O&M, and knowledge enhancement is to recall Keller (2005), who observed that O&M was a skill of primary importance in the development of a person with visual impairment. (Nasiforo, 2015) added that this is because people with visual impairment have limited familiarisation and also have to be taught how to move around, a skill which is almost automatic for sighted people.

Orientation and mobility skills enable persons with visual impairment to move independently. Koenig and Holbrook (2000) asserted that the significant and immediate impact of visual impairment is the restriction on one's ability to travel through physical and social environments and to anticipate and exercise control over potentially hazardous situations. This arguably explains many of the misconceptions and prejudices about people

with blindness. Unless an early intervention is provided to address this issue, it can result in a life of dependency and ostracisation among children with blindness. Huebner and Wiener (2005, p. 579) described independent mobility as a "fundamental and enabling life skill". The importance of independent travel for children with visual impairments cannot be understated. O&M teaches movement with a purpose. Purposeful movement may not occur naturally for children with a visual impairment. Early intervention of O&M is essential in achieving this goal. The capacity to travel independently is imperative for the feeling of autonomy. It empowers them to move about freely and autonomously in indoor and in outdoor settings. It allows them more opportunity and makes them less dependent on relatives and friends. It sharpens remaining senses through sensory training, develops coordination of movement and improves posture. In addition to fostering self-esteem, and social and economic independence, the acquisition of independent travel skills is important for students' participation in academic, non-academic and extracurricular aspects of education (Riley, 2000). Many individuals with visual impairment, for a variety of reasons, are unable to achieve that goal on their own.

Formal or systematic mobility services had been developed to guarantee each individual the opportunity to learn how to travel to the fullest extent of his/her abilities. In any case, society must ensure that each member will have that opportunity and that the acquisition of that knowledge was not left to chance (Blasch & Welsh as cited in Nasiyimu, 2011). This suggests that the opportunity for formalised O&M training must be provided for all persons with disabilities, including persons with visual impairment, based on their

needs. This move is necessary for achieving consistent policies to integrate such people into the mainstream of our society.

Orientation and mobility training can positively contribute to the self-confidence of individuals who are visually impaired. The limitation imposed on an individual's ability to get about as a result of blindness has annihilated impact on his/her self-confidence and self-image. The vast majority of persons with visual impairment stays or is kept in their homes, live an isolated life and accept visual impairment as destiny accomplice. These individuals need to rely on others, even when moving in a familiar environment. They have to depend on the convenience of others for their movement, daily activities and participate in social activities. O&M training is, therefore, required for independent movement which would enable them to develop self-confidence and empower them to carry out these activities at their own convenience and delight. This would encourage them to participate in community work and to have the desire to compete and progress. Chen (2012) stated that, with adequate O&M skills, the visually impaired are able to perform many living skills independently, such as using the toilet, walking into classrooms alone, cooking and avoiding falling, which are crucial to their self-esteem. Gaining experience and knowledge, expanding their living space, adapting to new social situations, improving relations with classmates and receiving encouragement from teachers make life for the visually impaired far easier and more fulfilling.

Orientation and mobility training is an important pre-requisite for the integration of persons with visual impairment into the community. The skills acquired empowers him/her to perform everyday activities like going to the

market, church, scenes of social activities, homes of relatives and friends. Through such development, individuals can connect with others and develop interpersonal relation which would improve the quality and amount of social contacts in the society. The degree of social association would further enhance if the individual can use public transport and go to far away places and different towns. In support of this, Ocloo (2011) stated that O&M training skills acquisition helps in the socialisation process of the individual as one is no longer restricted in the environment in terms of movement. This ability can encourage society to deal with persons with visual impairment with high levels of reassurance in terms of confidence building in their capacities. Ocloo further stated that for a successful integration of persons with visual impairment with the sighted, the person who is visually impaired should be able to achieve, to some extent, the same level of independent mobility enjoyed by their sighted colleagues. As such, the disparities between the two categories will be subdued or come to a lower degree.

The individual can also be gainfully employed or engaged in his independent career if he or she is mobile with or without little dependence on colleagues or the sighted (Ocloo, 2011). To be able to move independently within the environment is a prerequisite skill for employment. The critical role of O&M training in employment of persons who are blind was indicated early on by the results of Knowles' study (as cited in Aditya, 2004), in which proficiency in O&M emerged as the single most salient factor in predicting employment status. In light of the persistent unemployment rates among persons with visual impairment, the time is ripe to take a closer look at the field of O&M training. As Nagle (2001) noted, post-secondary education does

not by itself improve employment-readiness of people with visual impairment; proficiency in O&M is essential to obtain employment.

The foremost concern of sighted employers in a vision-oriented world of work is how a blind employee will get to work and get around at the workplace. This concern may not be ill founded if the employer has in the past seen other blind persons walking around with a sighted guide and depending on sighted people to do things for them all the time. There is pressure on the individual with visual impairment to achieve a high level of independent travel skills and to be able to communicate that achievement to a potential employer through confident demonstration of those skills (Mutuelle & Odeku, 2013). The field of O&M training, therefore, is a central one for the blind individual seeking employment.

There is a close link between mobility and sports. Training in O&M is a pre-requisite for promoting sports among persons with visual impairment. At the same time, when a person with visual impairment participates in sporting activities, it enhances their understanding of the environment, enables a person to overcome fear of movement in the unknown space and improves concentration which in turn results in better mobility. Physical activity for the visually impaired involves motor learning and movement related to environmental safety and convenience (Chen & Hsieh as cited in Chen, 2012). Significant differences exist between the physical exercise regimes of persons with visual impairment and the normally sighted. Chen (2012), citing Chang, asserted that the blind, suffers from a lack of exercise, and that walking alone imposes a psychological burden and a variety of dangers. Recreational activities include mostly sedentary activities, such as playing chess, piano, and

blind cards. Blind baseball not only provides an alternative outdoor recreational activity, but also builds confidence in the ability of individuals with visual impairment to live more normal (Chen, 2012).

Orientation and Mobility Techniques

A number of O&M key authors, including Jacobson (2008), Penrod (2012), LaGrow and Weessies (1994), Deverell, Taylor, and Prentice (2009), Rosen (2010), and Wilkinson (2017), comprehensively outline a "standard" curriculum for training of O&M skills to persons with blindness while acknowledging the need for individualised programme design to meet those with additional needs. These techniques provide methods of movement through the environment that makes the child feel safe and able to participate. Although there are a number of techniques and mobility aids for persons with visual impairment, this section refers to only techniques applicable in the Ghanaian context. O&M are considered as separate concepts, but the two areas are interrelated and proficiency in both is required in order to master control of the environment.

According to Deverell, Taylor and Prentice (2009), orientation techniques include the ability to identify and use nonvisual environmental clues and landmarks, knowledge of indoor and outdoor numbering systems, measurement and compass directions, the ability to access a range of maps (audio or tactile), and the development of self-familiarisation skills and strategies. Effective use of these techniques requires the use of cognitive processes such as decision making, problem solving, and an understanding of the body, spatial, and environmental concepts (Deverell et al., 2009).

Lagrow and Wessies (1994) had observed that traditionally, mobility techniques were initially taught within a controlled indoor environment, with proficiency in these techniques required prior to the introduction of a mobility aid such as the white cane. Mobility techniques include the sighted guide technique which is also referred to as human guide. Self-protection techniques allow for semi-independent travel in familiar environments.

The white cane is the most frequently used device for persons with visual impairment who travel by themselves and without assistance of someone else. The white cane is a lightweight metal or a fibre glass tube. It may be one piece, or it may be collapsed into one small section or several sections. The length is determined by the individual's preference and it may be white or metallic in colour with a few requiring a red tip. The amount of red showing on a cane, or the colour of the handle, has nothing at all to do with the skill nor does it have anything to do with the amount of vision of its user.

Rosen (2010) had identified the following four categories of function of the white cane. While each technique is designed for a specific purpose or for use in a specific travel environment, the techniques as a whole provide the foundation that enables the user to travel safely and effectively in most environments.

Detection: In these techniques, the white cane serves as both a probe and a bumper. It verifies a safe and clear travel path in front of the user and serves to detect low obstacles and elevation changes in the travel path before the traveller bumps into them. Detection techniques can also be used to identify specific features of the travel path, such as textural changes and changes in elevation. For example, waterlogged areas and valleys (Rosen, 2010).

Negotiating Doors and Stairs: Using specific white cane techniques enables the traveller to detect and safely negotiate doors and stairs of varying size and shape, and in a variety of indoor and outdoor environments (Rosen, 2010).

Negotiating Obstacles: These techniques are used to identify contact with an obstacle safely and efficiently in the travel path. For example, it can be used to identify contact with a piece of furniture in a room or a vehicle parked across a sidewalk and to locate a clear path by which to walk around it. These techniques are also used in relocating the travel path after a veer off-course.

Shorelining: Specific white cane techniques are used to follow the edge or "shoreline" of the travel path. This is often done to find a specific item or location along the edge of the travel path, such as a mailbox, or an intersecting hallway or sidewalk. In addition, some travellers use these techniques to maintain tactile contact with specific landmarks in the environment rather than travel through open space as they go from one place to another (Rosen, 2010).

LaGrow and Weessies (1994) further identified two basic white cane techniques in the diagonal technique and the two-point touch technique. The diagonal technique is used primarily in indoor familiar environments, and involves walking with the cane held in a fixed position at a 45 degree angle across the body with the cane tip just above or in constant contact with the ground. As described by Rosen (n.d), the traveller holds his or her cane hand in line with his or her shoulder and 6-8 inches in front of his or her near hip. She holds the cane with the handshake grasp with the back of the hand facing upward. The purpose is to obtain limited protection from the cane when travelling in indoor environments. Because this technique does not reliably detect all obstacles or elevation changes in a traveller's path, it is only used in

familiar, controlled environments in which there is no elevation change. For example, descending stairs or the traveller is aware of the location of elevation changes and can avoid them intentionally.

The most commonly used technique is the touch technique. It requires the user to use the proper skills for gripping the cane, tapping the right way from left to right, in step rhythm for foot and cane coordination, among others. Training for the use of the cane is, therefore, paramount. 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 Jacobson (2008) and Penrod (2012), these seven elements are:

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 (Jacobson, 2008).

The index finger: The 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 (Jacobson, 2008; Penrod, 2012).

Wrist action: The cane is positioned at the 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).

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 (or not 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 traveller, either slightly beyond (Jacobson, 2008) or at a distance of approximately 1 inch (Penrod, 2012) beyond the widest part of the cane user.

Rhythm: The tip of the cane touches the ground ahead of the traveller in time with the heel strike (Jacobson, 2008; Penrod, 2012).

Step: As the cane touches the ground on the left, the right heel lands and as the cane touches the ground on the right, the left heel lands (Penrod, 2012).

Effective independent travelling or protective technique enables the individual to avoid physical hazard. The technique requires the visually impaired to use their hands and arms as bumpers, thus reducing the likelihood of injury to the face and body in moving about in both indoor and outdoor environments. There are two techniques called the upper hand and forearm, and lower hand and forearm protective techniques.

The upper body protection technique involves positioning one arm horizontally across the body, with the arm held at shoulder height with the elbow bent at an angle of approximately 120 degrees. The palm of the hand faces outwards with the fingers cupped and slightly relaxed, providing protection from chest and head high obstacles, and is also used in conjunction with the white cane if a known overhanging obstacle is in the path of travel. (Deverell et al., 2009).

The lower body protection technique where one arm is extended slightly forward and downward across the traveller's midline and held about 30 centimetres in front of the body, provides limited protection against hip high obstacles when the traveller is not using mobility aids. With both upper

and lower body protection techniques, the arms must be far enough from the body to allow time to react if an obstacle is contacted (Deverell et al., 2009).

The upper body protective technique is designed to provide defence at the head and face level, thus providing a buffer for the upper body from contact with potential hazards, such as cabinets, sharp wall corners and low tree branches. As described by Cade (2012), either arm is extended in front of the face or upper chest area. The elbow is bent and the palm is facing away from the face. The arm should be extended approximately six to twelve inches away from the face. The lower hand and forearm protective technique is to detect things waist down. This technique is also helpful in protecting the lower body, especially the abdomen and groin, when travelling short distances.

