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The Evaluation of Visually Impaired Students' Mobility Skills

Banu Altunay Arslantekin [1]

Abstract

This study was conducted to determine the performance level of the visually impaired students' mobility skills. The subjects of the study consisted of visually impaired students who receive education in two schools for the visually impaired in Ankara. The participants were 53 visually impaired and 34 low vision students. Mobility Skills Criterion-Referenced Tests were prepared for data collection. The correct performance percentages of the students' mobility skills were determined by analysing the data obtained from measurement tools and camera recordings. In line with the data obtained in the study, it was concluded that the correct performance percentages of the students' mobility skills in schools for the visually impaired were very low and that they acted against the security, efficiency and appearance principles.

Keywords

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Introduction

One of the major problems caused by visual impairment is the limitation of mobility (Enç, 1987; Kalia, Legge, Roy & Ogale, 2010; Marston & Golledge, 2003; Montarzino et al., 2007). While the motivation for babies to move could be a human or an interesting object, visually impaired babies lack such a visual stimulus. The visually impaired children need encouragement to explore the world around (Martinez, 1998). The protective families who give little opportunity for their visually impaired children to move freely lead them to be dependent on others in the future. The visually impaired experience serious challenges about mobility in the familiar and unfamiliar settings; hence, they have to overcome such problems (Sánchez & Sáenz, 2010). The visually impaired individuals' mobility problems may cause important adverse results in terms of their participation in various activities, their personal independence, their inability to act safely, and their quality of life (Lancioni et al., 2010). The visually impaired people rely on independence in movement mostly to meet their social needs and the responsibilities as self-supporting people. The independent functioning is essential for the integration of the students with the society and to sustain their life easily without being dependent on others.

Independence in movement has two dimensions: orientation and mobility. Orientation skills include "an awareness of space and understanding the situation of the body within it"; mobility skills cover moving safely without facing any danger (McAllister & Gray, 2007). Individual's independent functioning within a society depends on not only their academic and daily life skills but also orientation and mobility skills (Barraga & Erin, 1992; Tuncer & Altunay, 1999). Hence, effective use of orientation and mobility skills enable students to perform mobility to accomplish their daily routines (Rosen & Joffee, 1999). These skills refer to moving towards the target safely, efficiently and independently by using visual, tactile, olfactory and auditory landmarks and clues (Hill & Ponder, 1976; Tuncer &

[1] Gazi University, Faculty of Education, Special Education, Turkey, abanu@gazi.edu.tr

Altunay, 1999). Students with visual disability have to not only consider visual, auditory and tactile clues to move around but also perform the required level of mobility skills based on such clues (Altunay, 2003; Tuncer & Altunay, 1999).

Orientation Skills

Orientation skills play a vital role in visually impaired individuals' mobility in relation to their environment. Orientation and wayfinding are among the critical skills for the visually impaired to move independently (Ross & Kelly, 2009). The visually impaired people need to have knowledge about their surroundings and the orientation skills to reach their targets by determining their location. For example, a visually impaired person can go across the road by visualizing the location of the crosswalk with the help of the sound of the traffic signs, the movement of other people and the vehicles. People who have the ability of seeing get access to their targets by identifying the visual landmarks (houses, bank, people etc.) around themselves in order to reach an address. In order for the visually impaired people to be informed about their environment, to identify and access to the location of their targets, they need to possess orientation skills. Orientation skills are defined as the visually impaired individual's identification process of relation between important objects within the environment and his/her position by using visual, auditory, kinaesthetic and olfactory senses (B.E.E.S, 1987; Hill & Ponder, 1976; Jacobson, 1993). Additionally, orientation skills refers to enabling the visually impaired to find answers to the questions of "Where am I?" "Where do I want to go?" and "How can I reach there?". Orientation skills are grouped as clues, landmarks, numbering systems of indoors and outdoors, measurement and compass directions (Altunay, 2003; Hill & Ponder, 1976). Each of the orientation skills is indicated for different purposes. A person with visual impairment collect information about his/her surrounding by making use of the clues of the setting on the first visit, and then turn to a specific direction. On the following visits, they turn the stable clues into landmarks. Once the numbering system of the indoors or outdoors are mastered the target can be found easily. Measuring helps the visually impaired people to have knowledge about the size of the items, the width of the space etc. For instance, having the ability to identify that the stairs is about three steps late is related with the ability to measure. The direction of the compass help people to find their ways on a vast area. For the visually impaired people, practices to develop the skills and manipulate the orientation skills should be conducted.

Mobility Skills

Mobility skills are those established to provide the visually impaired ways of environment recognition safely (Goodrich & Kinney, 1985). The dimensions such as one's safety, having natural appearance, providing feedback at the utmost level, ease of movement were considered while developing mobility skills (Altunay, 2003; Hill & Ponder, 1976).

Mobility skills are divided as indoor and outdoor mobility. Indoor mobility skills are classified as sighted guide skills (sighted guide technique), self-protection techniques, and cane skills. Sighted guide skills include walking with a guide, passing through narrow passageways with a guide, reversing direction with a guide, ascending/descending stairways with a guide, ascending/descending escalator with a guide, passing through doorways with a guide, reversing direction while walking with a guide, and seating with a guide. Self-protection techniques are using objects as a buffer, walking with upper hand-forearm technique, wall/object trailing (Altunay, 2000; Hill & Ponder, 1976; İleri, 1998). Cane skills include diagonal technique trailing, switching hands while walking with the diagonal technique, passing through doorways with a cane, ascending/descending stairways with a cane, examining objects, ascending and descending escalator, getting on the elevator skills. Outdoor mobility skills are grouped as; sighted guide skills, cane skills and skills necessary for going to residential areas and places to meet the needs (Hill & Ponder, 1976).