The arm is extended diagonally across one's midline. The palm should face towards the body and be approximately six to twelve inches away from the individual. The traveller can use this technique to detect chairs, tables, desks, beds, etc. The techniques can be used individually or together. Protective technique can be used while moving through open spaces, trailing, using a sighted guide, or using a cane (Cade, 2012). It is important to note that this technique will only partially protect the individual's waist level and provide information about approaching drop-offs, such as steps, stairs, and ramps. For maximum protection, a combination of upper and lower body protective techniques and/or a white cane, or sighted guide is recommendable.

According to Cade (2012), a final skill that can be utilised is trailing. Trailing can be utilised while strolling along a wall, fence, building line, or any straight pathway. The objective of trailing is to keep a straight line of travel and help discover objects along the pathway. When trailing, one's

arm is extended along the wall, approximately one foot, in front of them. The fingertips should be curled to protect one from door jams and other hazards along the way. One should then slide their arm along the wall. Once more, this technique can be used alone or in conjunction with the white cane or other protective skills.

When persons with blindness move around some of the time, they need guidance to make sure they are safe and reach the place where they want to go. While the key objective of O&M training is attaining independence in movement, the help of another person is essential under certain circumstances. A person with visual impairment may require assistance of a sighted guide while crossing a busy road, moving in an unfamiliar environment and moving into a crowded place.

The technique of human guide, which is commonly referred as a sighted guide, is a mobility system that allows an individual with visual impairment to participate actively in travel through different environments using the assistance of another individual, who typically has the use of vision (Hill & Ponder as cited in Scott, 2015). The technique requires the individual with visual impairment to hold the arm of another person who then leads them through the environment; methods exist for traversing narrow spaces, negotiating stairs, reversing direction, negotiating closed doorways, and seating (Hill & Ponder as cited in Scott, 2015).

There are different ways in this technique. The premise of the sighted guide technique is that the visually impaired individual holds the guide's arm slightly above the elbow and allows the guide to walk a step ahead. This allows the person to feel and follow the guide's direction. To begin sighted

guide, the guider who has sight should touch the arm of the visually impaired person being guided with the elbow. He or she can then take the arm above the elbow. Guiding signals are helpful when a change in direction is needed, for example, a brief pause at the edge of a curb. Verbal clues can also be helpful (Cade, 2012).

Specific skills are taught to be applied when the blind and the guide are travelling through various situations, including negotiating narrow doorways, ascending and descending stairs and negotiating doors, and locating a seat. Additionally, unique techniques are taught to the O&M pupil for accepting and refusing assistance from others; using sighted guide while holding the long cane; using sighted guide within various settings such as, restaurant, classrooms, and crowded areas among others; and self-advocacy skills, such as training others to provide sighted guide (Bischof, 2008). Wilkinson (2017) provides a detailed procedure of the sighted guide technique in the following situations.

When approaching a narrow area or doorway, the guide will move his/her forearm and hand to rest against the lower portion of their back, with the palm facing outward. The person being guided should slide his/her hand down to the guide's wrist and move directly behind the guide, at arm's length

When approaching curbs, stairs and doorways the guide should approach them squarely, never at an angle. At doorways, the guide should tell the person being guided which way the door opens so the person being guided can hold the door as they both pass through. The guide should let the person know when they are approaching the stairs. At the stairs, the guide should inform the person they are guiding whether the stairs go up or down and how

many steps they are. The guide should position the person so their free hand is closest to the rail. The guide should pause at the first step and at each landing (Wilkinson, 2017).

When approaching a seat, the guide should tell the person they are guiding that they are in front of or beside the seat. The guide will then place the guided person's arm on the chair back or chair arm and allow the guided person to follow the guide's arm down to the seat. The guide does not need to help the person they are guiding to sit down, unless the person being guided is frail or unsteady (Wilkinson, 2017).

Hindrances to Effective Orientation and Mobility Training

Some environments cause serious orientation problems to persons with visual impairment. Travellers with visual impairment depend on well-defined paths and memorable landmarks to find their way; poorly defined environment may be difficult to orient in. Similarly, because persons with visual impairment depend on their cognitive maps, environment that are hard to represent mentally are also hard to orient in. A simple building plan, such as a square, is likely to be understood and is generally simple to form a mental picture. A complex building with many turns or curves may be very difficult to orient in. In Ghana, Ocloo (2011) observed that the layouts of our school environments for the visually impaired do not facilitate easy mobility of the pupils. It is not uncommon to see pupils falling into gutters bruising the sheens of their legs. This actually impinges on their confidence and desire to go on independent travel or indulge in mobility training lessons.

Orientation and mobility training can be very time consuming, and it is often difficult to gauge how much input a child will need. O&M educators

have to work at the pace of the child, which can be affected by factors like child's age, natural ability, self-confidence, and additional disabilities they may have. More time is required to get to know the child, which is essential in order for them to trust the O&M trainer, since trainers can sometimes seem formidable to a child. This presents a challenge when trying to timetable assessments and O&M lessons, whether in or out of school time (Pavey, Douglas, McCall, McLinden & Arter, 2002).

Orientation and mobility training can take place both in and out of school hours. In practice, most O&M training is carried out within instructional hours since this is when teachers are contracted to work. Pavey et al. (2002), however, postulated that there are many examples of mobility skills taught out of school hours and during school holidays. For example, in the United Kingdom, O&M educators seem to work predominantly within school time, whilst social service O&M educators often work outside school hours, with an emphasis on home area work. Generally, though most O&M specialists seem to work both in and out of school hours, the emphasis depends on individual circumstances (Pavey et al. (2002).

According to Nasimiyu (2011), the factor of the curriculum had been a very big hindrance to effective teaching of O&M for pupils with visual impairment. The school must develop a curriculum that is a general blueprint from which the O&M teachers would work with most pupils. The assessment of the needs of pupils would lead to the design of the teaching plan for the individual. However, Nasimiyu further stated that none of the O&M curricula that were developed had been researched. O&M teachers had generally relied on the traditional notebook of mobility techniques as the basis for the curricula

developed for a specific agency or school programmes. It does not mean teaching pupils two or three familiar routes; but rather, the concept requires exposing the principles required to enable the pupil to be an active and independent traveller capable of deriving enjoyment in overcoming difficulties in the environment by applying those principles in a wide range of settings. The pupil with visual impairment should not only acquire knowledge of identifying and crossing a particular landmark like an open gutter; rather, he should be knowledgeable in the skills in crossing gutters safely and efficiently and the skill of crossing an unfamiliar landmark.

"Steps to Independence" project conducted by Pavey et al. (2002), reviewing the delivery of mobility and independence skills to children in inclusive education settings in the United Kingdom, reveals that most regular school teachers believe that congenital blind children are unable to learn skills, especially those relating to independence and personal competence, as may be gained through O&M. Since learners with congenital blindness are known to strictly use braille for their learning reading and writing, these teachers think that the educational experiences and concept formulation for children with congenital blindness, only boarders around the touch sense. Teachers therefore, take this touch sense as the only sensory function used by them for concept formulation.

Pavey et al. (2002) further indicated that teachers also have fears, especially when it comes to the navigation of these learners. As a result, teachers are unable to design appropriate O&M training programme that will equip learners with blindness skills to function independently and improve their quality. For lack of informed knowledge, the general class teachers

believe that the movement of learners with congenital blindness within the school and classroom environments includes having these learners being guided by a sighted person at all times. These teachers, then develop fears that it remains their responsibility to always offer a sighted guide to these categories of learners.

Another, major difficulty is the worldwide shortage of specialised personnel to provide training and to advocate O&M training (Scott, 2009). It has been suggested that O&M is an area that requires the services of specially trained professionals other than the qualified teacher for learners with visual impairment. The teacher of learners with visual impairment is not necessarily qualified to teach such advanced skills as the long cane, and this skill needs to be taught in conjunction with, not separate from, other O&M skills and techniques. The critical importance of having qualified O&M specialists who are skilled working with children is highlighted by Ravenscroft (2012), who stressed that it is not enough to have instructors who are trained to work with adults who suddenly find themselves working with children: this smack of viewing the child as a little adult. The author defined O&M specialist as a professional who specialises in teaching travel skills to persons with visual impairment, including the use of white canes, dog guides, or sophisticated electronic travelling aids, as well as the sighted guide technique.

Over the period, the role of the O&M specialist has expanded. Today, O&M specialists assume many roles. The O&M specialist has a significant role in the assessment of students (Huebner, Merk-Adam, Stryker & Wolffe, 2004). They are responsible for developing and conducting an O&M assessment for all children with visual impairment to determine the nature and

extent of services needed. These assessments of children are conducted in partnership with an assessment team.

The O&M specialist is also responsible for providing direct instruction in the area of motor development, concept development and advocacy. In the community, the O&M specialist has the responsibility to educate the general public regarding the capabilities of persons with visual impairment and may dispel the many misconceptions that the general public has about blindness. Additionally, the O&M specialist is responsible for more advanced O&M skills training such as white cane instruction and street crossings and may assign some basic duties in the training session to others. For example, the sports teacher can play supervisory role in route walk (Griffin-Shirley, Trusty & Rickard, 2000).

The O&M specialist is responsible for designing and implementing on going in-service education activities in the area of O&M for teachers, other professionals, paraprofessionals, administrators, parents, and persons with visual impairment (Griffin-Shirley, Trusty & Rickard, 2000). Service activities should provide information about the role of the O&M specialist and the goals of the O&M programme. O&M in-service activities should also focus on the roles of all appropriate school personnel in the development and reinforcement of concept development, sensory skills training, motor development and formal O&M skills.

It is also the responsibility of the O&M specialist to provide training to pupils with visual impairment and their parents. In addition to working cooperatively with family members in developing realistic goals, the O&M specialist must develop specific activities that parents and family members can

implement in the home environment for continuity of instruction to occur (Fazzi and Petersmeyer as cited in Griffin-Shirley, Kelley & Lawrence, 2006). Adequate acquisition of O&M skills by parents will empower them to help their wards to carry them out on daily activities and consolidate gains made by the specialist teacher. Despite the crucial role O&M specialists play in quality service delivery, there is a worldwide shortage of these professionals and Ghana is no exception.

The "Steps to Independence" project conducted by Pavey et al. (2002), reviewing the delivery of mobility and independence skills to children in inclusive education settings in the United Kingdom, revealed that most regular school teachers believe that children who are congenital blind are unable to learn skills, especially those relating to independence and personal competence, as may be gained through O&M. Since learners with congenital blindness are known to strictly use braille for their learning, reading and writing, these teachers think that the educational experiences and concept formulation for children with congenital blindness, only boarders around that sense of touch. Teachers, therefore, take this touch sense as the only sensory function used by them for concept formulation.

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guided by a sighted person at all times. These teachers, then, develop fears that it remains their responsibility to always offer a sighted guide to these categories of learners.

Effective Orientation and Mobility Training Programme

In the field of O&M instruction, two terms depict particular instructional theories and strategies: guided learning (conventional approach) and structured-discovery learning. Good cane travel requires that O&M teachers incorporate components of both methodologies. In the end, whatever the approach, the result must be that the pupil has the ability to process environmental information, think through what this information means, and what is to be done, while travelling independently. Guided learning emphasises specific and detailed techniques. It manages exactly how a student must hold a cane, utilise a human guide, or explore a blocked pathway. Once more, for some pupils this might be proper, yet most visually impaired individuals normally adjust strategies (Good Orientation and Mobility Programme in the Public Schools, n.d.). Routes are a major component of the guided-learning approach. Diverging from the route should not be encouraged. A good deal of the instructional time is spent on a series of routes to locations that are part of a pupil's daily activity.

Structured-discovery learning demands that pupils work constructively with the environment. For example, if a pupil is learning how to move from the play area to the classroom towards the end of break, the teacher guides the pupil to see different pupils' movement and discover terrain differences like (the texture of the compound, school workshop noise and so forth), that would be valuable in finding the classroom. The trainer provides guidance only, in

interpreting the environmental clues and how to use them in travelling. As a result, the pupil learns the clues that can be used in a variety of travel situations.

Proponents of structured discovery learning, such as Altman and Cutter (2004), advocated that attitudes and beliefs around blindness are fundamental to successful O&M intervention, while arguing that intervention must begin with blind persons having a sense of being whole persons with blindness, not as damaged sighted persons. White cane mobility is considered a foundational skill allowing for independent travel, and subsequently, an independent life. Ferguson (2007) explained that the goal of the structured discovery approach is the cultivation of problem-solving skills and confidence within the O&M pupil. This is achieved partly by the use of non-visual teaching techniques. O&M specialists are required to develop a very high level of personal travel skills with their own vision and to teach O&M techniques without the use of vision.

Orientation and mobility training will have almost no effect on pupils with visual impairment if guardians and relatives are not associated with the programme. Therefore, the O&M teacher or trainer must include them as part of the educational team. Families may understand the importance of the goal of travelling independently, but they rarely, if ever, see it in practice. They may never have seen a blind adult or child travel independently with a white cane. Imagine what it would be like to be a non-driving parent whose child is taking driving lessons, but who has never seen a car, much less seen one driven. It is not reasonable for the instructor to believe that a parent can support meaningful travel training for a child without having knowledge of the

capabilities of independent travellers with blindness. Therefore, it is important for the O&M trainer to educate parents about the skills their children are learning. Children who are blind usually delighted when they can share these new skills with their own families (Good Orientation and Mobility Programme in the Public Schools, n.d.).

The utilisation of an appropriate white cane as a tool in O&M is key in a successful programme. One of the primary functions of the cane is to detect objects and drop-offs. Just as in driving a car, a certain amount of reaction time is necessary to slow down or stop. Using short canes, either trainee has to extend his/her arms, locking the elbow in place to extend the reach of the cane to provide greater reaction time, or he/she has to slow down. Young children get tired or frustrated too easily to extend their arms stiffly for any length of time, so these problems can be avoided by starting with a longer cane. Children who are blind also need to run, skip, and physically move about and play just like sighted children. A longer white cane allows them to do this with greater safety and security (Good Orientation and Mobility Programme in the Public Schools, n.d.).

Given sufficient time is an essential factor for a successful training programme. Competency and confidence in independent movement with the white cane are specifically identified with what is described as road time. The pupil needs to rehearse and practice more. Therefore, O&M programme must incorporate practice time and also homework can be assigned. For example, during vacation holidays the pupil may be assigned to practice going to the bus stop twice a day (Good Orientation and Mobility Programme in the Public Schools, n.d.). Effective O&M training requires that, over time, systematic

instruction be conducted in a range of environments under varied circumstances. To this end, Small and Marin (2007) suggested that between 80 and 400 hours of training is needed for a basic understanding of O&M to be achieved. Jacobson (2008) also proposed that a pupil who is totally blind requires between 150 and 200 hours of training. These estimates suggest that effective use of O&M technique requires a great deal of effort.

The availability of qualified O&M instructors also makes an effective training programme. O&M specialists are hard to come by. At times, even with a good deal of hard work, a school will not be able to find an instructor. This does not negate its responsibility to provide this essential training. Through collaboration and with some creative thinking, the staff and family can find other means of providing this service. One possibility is to place the child in the nearest school for the blind. (Good Orientation and Mobility Programme in the Public Schools, n.d).

In-service training should be provided about the role of the O&M teacher and the goals of the O&M programme. The in-service activities should also focus on the roles of all other school personnel in the development and reinforcement of concept development, sensory skills training, motor development and formal O&M skills. To be effective, O&M training should be infused into school curricula, supported and reinforced by all individuals connected with the student (Griffin-Shirley, Trusty & Rickard, 2000).

The researches about the O&M skills in the literature have been examined here. Literature has revealed that numerous researches have been conducted on O&M skills in the developed countries but in our country, we have only a limited number of researches about the O&M skills. It critically

considered works conducted in the area of pupils skills in the white cane, the independent travelling or protective and sighted guide techniques as well as challenges of effective O&M training programme. These studies were reviewed in order to help fill the gap. A study, which compared the effectiveness of a white cane with a precane device for two male and two female pre-schoolers, was conducted by Clark, Sainato and Ward (1994),using a single subject alternating treatments design. The authors found that the precane device was effective. However, the study appears not to have assessed the challenges associated with the use of the white cane.

In another study McGregor (1998), a single subject, multiple treatment design was used to determine whether adolescents with severe visual impairment and severe developmental disabilities could be taught, by means of verbal and physical prompts, a modified cane technique that would allow them to travel independently in a familiar indoor environment. The subjects were four female high school students, between the ages of 17 and 21, who were severely visually impaired and had severe developmental disabilities. The study established that the verbal and physical prompts were effective in teaching four adolescents, with severe visual impairment and severe developmental disabilities, a modified diagonal cane technique that would be functional for them in travelling independently in a familiar indoor environment. A major weakness is related to the individual characteristics of the subjects. Because of their severe developmental disabilities, more so than their visual impairment, they may never be totally independent travellers, even in familiar indoor environments such as their school. However, the study failed to examine methods of teaching functional route travel to persons who

are visually impaired and have severe developmental disabilities. Again, the challenges persons who are visually impaired with additional disabilities faced using the white cane and means of overcoming them are excluded from this study.

Another study conducted by Arslantekin (2015) aimed to determine the performance levels of the mobility skills of pupils with visual impairment. All stages of the implementation process were performed by the researcher. The study consisted of pupils with visual impairment who receive education in two schools for the visually impaired in Ankara. The participants were 53 pupils with blindness and 34 pupils with low vision.

Subjects were identified, the environment was arranged and criterion-referenced tests were developed to perform the study. It was found out that pupils with visual impairment did not have full competence in cane skills. Learning how to use canes at early ages will enable the visually impaired pupils to effectively use these skills in numerous environments. Lack of cane instruction at early ages could cause important consequences such as body collision, hitting the pupil from the back while descending and fainting after hitting the head to the window. The results of the study is not quite convincing since only first and fifth grade in a school in Ankara for the visually impaired participated and also the study failed to consider their outdoor mobility skills.

In terms of the subject of independent travelling technique, Arslantekin (2015) determined the correct performance percentages of the pupils' mobility skills by analysing the data obtained from measurement tools and camera recordings in line with the data obtained in the study. The results of the study also reported that independent travelling techniques for outdoors were not

properly utilised. When the pupils were instructed to walk with the upper body protection technique, many walked by extending their arms forward or by moving their arms too close to their head.

Considering the subject in terms of sighted guide skills, Arslantekin (2015) study revealed that the pupils with residual vision do not have the skills to walk with a guide. Considering that pupils with residual vision at the schools for the blind would guide their friends, they should be trained to guide. Hence, they would comfortably lead their friends who cannot move along the routes, help them reach their targets safely and provide feedback as a guide with the use of the arm. For instance, when the pupil with low vision puts his arm behind his back, a pupil who is blind understands that they will pass through narrow passageways or there is a danger ahead and he needs to stay behind; when the guide raises his/her arm it means that they will ascend the stairs. Clearly, the study excluded investigating measures that can be adopted to improve specific techniques.

Kim, Emerson and Curtis (2009) compared the drop-off detection performance with the two-point touch and constant contact cane techniques using a repeated-measures design with a convenience sample of 15 cane users with visual impairment consisting of 10 men and 5 women. Participants were in O&M programme at Western Michigan University who were familiar with both the two-point touch and constant contact techniques. Students had received 1 month to 4 months of cane training. The research found out that the constant contact technique was superior to the two-point touch technique in the drop-off detection rate. A major challenge of the study is related to the use of sighted O&M students, rather than cane users who are blind, which may

limit the generalisation of the findings for travellers who are blind. Again, its small convenience sample limits the generalizability of the finding. Lastly, drop-off detection is only one of many possible performance outcome measures of the cane technique. For example, the study failed to examine the positioning of the cane, index finger and swinging in movement to determine the overall effectiveness of each cane technique.

It seems the only study conducted in Ghana on the white cane was done by Adu (2015), which aimed at measuring the competency of students with visual impairment in familiarising themselves in their school environment using the white cane. A mixed research approach was adopted to guide the methods of data collection with a sample size of 20 senior high school students. The result showed that additional time is required for practice in order to be effective. He therefore recommended that additional time should be allocated to students to develop their competency in O&M. A major limitation of the study is the use of one inclusive senior high school and small sample size which is inadequate to make a sound generalisation. A major area the study failed to focus on is the assessment of students' competency in the sighted guide technique and its associated challenges. Again, though the study investigated challenges students with visual impairment faced in utilising the white cane, it appears not to have looked at the concerns of students in the school as regard to O&M training.

Rudiyati (2014) also conducted a study to improve the skills of candidate teachers of children with visual impairment as a sighted guide for the blind through training and mentoring. A qualitative action research was adopted as a descriptive analysis. Seven (7) candidate teachers of children

with visual impairment were selected based on the researcher's convenience. The study was carried out in the school and the subjects were observed. The results showed that the training and mentoring is proven to improve the skills of candidate teachers of children with visual impairment as a sighted guide for people with blindness. However, the study have focus on actions performed by training and mentoring for candidate teachers of children with visual impairment in improving skills as a sighted guide for people with visual impairment. These actions are expected to study the problems but not how candidate teachers for children with visual impairment utilise the sighted guide technique nor can challenges they faced in using the technique be overcome.

Nasimiyu (2011) investigated the factors hindering teaching of O&M to pupils with visual impairment in Thika Primary School for Children who are Visually Impaired in Kenya. The design was a descriptive survey study, which attempts to describe characteristics of subjects, phenomena, opinions, attitudes, preferences and perceptions of persons of interest to the researcher. The population consisted of the head teacher, 27 teachers and 107 standards four to eight pupils. A purposive sampling technique was applied to identify the target population. Data was collected using, two instruments: questionnaires and classroom observation schedule. The study revealed that the teaching of O&M was not effective in the school due to shortage of instructors and enough mobility cane. However, the study failed to gather data from respondents on measures that could be taken to improve O&M training. Again, the study did not investigate on difficulties pupils face in using the white cane as a mobility tool.

The study recommended that teachers should give O&M training importance like other academic subjects and that pupils should be encouraged to practice O&M skills. This is similar to the suggestion made by Adu (2015), who recommended that the school must buy new white canes to advance students' O&M skills. Adu further suggested that strategies which has been adopted to develop students' familiarity on cane technique and independent travelling technique should be encouraged. A major challenge of Nasimiyu's study is that the literature reviewed seems not adequately support the topic investigated.

In another study by Altunay and Ekinci (2014), it was aimed to define the training received by four university pupils with visual impairment for O&M skills, and the mobility difficulties experienced by these. Pupils with visual impairment were interviewed. The study found that the pupils encountered mobility problems in familiar and unknown environments and never learned any O&M skills throughout their academic career. Interviewees indicated that they participated in the courses at rehabilitation centres in order to learn mobility skills. The study appears not to have focused on children with visual impairment at their formative years of education.

It is highlighted in all of the studies that pupils with visual impairment faced mobility difficulties. O&M trainers should assess to know the extent the pupils with visual impairment possess O&M skills and trainers should be provided accordingly (Tuncer, 2004). For effective instruction and encouragement of movement, there is the need to assess and improve pupils' skills.

A Model Illustrating the Framework of Effectiveness of Orientation and Mobility Training Programme

Training effectiveness in general is influenced by numerous variables (Pavey, Douglas, McCall, McLinden, & Arter, 2002). An effective O&M training programme which is the dependent variable may depend on pupils' levels of proficiency. The conceptual framework shows that when pupils are trained on O&M skills, they master control of the environment. The ability of pupils to demonstrate these skills will show the degree of effectiveness of the training programme.

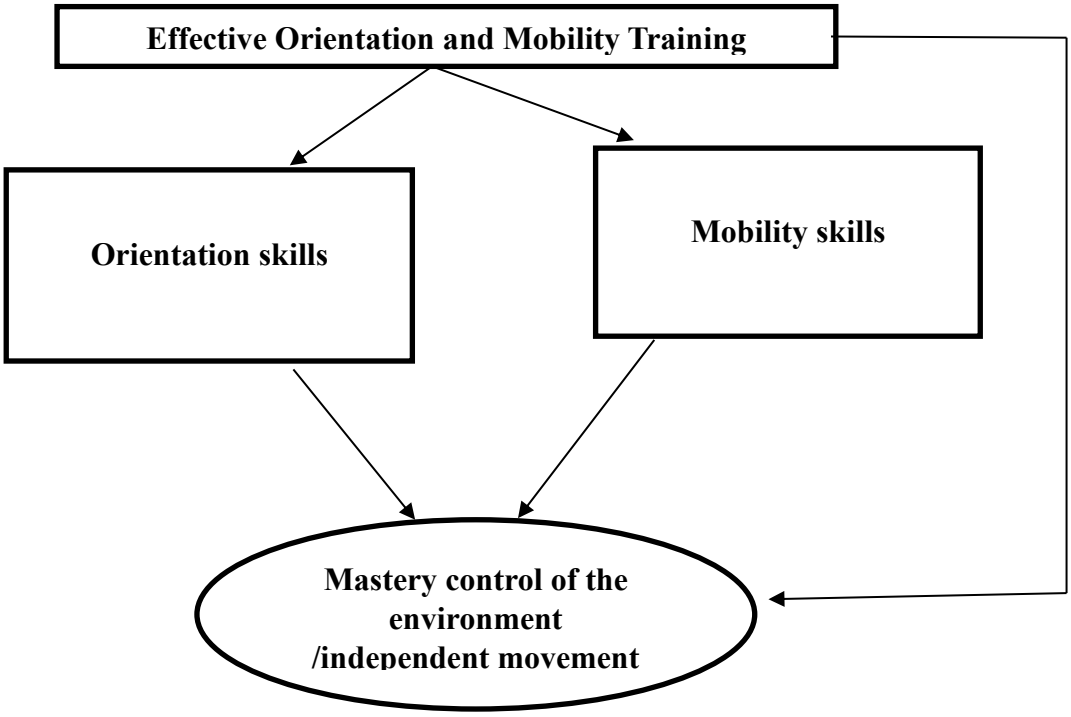

Figure 1: Conceptual framework on effective orientation and mobility training

Source: Author's construct, 2017

Chapter Summary

The present study reviewed literature on the theoretical framework that supports the concept of O&M training programme for pupils with visual impairment. The emphasis of O&M training has been that of pupils acquiring

skills to enable them to become confident and travel independently in their environment. The concept of O&M training is supported by the social model of disability where individuals with disability needs social action necessary for them to function and fully participate in the society. An effective training in O&M is required for pupils with visual impairment to reach their potential growth and function in their society. Also reviewed were: The concept of O&M, The concept of visual impairment, the impact of visual impairment on learning and movement, O&M services, benefits of O&M training for persons with visual impairment, hindrance to effective O&M training programme, and factors of an effective O&M training programme for pupils with visual impairment were also reviewed.

Even though O&M skills have been beneficial as espoused by the review on the justification for the training and empirical findings on the importance of O&M, researchers have found that pupils have difficulties in using such O&M techniques in their environment. The empirical review also indicated that pupils had concerns on O&M training in their schools. The issue of O&M has been a problem and hence the need to assess the effectiveness of the training programme in the schools for the blind

CHAPTER THREE

RESEARCH METHODS

Introduction

In this chapter, the methods and approaches employed to collect empirical data and the rationale behind the use of these approaches are explained. It discusses specifically the research design, the study area, population, sample and sampling technique, data collection instruments, procedure for data collection, and data processing and analysis.

Research Design

This study adopted the descriptive qualitative design to assess the effectiveness of the O&M training programme in the Schools for the Blind in Ghana at Akropong and Wa. The adoption of this design is appropriate to achieve the study objectives. Denscombe (2007) and Glesne (2006) argued that qualitative research methods require the use of narratives/words in collecting and analysing information from the respondents. It is important to note that qualitative methodology presents significant challenges to investigators who choose to go that way, particularly in trying to understand human behaviour and/or actions. Qualitative methods have become quite common in the pursuit of knowledge in social sciences.

However, Bryman (1999) cautioned that, although there has been a proliferation of writings on qualitative research since the 1970s, stipulating what it is and is not as a distinct research strategy is by no means straight forward. Creswell (2007) opined that qualitative research involves close

attention to the interpretive nature of inquiry, and situating the study within the political and, social, and cultural context of the researchers, the participants, and the readers of the study. Creswell (2009), further observed that the qualitative researcher obtains data in the natural setting of the phenomenon in question. The qualitative strategy is very effective because it relates to cases that are mostly of a social phenomenon, like in this case, the effectiveness of the O&M training programme for pupils with visual impairment.

The descriptive qualitative design was used as the study design to obtain data from pupils with visual impairment in order to determine the effectiveness of the O&M training programme in the basic schools. A descriptive qualitative design according to Merriam (1998), is "basic or generic qualitative research" (p. 20). Descriptive qualitative studies are those that present the characteristics of qualitative research rather than focusing on cultures as does ethnography, the life experiences as in phenomenology or the building of theory as with grounded theory. As a methodology, the use of descriptive qualitative approach is particularly relevant where information is required directly from those experiencing the phenomenon under investigation, where time and resources are limited and perhaps as part of a mixed methods approach (Neergaard, Oleson, Anderson, & Sondergaard, 2009).

Descriptive qualitative research studies are those that seek to discover under a phenomenon, a process or a perspective and views of the people involved (Caelli, Ray, & Mill, 2003; Merriam, 1998). The design selected is appropriate for this study. This is because the study ought to assess O&M

skills in order to determine the effectiveness of the training programme in the basic schools based on the viewpoints of pupils with visual impairment.

Study Areas

The study was mainly conducted in Akropong and Wa Schools for the Blind. The reason for selecting these schools was because they were the two main schools specially designed to train and educate the children who are visually impaired in Ghana. They both provided education at nursery, primary and the junior high school level and are residential. They admitted children with visual impairment from all parts of the country with the purpose of training them for integration into the mainstream society. Akropong School for the Blind is located in the Eastern Region of Ghana and in the Akwapem mountainous terrain, about 48 km from Accra, the capital city of Ghana. According to records available at the school, it was first started on the premises of the Presbyterian College of Education (PCE), formerly Presbyterian Training College (PTC) at Akropong-Akwapem. It is the first special education facility for persons with visual impairment in West Africa to be initiated by the Presbyterian missionaries. Wa Methodist School for the Blind is located in the Upper West Region. The school was initiated by Rev. Paul Adu, the Methodist minister in-charge of the Wa Mission area and was also the Local Manager of Methodist schools.

Population

Creswell (2005), stated that a population refers to groups of humans selected for a study. The population of the study consisted of all the 60 final year pupils who had varying degrees of impairment in the Schools for the Blind. Of the 60 pupils, 40 were from the Akropong School for the Blind

comprising 24 males and 16 females and 20 from Wa School for the Blind comprising 13 males and 7 females.

Sampling Procedure

The research employed non-probability sampling techniques in selecting the respondents. This implies that the selection of the respondents was not based on random methods, but on non-random means. Purposive sampling technique was employed. Purposive sampling technique was used to select pupils from the two schools who used the white cane. With this technique, the researcher chose the sample based on who was appropriate to provide the relevant information to achieve the research objectives. The adoption of this technique was also based on the fact that the study sought to describe a phenomenon (the effectiveness of O&M training for pupils with visual impairment). Out of the population, 18 final year pupils were selected because the researcher perceived that they might have attained some degree of mastery in white cane, independent travelling and sighted guide techniques. Creswell (2005) argued that selecting a large sample number of interviews will result in superficial perspective and the overall ability of researchers to provide an in-depth picture diminishes with the addition of each new individual or site.

Data Collection Instruments

Two main instruments were used. Interview guide and observation guide were employed to collect data for the study. A semi- structured interview guide was (see Appendix A) used to obtain in-depth information on the opinions of the respondents since the researcher had the opportunity to clarify questions that are not understood and probe further in case of an

incomplete answer. The interview guide had questions that reflected the research objectives. The interview guide was divided into six sections. The first section dealt with the background characteristics of pupils. The second section covered the use of the white cane and the total number of items in this section was six. The third section covered the use of the independent travelling technique and had a total of six questions while section four dealt with questions relating to the use of the sighted guide technique and also had six items. Section five covered pupils' concerns in O&M training while section six dealt with suggestions that can be taken to improve O&M training. The last two sections had one general question each.

The observation guide (see Appendix B) also consisted of five items, the observation guide covered more specifically, holding the cane, steps in route travel, upper body protection technique¸ lower body protection technique and general positioning in sighted guide technique. Patton (2009) asserted that observational data have the ability to describe the activities that is unfolding at the research setting, the people that are participating in those activities and what they are saying as compared to what they are saying during an interview.

Validity of instruments

According to Amedahe (2001), it is the soundness of the interpretations given to the assessment scores that are validated, not the instrument. If the instrument measures what it intends to measure and the results are used for the intended purpose, then the instrument can be said to be valid. To achieve the validity of the instruments, interview guide and observation guide were given to colleagues and experts in the field (my supervisors) for their review, since face or content validity can be determined

by expert judgement. The suggestions they made were used to restructure the items. A pilot-test was also conducted to refine the research instruments.

Pilot-testing

The research instruments of this study were pilot-tested in the Bechem School for the Deaf in the Tano-South District of the Brong Ahafo Region. The reason for picking the school was because it had a unit for the blind. The school consisted of 37 pupils. The piloting provided a good opportunity for the researcher to identify any weaknesses in the instruments, and to find out if the anticipated data analysis technique was appropriate. The findings from the pilot-test allowed the researcher to rework on the research instruments for the improvement in case of inconsistencies; typographical errors, language use, and any ambiguities were removed. The instruments were pilot-tested on 10th March, 2018. Four cane users consisting of three males and one female who were in their final year were interviewed and observed. It was found out that pupils needed time to think and compose their responses. Hence, the researcher decided to give pupils about twenty seconds before prompting a response during the main study. In certain situations, the questions had to be repeated before the pupils attempted to answer. The respondents fully understood all the questions asked and answered to the best of their knowledge.

Reliability of the Instruments

Reliability is the measure of the degree to which for data collection instrument yields consistent results. Orodho (2009) also defined reliability, as a measure of the degree to which research instruments for data collection yield consistent results. To ensure consistency of the items in the interview

guide and observation guide, the items were reviewed with the help of colleagues. The comments and suggestions made were given for expert judgement that was the supervisors for the study. Also, the prompt and probes used to elicit further information or clarification was the same for all the respondents.

Lincoln and Guba (1985) used the word believability to better describe validity and reliability in qualitative research. The researcher needs to provide evidence of what he has done in the study to assist others to believe what he reports and concludes (Lincoln & Guba, 1985). Trustworthiness is seen when the collected information is not changed to fit the researcher's interests. Trustworthiness has been discussed in the following:

Credibility

Credibility means that the research findings must be closer to reality (Merriam, 2007), because a qualitative study happens in a real-life setting. For this reason, the substantiations which the researcher presents must be convincing. That is why Lincoln and Guba (1985) argued that qualitative work must be based on data that speaks to the findings. In order to established credibility, the researcher restated and paraphrased the information received from the respondents to ensure that what was heard was in factually correct. Some of the respondents were contacted afterwards to confirm what they meant by what they had said.

Transferability

Transferability refers to the extent that the findings can be generalised to other settings, contexts, or populations (Lincoln & Guba, 1985). The researcher must provide readers with enough case information, especially

about the context, so that generalisations can be made to similar contexts (Merriam, 2007). In addressing the issue of transferability, the researcher provided a detailed description of the number of schools included in the study and where they are located, data collection methods employed as well as the number of respondents in the fieldwork.

Dependability

Dependability relates to what extent the findings of the study might be found again (Merriam, 2007). The data collection and the analysis process should be presented logically, traceably and well-documented (Lincoln & Guba, 1985). In other words, the researcher must provide a rich description and a detailed explanation of the decisions, methods and procedures which might have influenced the study (Merriam, 2007). In order to address dependability, the research design and its implementation were described in detailed as well as the data collection procedure.

Confirmability

Confirmability refers to the extent that the research can be confirmed or corroborated by others (Lincoln & Guba, 1985). The authors further stated that there are certain strategies used to enhance confirmability, like searching for negative cases or conducting a data audit to pinpoint possible bias. In order to achieve conformability in this research, the researcher consulted with his supervisors to ensure that he was objective with his analysis of the data.

Ethical Consideration

An application was made to the University of Cape Coast Institutional Review Board for ethical clearance. This clearance was given via a letter (see Appendix C). After this, the researcher obtained approval from the

Department of Education and Psychology. They granted approval and gave me a letter introducing me to the schools (see Appendix D). Informed consent form was given to participants to sign before participating in the study. This statement need not always be written; it can also be given verbally. Participants were given the freedom to exit anytime they want to do so.

Another issue that arises about giving full or explicit information in the process of obtaining informed consent is the assurance of confidentiality and anonymity. This helps to establish trust between the researcher and participant. Anonymity and confidentiality were stressed in the research study. Anonymity and confidentiality were observed in the research study. In this study, the names of participants were kept anonymous and the data collected was used for academic purposes. As mentioned earlier, the interviews were tape-recorded with permission from the interviewees after they had been assured of confidentiality. Additionally, photographs that were taken during the observations did not show the faces of pupils and this was done by masking. This was also done with the consent of the respondents.

Data Collection Procedures

The researcher obtained a research introductory letter from the Head of Department authorising him to the schools for permission to carry out the research. The researcher then visited the two schools to brief pupils on the study. Interviews were arranged. The researcher personally collected the data at Akropong and Wa Schools for the Blind in the Eastern and Upper West Regions respectively. Upon receiving permission from the schools, data were collected from 17th March, 2018 to 23rd March, 2018. Data collection was done in the library at the Akropong School for the Blind because it had a very

congenial atmosphere. The session lasted for sixty minutes for all six participants and sixty-one minutes for another group of seven participants. The researcher went to the Wa Municipal Education Office and the Public Relation Officer on behalf of the Director of Education wrote to the school informing them of my research. The researcher then went to the selected school to inform the head teachers and pupils about the study. The data collection process was done in the ICT laboratory. The session lasted for fifty minutes for all the five participants from 6: 15 pm to 7: 00 pm. It was done after dinner.

Focused group interviews were used for the data collection. In the process of conducting the interview, note taking was done so as to capture information that was provided by the respondents. However, due to the limitation of notes taking where ever information provided by the respondent cannot be captured, the tape recording was also used. This was done with the consent of the respondents. According to Walliman (2006), audio recording during interviews are necessary so as to retain a full, un-interrupted record of what has been said and also to check against researcher's bias.

The qualitative data gathered in an interview from what people say could have limitations in terms of validity. Therefore, in order to understand these limitations, the researcher must incorporate observation as a phenomenon of interest (Patton, 2009). During the data collection process in the schools, the researcher took on the role of a participant observer. This was done to allow the researcher partake in the social world chosen for the study.

Marshall and Rossman (1989) stated that "immersion in the setting allows the researcher to hear, see and begin to experience reality as the participants do" (p. 79). Therefore, Gold (as cited in Bryman, 2004) stated that

by being a participant observer, the researcher's status is known by members of the social setting. Camera recording was used for data collection. Photographs of participants were taken to present images related to the study.

Data Processing and Analysis

Thematic analysis was employed in analysing data gathered from the interview after interview information was transcribed. In the thematic analysis, major issues as raised during the interview were put in main themes so that the analysis of such data would be relatively easier for discussion. Core principles of the thematic approach to qualitative data analysis by (Braun & Clarke, 2006) were adapted for use in this study. According to Braun and Clark (2006), thematic analysis is a method for identifying, analysing, and reporting patterns (themes) within the data. It minimally organises and describes your data set in detail.

Thematic analysis by Braun and Clarke (2006) had six phases which have been stated and described below. (1) Familiarising yourself with the data: This is the first stage requiring transcribing the data (if necessary), reading and re-reading the data, noting down initial ideas. (2) Generating initial codes: Coding interesting features of the data in a systematic fashion across the entire data set, collating data relevant to each code. (3) Searching for themes: Collating codes into potential themes, and gathering all the data relevant to each potential theme. (4) The fourth stage is reviewing themes. Checking if the themes work in relation to the coded extracts (level 1) and the entire data set (level 2), generating a thematic 'map' of the analysis. (5) Defining and naming themes: On-going analysis to refine the specifics of each theme, and the overall story the analysis tells, generating clear definitions and names of

each theme. (6) Producing the report: The final opportunity for analysis is producing the report selection of vivid compelling abstracts examples, final analysis of selected extracts, relating back of the analysis to the research question and literature, producing a scholarly report of the analysis.

In doing this, the procedure outlined by Braun and Clarke (2006) was not followed. This was because the researcher used a semi structured interview guide and had predefined main and sub-themes. However, the researcher was able to identify four of the sub-themes that were not predefined. The section here describes how it was done. The sub-themes were identified as 'motor vehicle movement and use of traffic", "obstacles" 'Sensitisation on the use of the white cane' and "Ensuring basic school inclusive education"

(1) Familiarisation with the data

The audio recordings of the interviews were listened to several times for familiarisation purposes. Each respondent was given a letter of the alphabet as a code for easy referencing and a numeric code were given to the groups. The code was assigned based on the order in which the respondents were interviewed (A-R). The recording of each interview was typed verbatim. The aim was to preserve originality and ensure that no information was misinterpreted or lost.

(2) Generating initial codes

Coding is part of analysing qualitative data and helps the researcher to think critically about the meaning of the data. Coding, according to Taylor and Gibbs (2010), is the process of examining the data for themes, ideas and categories and marking similar passages of text with a code label so that it can easily be retrieved at a later stage for further comparison and analysis. This

process was guided by three general topic challenges involved in using O&M techniques and suggestions for effective O&M.

(3) Searching for themes

According Braun and Clarke (2006), searching for themes involves sorting the different codes into potential themes, and collating all the relevant coded extracts within the identified theme. Essentially, you are starting to analyse your codes and consider how different codes may combine to form an overarching theme. This stage involves thinking about the relationship between codes, themes, sub-themes, and re-arranging and organising the coded extracts to be meaningful.

(4) Reviewing sub-themes

The model proposed by Braun and Clarke (2006) was adapted to help review the sub-themes. The researcher evaluated and tried to refine the sub-themes instead, since the main themes were predefined. The researcher crosscheck the data and ensured that he had captured the relevant sub-themes, their relevant verbatim examples and codes, and that they were coherent and meaningful and they all had a story to tell.

(5) Defining and naming sub-themes

According to Braun and Clarke (2006), this stage was necessary in order to define and further refine the themes one will represent for analysis, and analyse the data within them. Again, this process was adapted to the sub-themes. The researcher further reads the coded data and the illustrative extract of the responses, and organised it into a coherent whole. The researcher ensured that the names given to the subthemes were concise and immediately gave the reader a sense of what the theme is about.

(6) Producing the report

According to Braun and Clarke (2006), writing the report is an integral part of the analytic process. At this stage the researcher has to make sense of the raw data and present it in a way that it will be understood by others. Again, the analysis was presented in a coherent and logical. Also, the write-up must provide sufficient evidence of the themes within the data.

The main themes were selected and included in the final report. This offered the opportunity for the ‘‘selection of vivid, compelling extract examples, final analysis of selected extracts, relating back of the analysis to the research question and literature’’ (Braun & Clarke 2006, p. 87). The selections of verbatim extracts included in the final write-up were chosen from the pool of responses based on their detail, clarity, relevance and vividness.

Chapter Summary

This chapter discussed the methods that were employed in the study. A qualitative research approach using the descriptive qualitative design was used for the study. The profile of the study area was presented, including a discussion of the population, the sampling procedure which included the purposive technique as well as the sampling units. The chapter further presented the data collection procedures and instruments. The main instruments for the data collection were the interview guide and observation guide. The data collection was conducted from 17th March to 23rd March, 2018. Data gathered from the interview after interview information was transcribed. In the thematic analysis, major issues as raised during the interview were put in main themes and analysis of such data was made easier during discussion.

CHAPTER FOUR

RESULTS AND DISCUSSION

Introduction

In the following chapter, an analysis of this qualitative descriptive research study is presented, it sets out to answer the research questions stated in chapter one of the study. The results of the analysis have been done for information on the effectiveness of orientation and mobility (O&M) training programme for pupils with visual impairment in basic schools in Ghana with particular reference to Akropong and Wa School for the Blind in the Eastern and Upper West Regions respectively. Specifically, it focuses on issues such as the use of the white cane, the use of independent travelling technique and the use of sighted guide techniques. It also looked at the concerns about O&M training in the two schools as well as measures that can be adopted to deal with the challenges.

The data analysis has been done based on thematic analysis. The analysis conducted at this level reveals five broad themes, namely: (i) the white cane; (ii) the independent travelling technique (iii) the sighted guide technique (iv) pupils' concerns and (v) measures for effective O&M training. The major themes were chosen from the interview guide which had predefined themes that were closely related to the research questions and data. In all, five major themes and seven sub-themes were identified.

Research Question 1: How effectively are pupils with visual impairment utilising the cane technique?

The first objective of the study aimed at determining how effectively pupils with visual impairment utilise the white cane. In order to assess how effective, the white cane is used, pupils were asked to describe how they use it. A semi- structured interview guide using the white cane was applied to all pupils and responses of pupils were compared with what is recommended and described in literature.

The White Cane

The pupils reported the diagonal position swing of the white cane, wrist action and the steps. They also mentioned the position of the forefinger. In assessing the effective use of the white cane, the following illustrative emanated from the data gathered:

> *"I use my white cane by holding the handle with my index finger, and then as I move my right leg the white can go left and when I move my left leg the white cane goes right"*
>
> (Respondent C, see figure 2).

Figure 2: Demonstration of the white cane technique by respondent C.

When holding the white 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 (Jacobson, 2008). Respondent C was able to perform the wrist and step action appropriately. He also bent the elbow slightly, and stretched the forefinger out in the most appropriate way. Respondent C from Akropong School for the Blind was the best performer of the technique in both schools. However, it was observed that he firmly griped the cane contrary to what is described in literature.

Another pupil also had this to say about how he uses the technique:

> "*As my brother just said you hold it in such a way that you let your palm be on top of where the rope is, then you let your forefinger be on the flat part. As you are walking when you are taking the right step, the white cane should go to the left-hand side. And as you are taking your left leg too, it should go to your right side. You are to hold it in a way so that if getting to a pit or gutter you will be able to know"* (Respondent B, see figure 3).

Figure 3: Demonstration of the white cane technique by respondent B.

Figure 4 indicates that respondent B was unable to perform the wrist and step action appropriately. Also, it was observed that the respondents held the cane below waist level, and the positions of the forefinger were all contrary to what literature posits as standard.

A male respondent also had this to say:

> *"I always make sure I hold the white cane where the rope is located and place my forefinger on the flat part. As I am walking when I move my left leg first, I make sure that the white cane moved to the left side and when I move the right leg, I make sure that the white cane is move to the right." (See figure 4).*

Figure 4: Demonstration of the white cane technique by respondent F.

As the cane touches the ground on the left, the right heel lands and as the cane touches the ground on the right, the left heel lands (Penrod, 2012). Respondent F was unable to perform the wrist and step action appropriately.

The forefinger is not properly placed and the grip on the handle of the white cane seemed very rigid.

Another respondent also said:

> *"I hold the handle with my palm and attach my forefinger to the middle part of the cane and then I swing from left to right"* (Respondent H, See figure 5).

Figure 5: Demonstration of the white cane technique (Respondent H)

The respondent was able to show the left step action alone but was unable to position the forefinger and the white cane appropriately. As stated earlier, 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 (Jacobson, 2008). Generally, as observed from the above statements of the respondents, it is indicative that most of the respondents were only able to fairly describe the wrist action and the step action. Other aspects of the cane technique such as the position of the cane, the position of the forefinger, arch height and arc width were not mentioned or not appropriately described. These findings

revealed that pupils of the schools for the blind were probably not using the white cane effectively. The descriptions given by the respondents were found not to be consistent with the standard descriptions given by Penrod (2012), and Jacobson (2008).

Challenges Involved in Using the White Cane

On challenges pupils encountered while using the white cane as a means of orienting and mobilising themselves in the environment, it was revealed that the challenges mostly encountered by white cane users had to do with traffic. This was mostly mentioned by all respondents from the two Schools for the Blind.

Motor Vehicle movement and Use of Traffic

On challenges pupils encountered while using the white cane as means of orienting and mobilising themselves in the environment, it was revealed that the challenges mostly encountered by white cane users had to do with motor vehicular movement and use of traffic. This was mostly mentioned by all respondents. A respondent had this to say:

For example, a male respondent said:

> *"I will just go straight to the point, especially, the rural areas like the cities people are not educated on the white cane. Drivers like John Mahama gamboo riders,* (the motor passenger tricycle riders) *do not respect the white cane; excuse me to add that I was nearly knocked down by a car, John Mahama gamboo driver (motor passenger tricycle rider). Later on, the man told me he was sorry for the crash. In fact, we face a lot of challenges…"* (Respondent F).

Other respondents remarked:

> "*Drivers do make mistake and crash blind person", (Respondent I).*
>
> *"Drivers do not stop to traffic for blind person to cross" (Respondent J).*

Literature has established the fact that environmental concepts such as traffic do not come to pupils who are visually impaired as easy as it comes to the sighted pupil. Traffic concepts are vital to safely utilise the surroundings (Aslantatekin, 2017). When persons with visual impairment move around in the environment, they may encounter risky situations, such as crossing the road where the possibility of death or injury is very high. Street crossing is easily learned by sighted pupils, but not pupils who are visually impaired (Geruschat, Hassan, Turano, Quigley & Congdon, 2006).

Obstacles

The issue of environmental unfriendliness ran across the responses given by the respondents. This is exemplified in the following:

> "*Most at times when you are walking and you suspect there is an object or obstacle how to swing the white cane in order to find the position of the obstacle before you move sometimes becomes a problem"* (Respondent A. See figure 6).

Figure 6: Image shows open gutter at Akropong School for the Blind.

Figure 7: Image shows open gutter at Wa School for the Blind.

It was realised that the major challenge faced by pupils of Akropong and Wa Schools for the Blind was the nature of the environment which made it difficult for the pupils to move freely in the environments. The pupils were unable to use the white cane to identify obstacles to manoeuvre. This was due to the fact that there were numerous potholes and uncovered gutters (obstacles) which hampered movement. Ocloo (2011) observed that the layouts of our school environments for the blind do not facilitate easy mobility of the pupils.

Sensitisation on White Cane

As a means to overcoming the environmental challenges, participants drew attention to the importance of educating the public on the importance of the white cane (what it means if an individual is seen with a white metallic cane with a red tip).

The need to educate the general public on the white cane is exemplified in this remark from respondent F:

"*There is the need to educate the general public on the importance (significance) of the white cane"*

This was confirmed by respondent J who said:

"The traffic light people should be made aware that if they come across an individual with a white cane, it means that he or she is a blind person, and that the cane is his or her eyes"

(Respondent E)

By implication it appears some Ghanaians especially drivers do not know what the white cane stands for. They may be unaware that an individual holding the white cane deserves to be treated differently from all sighted people because they cannot see. This means the public should be educated about the significance of the white cane.

Research Question 2: How effectively do pupils with visual impairment employ the Independent travelling technique?

The main purpose of the question was to ascertain how effectively independent the pupils who are visually impaired were in travelling. Generally, the respondents were found to mostly rely on the sighted to guide them in accessing their environment. The pupils were required to describe how they use the independent travelling technique in their schools.

Independent Travelling Technique

In assessing how pupils effectively move about independently, they were asked to describe the upper body and lower body protective skills, many rightly walked, turning their palm away from their face, but extended their arms close to their head and could not tell the angle of the elbow. Counting steps and stretching arms forward were the most significant skills mentioned

by all respondents from Wa school for the Blind when describing the independent travelling technique.

A male respondent described the technique in the following words:

"How I do it is that I raise my most active hand, which is the right hand, I raise it to forehead level and make sure the palm is not facing me and at an angle of about 90^0 In that order and with the lower body protection too, the hand is placed in a diagonal direction, but this time around my palm is directly opposite to my body and in some distance away from my body" (Respondent B, see

figure 8).

Figure 8: Demonstration of the independent travelling technique (Respondents B and C)

It was confirmed by another respondent that:

"For the upper body protection technique I used the right when I raise the right hand to angle of 90^0" (Respondent C, see figure 8).

Another responded had this to say:

"*I use my left with my palm facing me and I use to protect me against pillars" (*Respondent E)

The upper body protection technique involves positioning one arm horizontally across the body, with the arm held at shoulder height with the elbow bent at an angle of approximately 120 degrees. The palm of the hand faces outwards with the fingers cupped and slightly relaxed, providing protection from chest and head high obstacles, and is also used in conjunction with the white cane if a known overhanging obstacle is in the path of travel. (Deverell et al., 2009).

Many of the respondents were able to describe the lower body protection skill very well, but had difficulty with the upper hand protective skills. It was revealed that the majority of them were able to position the palm appropriately, but seem to have difficulty in raising the arm appropriately. It appears the respondents were not able to use the independent travelling technique effectively. The respondents only mentioned rightly the direction of the palm. However, they stated wrongly the angle of the elbow bend which is supposed to be an angle of about 120°, not 90° and arm should be raised to shoulder level not forehead level (Deverell et al, 2009). When they were instructed to walk, many walked moving their arms close to the head.

Summary of responses has been presented in the words of a female respondent:

> *"When I am walking alone, I place my hands by my side and count my footsteps. I take note of the number of footsteps required to reach every place that I go"* (Respondent I. See figure 9).

Figure 9: Demonstration of the independent travelling technique (Respondent G)

Figure 10: Demonstration of the independent travelling technique. (Respondent I)

A male respondent also confirmed that;

"When I am not using the white cane like my sister rightly said, I do count my footsteps" (Respondent G. See figure 10)

In the images in figure 9 and 10, the participants were found to be walking freely like sighted persons without using any of the lower and upper body protection techniques. It seemed to be that the respondents probably were not using the technique in the way that they were expected to use it. The demonstrations and descriptions given by the pupils on the independent travelling technique were found to be inconsistent with the standard description given by Deverell et al., (2009).

An investigation into the challenges to the use of the independent travelling technique revealed that the major challenge faced by pupils when they use the independent travelling technique was environmental challenges like falling into gutters, and traffic. It is clear that almost all gutters in Ghana

are not covered and yet again, drivers do not obey the zebra crossing rules which make it very difficult for the visually impaired to access some parts of their own environment.

For the most part, the issue of environmental challenges was mentioned by all the pupils. It was also mentioned by most respondents from the schools that they faced the challenge of feeling pains in the arms due to holding them up for a relatively long time. The issue of physical pain is also present after the individuals fall into gutters or bump into obstacles in the environment and sustain cuts and bruises on parts of their body. The independent travelling technique may leave some of these visually impaired pupils to fall into gutters:

Some respondents had this to say:

"*Some gutters may be in front of you, even though you are using the independent travelling technique, you can still fall in*" (Respondent H).

"When using that technique and walking to a far place you feel pain in your hands" (Respondent A).

Another respondent said:

''Because you are using the independent travelling technique you can even fall in a gutter if care is not taken' (Respondent M).

A respondent suggested that:

The suggestion given on how the independent travelling technique can be improved for the pupils who are visually impaired centred on modifying the technique:

> "*I suggest that instead of using the hands like we did describe we can rather be making some noise or sound so*

"that if there is a person, he will first hear the sound and then position him or herself for you to go" (Respondent B).

Another respondent suggested that:

"'Because you are using the independent travelling technique you can even fall and get injured in a gutter if care is not taken" (Respondent G).

"In another way you should be wearing a cup like a helmet so that you will not be colliding with people in public" (Respondent D).

Research Question 3: How effectively do pupils with visual impairment utilise the sighted guide technique?

The Sighted Guide Technique

Pupils were required to describe how they use the sighted guide technique in their environment. The most common issue mentioned by all the respondents was the fact that they allowed the sighted person to lead the way. Most respondents also rightly mentioned holding the elbow and the need for communication (verbal and touch) between the blind and the sighted. However, the majority of them could not tell the distance between the sighted guide and the blind, and how the fingers are positioned. A good number of the respondents also mentioned that they walked with the guide side by side holding hands.

A respondent had this to say:

"The sighted guide should always be in front of you and then you will hold his or her elbow, you use your left hand to hold

his right elbow and then he moves before you go so when the sighted guide move the right leg you have to move the left and when he moves left you move right and there should be communication between the two of you and when you are moving to a narrow place the sighted moves his hand to the back for you to know that you are getting to a place like that."

Figure 11: Demonstration of the sighted guide technique (Respondent L)

The premise of the sighted guide technique is that the individual with visual impairment holds the guide's arm slightly above the elbow and allows the guide to walk a step ahead (Cade, 2012). The pupil who is blind (behind), was able to appropriately hold the sighted (in front), however the distance between them is closed contrary to what is recommended by Cade (2012). Descriptions of the sighted guide technique as given by other respondents are:

"The sighted guide moving in the narrow way has to tell you so that you hold him well in order not fall off" (Respondent B).

"You have to be at the back of the guide in a narrow way so that you will not get yourself hurt or wounded. Communication is very vital" (Respondent C. See figure 11).

Figure 12: Demonstration of the sighted guide technique (Respondent C)

The visually impaired was able to demonstrate the correct distance between him and the guide but appeared not to have a proper grip of the sighted elbow.

A female respondent had this to say:

*"If the person is a female, I use my hand to cross her wrist and the person too will use her hand to cross my wrist, we cross each other as if we are matching. If she says this is a door we are entering I use my hand to measure to know whether I am supposed to bend or equal or just move freely" (*Respondent L. See figure 12).

Figure 13: Demonstrating the sighted guide technique (Respondent L)

Clearly, the position of the guide is inappropriate; the grip should not be on the hand but slightly above the elbow. The pupil who is blind (left) was supposed to be one step behind the guide, but in this case both of them walked side by side.

Another respondent also said:

> *"Mostly, I always want the sighted person to hold my shoulder, if the person is standing in front of me, I will hold the person so that we will all be walking on the same level. When you are walking and they are pulling you, you are like a goat. I just want us to be walking at the same level and pace (*Respondent F).

Comparing the descriptions given by respondents with recommended description from literature, the shortcomings were noticed. Few were able to give a fair description of the technique. Few respondents from the Akropong

School for the Blind were able to give what the researcher can only call a fair description of how they used the sighted guide technique. Generally, it was revealed that descriptions given on the sighted guide technique were inconsistent with the descriptions given by Cade (2012).

By implication, it appears that pupils of Wa School for the Blind had not received any formal training on how to use the sighted guide technique for moving about in their environment. Generally, from the statements above, it is evident that the majority of the pupils seemed not to be using the sighted guide technique effectively.

Challenges involved in using the Sighted Guide Technique

The challenges pupils encounter in using the sighted guide technique was assessed during the interview. It was identified among the majority of the participants that they were mostly rejected by the sighted guide, and also the sighted were mostly unwilling to help them. It was also found out that after being rejected, they find it difficult to move about on their own.

A respondent had this to say about the challenges:

> "*The challenges we face is that sometimes when we walk with the sighted, they see amazing things which get their attention, and as a result sway them off the direction and the purpose of the walk and move towards what they see. In doing this they sometimes leave us on our own and before you realise, you might be knocked down or might have fallen in a gutter"* (Respondent K).

Another respondent reported that the guides sometimes dictate the pace of the walk, moving at a faster pace, and exerting control over the visually impaired.

"The guide may move faster than I want to move and then the guide has all the control, if you try to control him or her, he can just ignore me and leave. Also, the sighted are not always available or not in a position to help me". (Respondent A).

Enforce Inclusive Education and Public education for Sighted Guides

From the responses gathered on suggestions to improve the use of the sighted guide technique, factors such as enforcement of inclusive education policies and educating the public on how to help persons with visual impairment were mentioned. A respondent had the following to say:

"Government should ensure that all basic schools practice inclusive education so that the sighted persons can also help the blind" (Respondent F).

Another respondent also said:

"*I suggest that government should let sighted people join the blind schools so that they will help us to go to any place we want".*

A male respondent remarked:

"*There is the need to educate the guide"*

Another respondent said: *"The public need to be educated"*.

Research Question 4: What factors obstruct the effective orientation and mobility training programme for pupils with visual impairment in the basic schools?

In this research question, factors that obstruct the effective O&M at the schools for the blind were investigated as pupils' concerns in O&M

training. Pupils were required to respond to questions which had to do with the factors that obstruct O&M training in the schools for the blind. The theme "pupils' concerns" was identified.

Pupils concerns

On factors that obstruct the effective O&M training programmes in the schools for the blind, respondents were asked to mention their concerns in regard to O&M training in their schools, It was realised that the majority of the pupils cited factors relating to unfriendly environment, lack or inadequate teachers, inadequate time for O&M training and inadequate white cane.

A respondent had this to say:

> *"We do not have teachers who will teach us the white cane technique. Our environment is not friendly; we do not have white canes".*

Another respondent also confirmed:

> "*We do not have teachers who can teach us the white cane technique, and sighted guide technique. We do not also have white canes that we can use to walk, and then again there are a lot of potholes, if care is not taken when walking one may fall"*

On the other hand, issues such as time constraint were mostly mentioned by pupils from the schools for the blind:

The views of the respondents were amplified when a female pupil explained that

> *"Most people look at you when you are holding the white cane; others also look down on you"* (Respondent E).

Another respondent' also confirmed that:

"*They don't have much time"* (Respondent D). *"The teachers are only two teaching the whole school*" (Respondent C).

Factors that obstruct the effective O&M programmes in the basic school had to do with, poor environmental conditions. Respondents from the Akropong School for the Blind gave other very interesting responses including stigma. It was however found out that even though there was no formal programme in place for pupils at Wa School for the Blind. Pupils relied on the sighted guide in moving about in their environment.

Research Question 5: What measures can be adopted to improve orientation and mobility training for pupils with visual impairment in the basic schools?

As a means to overcoming the factors that obstruct the effective O&M training, the respondents were asked to suggest measures that can be adopted to improve O&M training in their schools.

Suggestions for effective O&M training

Concerning measures that can be adopted to improve O&M training for pupils in the basic schools, issues such as ensuring that inclusive education is practiced in all basic schools, train teachers on the O&M techniques, and educate the sighted to be able to use the O&M techniques appropriately, provide white canes for pupils who are visually impaired, allocate more time for O&M training for pupils with visual impairment, and finally it was stated that the pupils with visual impairment should be encouraged to use the white cane. Pupils from both schools gave relatively different suggestions as to what should be done to improve O&M training for

pupils with visual impairment, as a result, the researcher sought to paint the scenario on each campus by presenting the suggestions received from pupils from their respective schools.

The issues mentioned by pupils from Wa School for the Blind mostly dwelt on inclusive education, training teachers, and providing white canes for pupils to use. The respondents remarked:

> *"Government should try and bring inclusive education and get us teachers who will teach us how to move"* (Respondent B).
>
> *Inclusive education should be introduced to the basic school level for us to be with the sighted…*" (Respondent L).

It was also mentioned that the teachers are not well trained in the teaching the various O&M techniques; therefore, teachers should be given the platform to equip themselves with the skills.

One respondent said:

> "*Because some teachers are not well trained in orientation and mobility, they should open forum to train them"* (Respondent G).

Another respondent mentioned the fact that there is the need for the pupils to be provided with white canes and yet mentioned the irony of the sighted helping them.

A respondent remarked:

> *"Government should provide us with more white canes… So that the sighted people will help us"* (Respondent J).

On the other hand, in the Akropong School for the Blind, issues that emerged from the analysis of the data had to do with the extension of time for training pupils on O&M, provision of white canes, sighted education on how to guide the visually impaired, encouragement for the pupils who are visually impaired to use the white cane, and the provision of technological gadgets to aid in directing the pupils with visual impairment when moving. The issues mentioned by the respondents from the Akropong School for the Blind have been summarised in the following statements:

"*The time should be extended"* (Respondent A).

Another participant said that*: "the sighted should be educated on how to walk with the visually impaired"* (Respondent C). Another response had to do with encouraging pupils who are visually impaired to use the white cane: *"visually impaired pupils should be encouraged to use the white cane"* (Respondent D).

Generally, it is revealed from the above statements that factors such as, allocating more time and teachers for O&M training, provision of enough white canes for pupils, ensuring inclusive education in all basic schools and providing specialist teachers.

Discussion of Results

Results from the study shows that the majority of the pupils who were involved in the study were not utilising the white cane technique effectively. The pupils' skills in using white cane were found to be relatively low. To use the white cane technique, the user is required to adhere to the proper skills for gripping the cane, tapping the right way from left to right, in step rhythm for foot and cane coordination, among others (Rosen, 2010). Penrod (2012)

reported that, in general, professionals are in agreement that there are seven distinct but interrelated components required for the long cane technique (white cane). Based on the key texts by Jacobson (2008) and Penrod (2012), these seven elements are: Positioning of the cane, the index finger positioning, the wrist action, arc height, arc width, rhythm and steps. Respondents were interviewed on the based on these standard criteria.

The respondents were able to give a fair description of the wrist action (moving the cane from left to right) and the steps, but not the position of the cane, and the index finger. However, the respondents were unable to mention the arc height, arch width, and rhythm. This may indicate that pupils in the schools for the blind were unable to use the skills effectively. As such, the argument is made that the pupils in the schools for the blind are unable to effectively use the white cane for O&M purposes. It suffices to say that the technique is complex and requires a lot of hours of practice to be perfect (Jacobson, 2008). A pupil who is totally blind requires between 150 and 200 hours of training. These estimates suggest that effective use of O&M technique requires a great deal of effort.

The second research question of the study sought to investigate how effectively pupils with visual impairment employ the independent travelling technique. The study results indicate that the majority of the pupils had difficulties in employing the independent travelling technique. This is an indication that the pupils in the basic schools probably are unable to effectively use the independent travelling technique. The problem of not using an independent travelling technique effectively could be linked to the nature of the environment the pupils find themselves in, their incompetence in using an

independent travelling technique and lack of experience regarding the use of the technique. The study also shows that challenges with the independent travelling technique relate to environmental threats which lead to physical pain. The physical pain may not necessarily be as a result of only bumping, crushing, or falling into gutters, but also, has to do with the fact that pupils have to raise their hands up to perform the upper body protection and lower body protection techniques.

The results of the study also revealed that the sighted guide is the most O&M technique employed by the pupils. It was, however, found out that the effectiveness seemed to be poor. The pupils could not give an appropriate description of the technique. The reason given by the pupils in Wa School for the Blind's on the usage of the sighted guide technique more often could be attributed to the fact that the school had no teachers to teach the pupils on the use the sighted guide technique. On the part of the pupils of Akropong School for the Blind, the cause of the pupils' use of the sighted guide technique could also be linked to inadequate teaching and learning time for inadequate O&M, inadequate staff to teach the techniques properly, and also experience, since the techniques require a lot of hours of practice before one can be good at it. The study also found out that upon using the sighted guide technique, pupils faced challenges getting the sighted to guide them. Sometimes when they get the sighted to guide them, they neglect them in the middle of the road. They leave them to fend for themselves in traffic and navigate through the disabling environment which is made up of lots of potholes and uncovered gutters.

The five (5) factors identified to militate against the effective O&M programme were lack of teachers (or inadequate), unfriendly environment

(potholes, uncovered gutters, and poor layouts), inadequate white canes, stigmatisation, and inadequate time.

Travellers who are visually impaired depend on well-defined paths and memorable landmarks to find their way; poorly defined environment may be difficult to orient. In the same way, because people with visual impairment depend on their cognitive maps, environments that are difficult to present mentally are also hard to orient in. A simple building plan, such as a square, is likely to be understood and is generally simple to form a mental picture. A complex building with many turns or curves may be very difficult to orient in. Ocloo (2011), observed that the layouts of our school environments for the visually impaired do not facilitate easy mobility of the pupils. It is not uncommon to see pupils falling into gutters bruising the sheens of their legs. This actually impinges on their confidence and desire to engage in independent travel or indulge in mobility training lessons. Scott (2009), observed that one of the major difficulties with O&M training is the worldwide shortage of specialised personnel to provide training and to advocate O&M training.

Orientation and mobility is an area that requires the services of specially trained professionals other than the qualified teacher for students with visual impairment. The teacher for students who are visually impaired is not necessarily qualified to teach such advanced skills as the white cane, and this skill needs to be taught in conjunction with, not separate from, other O&M techniques. Ravenscroft (2012) stressed that it is not enough to have instructors who are trained to work with adults who suddenly find themselves working with children. This smacks of viewing the child as a little adult.

Measures to be considered to improve O&M training as found by this study include removing all barriers to introduce inclusive education in all basic schools, training and providing teachers (specialists) to teach pupils who are visually impaired. O&M techniques, provision of white canes, extension of O&M training time, and encouraging the child who is visually impaired to use the white cane. The result of the study confirms findings by Adu (2015) who recommended that the school must buy enough white canes to advance pupils O&M skills and findings of Nasimiyu (2011) who recommended that teachers should treat O&M training like other academic subjects and that pupils should be encouraged and given time to practice O&M skills.

Giving sufficient time is an essential factor for a successful training programme. Competence and confidence in the independent movement with the white cane are specifically identified with what is described as road time. The pupils need to rehearse and practice more. To this end, Small and Marin (2007), suggested that between 80 and 400 hours of training is needed for a basic understanding of O&M to be achieved. The availability of qualified O&M instructors also makes an effective programme. Although O&M specialists are hard to come by, through collaboration and with some creative thinking, the staff and family can find other means of providing this service. Then again, in-service training should be provided about the roles of the O&M teacher and the goals of O&M programmes.

CHAPTER FIVE

SUMMARY, CONCLUSIONS, AND RECOMMENDATIONS

Introduction

This chapter presents the summary of the study, conclusions, and recommendations.

Summary

The purpose of this study was to assess the effectiveness of O&M programme for pupils with visual impairment in the basic schools in Ghana with particular reference to the schools for the blind at Akropong and Wa. The study was guided by five research questions which include: to determine how effectively pupils with visual impairment use the white cane in the basic school, to determine how effectively do pupils with visual impairment employ the use of the independent travelling technique in the basic schools, to ascertain how effective pupils employ the use of the sighted guide technique in the basic school, to ascertain factors that obstruct the effectively O&M training programme in the schools, the last research question had to do with identifying measures that can be taken to improve O&M for pupils with visual impairment in the basic schools.

Literature reviewed on the social model of disability, the concept of O&M, the concept of visual impairment, impact of visual impairment on learning and movement, cognitive skills, social and emotional skills, and motor skills. Literature was also reviewed on daily living skills, career and vocational skills, O&M services, benefits of O&M skills to persons with

visual impairment, O&M techniques, and hindrances to effective O&M training programme.

This study adopted a qualitative approach using the descriptive qualitative design to assess the effectiveness of the O&M training programme in the basic schools in Ghana. The study was mainly conducted in Akropong and Wa Schools for the Blind. The target population for the study consisted of all final year pupils who had varying degrees of visual impairment in the schools for the Blind. The study employed the purposive sampling technique to select participants for the study. Data for the study was collected by interviewing and observing respective participants in their schools and thematic analysis was conducted to analyse the data collected from the survey.

Summary of Key Findings

The key findings of the study are:

Research question one sought to determine how effectively pupils with visual impairment use the white cane. The study showed that pupils with visual impairment were unable to describe appropriately the cane technique, showing that the pupils did not have the required skills to use the technique effectively. Therefore, pupils in the schools for the blind are probably unable to use the white cane technique.

Research question two aimed at determining how effectively pupils with visual impairment employ the use of the independent travelling technique. The findings of the study showed that the pupils had difficulties in employing the independent travelling technique. This is an indication that the pupils in the schools for the blind are probably unable to effectively employ the independent travelling technique.

Research question three sought to ascertain how effectively pupils utilise the sighted guide technique. The results of the study indicated that the sighted guide technique is the most used technique for O&M. Although it is the most used technique, the effectiveness of the use of the technique was found to be relatively poor. The majority of the pupils were found to be holding the shoulder of the guide, walking side by side, and holding hands tightly instead of holding the guide's arm at the elbow level or little above the elbow and keeping a distance of one step behind the guide.

Research question four had to do with ascertaining factors that obstruct the effective O&M programme in the basic schools. It was evident that lack of teachers or inadequate teachers, unfriendly environment, inadequate white canes, stigmatisation, and inadequate time for practice were the factors that affect effective O&M training programmes in the schools for the blind.

Finally, the results of the study showed that measures that can be adopted to improve O&M training for pupils in the basic schools include ensuring that all barriers are removed to allow the inclusion pupils with visual impairment in all regular basic schools. There should be training of teachers (specialists) to teach pupils with visual impairment O&M techniques, provision of white canes, extension of O&M training time and encouraging pupils who are visually impaired to use the white cane.

Conclusions

Based on the findings, it may be concluded that the O&M training programmes in the basic schools are not as effective as they are supposed to be and as a result, pupils of the two Schools for the Blind in Ghana are unable to use the white cane effectively, the independent travelling technique and the

sighted guide technique. The major challenges to effective O&M training in schools for the blind include lack of enough teachers or specialists to train the pupils, lack of white canes, unfriendly environment, stigmatisation and limited time for O&M training. By implication O&M training programmes in Ghanaian basic schools are in a stage where a lot of revamping is required. Processes have to be changed, personnel have to be trained and equipment has to be provided in the numbers that they are required.

Recommendations

Based on the findings of this study, the following general recommendations have been made, which could be useful in changing the destiny of O&M in Ghana.

1. Teachers should be trained in the area of O&M to take on the responsibility of teaching pupils who are visually impaired how to use the O&M techniques. In training personnel to teach O&M, the Special Education Division of the Ghana Education Service through the National Teaching Council should also consider training people to become a specialist who can teach the techniques and help the pupils develop the confidence to use the techniques.
2. The Ministry of Education, through the central government, should ensure that the environmental conditions in the schools for the blind are improved to enable easy orientation and mobility of pupils with visual impairment in their environment.
3. The Ghana Education Service, through the Ministry of Education should ensure curriculum in the schools for the blind is restructured in

a way that will afford pupils the opportunity to have more time to learn and practice the O&M techniques.

4. The government of Ghana and the Ministry of Education should put measures in place to procure white canes for the pupils in schools for blind and encourage them to use the canes.
5. Government should educate the public on the need to refrain from the use of abusive- stigmatising words against pupils with visual impairment.

Suggestions for Further Research

The study assessed effectiveness of the O&M training programme for pupils with visual impairment in basic schools in Ghana. It employed the qualitative method of inquiry in collecting and analysing data. It is therefore recommended that future research efforts should concentrate on:

1. Evaluating the competency levels of O&M trainers' skills.
2. Employing the same topic, but using the mixed method approach.

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APPENDICES

APPENDIX A

UNIVERSITY OF CAPE COAST

FACULTY OF EDUCATIONAL STUDIES

DEPARTMENT OF EDUCATION AND PSYCHOLOGY

MPHIL (SPECIAL EDUCATION)

INTERVIEW GUIDE FOR PUPILS

Dear Pupil,

The aim of this interview is to assess the effectiveness of orientation and mobility training programme for pupils with visual impairment in Basic Schools in Ghana with particular reference to pupils in the Schools for the Blind at Wa and Akropong in the Upper West and Eastern Region, respectively. The information you supply will purposely be used for this research only and will be treated with strict confidentiality.

Thank you

Isaac Attia

1 School:……

2 Class:……

3 Category of Visual Impairment:……..

4 Duration of Interview:……..

USE OF THE WHITE CANE

5. Do you use the white cane?

6. Why do you use the white cane?

7. How often do you use the white cane?

8. How do you use the white cane?

9. What challenges do you face in using the white cane?

10. What suggestions do you make to improve the use of the white cane?

USE OF THE INDEPENENT TRAVELLING TECHNIQUE

11. Do you use the independent travelling technique?

12. Why do you use the independent travelling technique?

13. How often do you use the independent travelling technique?

14. How do you use the independent travelling technique?

15. What challenges do you face in using the independent travelling technique?

16. What suggestions do you make to improve the use of the independent travelling technique?

USE OF SIGHTED GUIDE TECHNIQUE

17. Do you use the sighted guide technique?

18. Why do you use the sighted guide technique?

19. How often do you use the sighted guide technique?

20. How do you use the sighted guide technique?

21. What challenges do you face in using the sighted guide technique?

22. What suggestions do you make to improve the use of the sighted guide technique?

CONCERNS IN ORIENTATION AND MOBILITY TRAINING

23 What are your concerns in orientation and mobility training in your school?

SUGGESTIONS TO IMPROVETRAINING ORIENTATION AND MOBILITY

24. What suggestions do you make of how orientation and mobility training in your school can be improved?

DURATION OF INTERVIEW .....

APPENDIX B

OBSERVATION GUIDE

1. The cane technique
    a. holding the cane
    b. steps
2 The independent travelling technique
    a. Upper body protective technique
    b. Lower body protective technique
3 The sighted guide technique
    a. General position

APPENDIX C

ETHICAL CLEARANCE

UNIVERSITY OF CAPE COAST
COLLEGE OF EDUCATION STUDIES
ETHICAL REVIEW BOARD

UNIVERSITY POST OFFICE
CAPE COAST, GHANA

Our Ref: ~~CES-ERB~~/ucc-edu/V2/18-31

Your Ref: .....

Date: Jan 21, 2018

Chairman, CES-ERB
Prof. J. A. Omotosho
jomotosho@ucc.edu.gh
0243784739

Vice-Chairman, CES-ERB
Prof. K. Edjah
kedjah@ucc.edu.gh
0244742357

Secretary, CES-ERB
Prof. Linda Dzama Forde
lforde@ucc.edu.gh
0244786680

Dear Sir/Madam,

ETHICAL REQUIREMENTS CLEARANCE FOR RESEARCH STUDY

The bearer, Isaac Attia,..., Reg. No. Ed/SPD/16/0006 is an M.Phil. ~~/Ph.D.~~ student in the Department of ...Education... and ...Psychology..... in the College of Education Studies, University of Cape Coast, Cape Coast, Ghana. He / ~~She~~ wishes to undertake a research study on the topic:

Effectiveness of orientation and mobility training programme for pupils with visual impairment in basic schools in Ghana

The Ethical Review Board (ERB) of the College of Education Studies (CES) has assessed his~~/her~~ proposal and confirm that the proposal satisfies the College's ethical requirements for the conduct of the study.

In view of the above, the researcher has been cleared and given approval to commence his~~/her~~ study. The ERB would be grateful if you would give him/~~her~~ the necessary assistance to facilitate the conduct of the said research.

Thank you.
Yours faithfully,

Prof. Linda Dzama Forde
(Secretary, CES-ERB)

APPENDIX D

LETTER OF INTRODUCTORY

UNIVERSITY OF CAPE COAST
COLLEGE OF EDUCATION STUDIES
FACULTY OF EDUCATIONAL FOUNDATIONS
DEPARTMENT OF EDUCATION AND PSYCHOLOGY

Telephone: 233-3321-32440/4 & 32480/3
Direct: 033 20 91697
Fax: 03321-30184
Telex: 2552, UCC, GH.
Telegram & Cables: University, Cape Coast
Email: edufound@ucc.edu.gh

UNIVERSITY POST OFFICE
CAPE COAST, GHANA

Our Ref:

Your Ref:

TO WHOM IT MAY CONCERN

Dear Sir/Madam,

THESIS WORK
LETTER OF INTRODUCTION: MR. ISAAC ATTIA

We introduce to you Mr. Attia, a student from the University of Cape Coast, Department of Education and Psychology. He is pursuing Master of Philosophy degree in Special Education and is currently at the thesis stage.

Mr. Attia is researching on the topic:

"Effectiveness of Orientation and Mobility Training Programme for Pupils with Visual impairment in Basic Schools in Ghana. ".

We would be grateful if he is given all the needed assistance toward this necessary academic exercise. Please, any information provided will be treated as strictly confidential.

Thank you.

Yours faithfully,

Theophilus A. Fiadzomor
Senior Administrative Assistant
For: HEAD

APPENDIX E

GHANA EUDCAITON SERVICE

GHANA EDUCATION SERVICE

In Case Of Reply The
Number And Date Of This
Letter Should Be Quoted.
My Ref Ges/Uwr/Wa.58/Vol.22/

Republic Of Ghana

Municipal Education Office,
P. O. Box 15,
Wa, Upper-West Region.
Tel: 03920-22018

Your Ref.....

Date: 23rd March, 2018.

Dear sir/madam,

RE: LETTER OF INTRODUCTION

The student whose name appears on this letter below is a Masters student from the Department of Education and Psychology, in the University of Cape Coast.

Name of Student

1. Isaac Attia (Mr.)

He requires your assistance to carry out a study on the topic: ***"Effectiveness of Orientation and Mobility Training Programme for Pupils with Visual Impairment in Basic Schools"***

The Management of the Municipal Education Directorate request the cooperation and support of your school to enable him carry out the research work..

Your usual cooperation is highly anticipated.

(ABUBAKAR OSMAN SAGRIPEO)
PUBLIC RELATIONS OFFICER
***FOR:* MUNICIPAL EDUCATION DIRECTOR**
WA

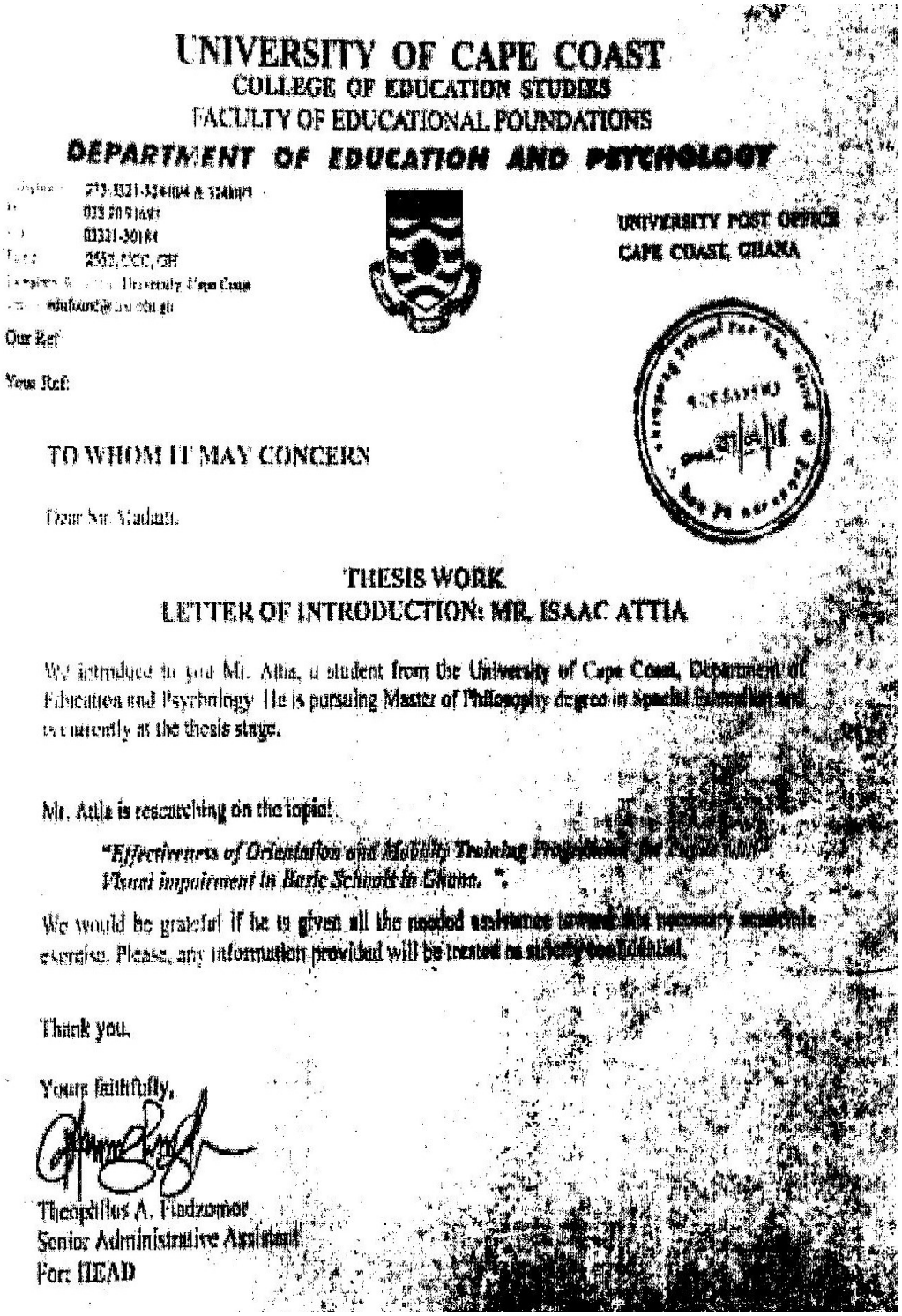
THE HEADMASTER
METHODIST SCHOOL FOR THE BLIND, WA
P.O. BOX 31
WA, UPPER WEST REGION.

Cc: The Regional Manager
Methodist Education Unit
Wa, Upper West Region.

✓ **Isaac Attia (Mr)**
University of Cape Coast

APPENDIX F

EUDCAITON AND PSYCHOLOGY



UNIVERSITY OF CAPE COAST
COLLEGE OF EDUCATION STUDIES
FACULTY OF EDUCATIONAL FOUNDATIONS
DEPARTMENT OF EDUCATION AND PSYCHOLOGY

UNIVERSITY POST OFFICE
CAPE COAST, GHANA

Our Ref

Your Ref:

TO WHOM IT MAY CONCERN

Dear Sir/Madam,

THESIS WORK
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We would be grateful if he is given all the needed assistance towards his necessary academic exercise. Please, any information provided will be treated as strictly confidential.

Thank you.

Yours faithfully,

Theophilus A. Fiadzomor
Senior Administrative Assistant
For: HEAD