Most of the visually impaired students can move around with the help of their teachers or friends. Students establish different posture and walking styles to collect environmental clues and to stay safe (Tuncer & Altunay, 1999). The visually impaired display a posture with head to one side leaning forward, shoulders leaning forward, lower back side in an arc, protrusive belly (Welsh & Blasch, 1980) and flatfeet open outwards with wide base of support. Moreover, walking slowly and short stride length, stepping forward strongly, swaying and slight contact of the heel to the ground, being inactive or moving slightly, moving the arms slightly or extending the arms forward while walking.

Students suffering from sight problems are observed to fail acting in accordance with principles of safety, appearance and efficiency. The principle of safety refers to overcoming the obstacles without harming oneself. The principles of appearance means not being different from the other society members in terms of posture and walking; while, efficiency principle refers to having each move a purpose while travelling around (Gee, Harrell & Rosenberg, 1987). Various posture and walking styles make students seem different that can form an obstacle for the society integration (Tuncer & Altunay, 1999). Mobility skills should be taught to the visually impaired to help move safely, successfully and independently in the familiar and unfamiliar settings (Altunay, 2003; Ambrose & Corn, 1997; Hill & Ponder, 1976; Wall Emerson & Corn, 2006). The visually impaired students should learn the orientation and mobility skills to position themselves in an environment, to plan routes to achieve the special targets and to reach the targets safely (Rosen & Joffee, 1999). Making use of such skills can be possible by integrating them into the instructional activities systematically (Altunay, 2000).

The Curriculum for the Visually Blind includes Physical Education and Mobility course along with its general objectives and topics per grade (M.E.B., 1990). The curriculum is insufficient as a teaching guide due to the lack of clarity in explaining how to make students gain mobility skills and how to assess them. As a consequence, it is observed that schools do not cover systematic instructional activities to teach mobility skills (Altunay, 2000; Tuncer & Altunay, 1999). However, one of the main tasks of educators is to enhance the use of mobility skills of the visually impaired students (Özyürek, 1997). The fluency and generalization activities with various environments, persons and materials will be required to determine the performance level of the students in terms of their orientation and mobility skills. Thus, suitable teaching methods will be employed for systematic instructional activities.

The researches about the orientation and mobility skills in the literature have been examined here following not chronologically, but categorically within the context in terms of coherency. In our country we have only limited number of researches about the orientation and motor skills. There are only two studies about the route training which helps the visually impaired people to reach their targets securely. The first study conducted by Altunay (2000) aimed to assess the effectiveness of 'individualized route instruction material provided with physical prompt and verbal clues'. Before route instruction, students were provided with a training in independent mobility skills that they would use along the route. At the end of the study, "route instruction material" has been found effective as two primary school students gained mobility and orientation skills along predetermined indoor routes. In another study aimed for route instruction, Çakmak (2011) studied the effectiveness of the instruction material developed for the skill of getting on bus and provided with the method of simultaneous prompting to three 8. grade students with visual impairment. It is observed that students gained the ability of getting on bus at the end of the study. The materials used in both studies for route instruction enabled visually impaired students to find their indoor and outdoor targets.

Renshaw and Zimmerman (2008) conducted a study on using a tactile map which is known to be significant for route instruction. In the research, the effects of using a tactile map in outdoor settings on mobility skills of the visually impaired students have been studied. It is determined that these maps reduce the duration of finding the targets. Analyzing models for using tactile maps, Wright, Harris and Sticken conducted an experimental research which emphasized that they affect the independent mobility skills of the visually impaired individuals significantly.

Considering the subject in terms of technological device utilization, it is observed that technological devices aimed at orientation and mobility are not utilized in our country. However, studies on navigation systems and electronic mobility devices have been increasing in the literature with the increasing recent technical developments. There are studies discussing researches on the effectiveness of electronic mobility devices (Roentgen, Gelderblom, Soede & Witte, 2008, 2009). A study was done by Lancioni, Singh, O'Reilly, Sigafoos, Campodonico and Oliva (2008) on the effectiveness of orientation technology for the purpose of increasing mobility levels of individuals with multiple impairments. Navigation using direction instructions produced through digital mapping software and synthetic speaking was researched by Kalia et al. (2010). All studies indicate that navigation systems assist individuals in understanding locations of their destinations or various objects. Electronic navigation system provides the person with information on their route or surroundings (Havik, Kooijman & Steyvers, 2011). People with visual impairment also need to utilize their mobility skills in order to overcome possible obstacles while moving, besides utilizing navigation systems.

In another study by Altunay Arslantekin and Ekinci (2014), it was aimed to define the training received by university students with visual impairments for orientation and mobility skills, and the mobility problems experienced by these students. Students affected by visual impairment were interviewed in the research. Concluded from these interviews were that the students encountered mobility problems in familiar and unknown environments and never learned any orientation and mobility skills throughout their academic career. Interviewed people indicated that they participated in the courses at rehabilitation centers in order to learn mobility skills.

In terms of systematical learning of mobility skills, a study, which compared an adjusted cane with a normal cane with two male and two female students, was conducted by Clark, Sainato and Ward (1994) and it was reported that the adjusted cane was effective. In addition, a pilot study was conducted by Higgerty and Williams (2005) for teaching of mobility skills in a small group. It was defined through group teaching that, it was possible to train more people, utilize time more efficiently, a secure education environment was formed through sensory support among participants and self-esteem was increased. In the study conducted by Çotuk (2015), the effectiveness of teaching of mobility skills to four students with visual impairments by siblings using simultaneous prompts was researched. It was observed that simultaneous prompting method was effective in teaching of mobility skills by normally developed individuals to their siblings, and that students with visual impairments acquired mobility skills. While exhibiting a normal development, the children also encouraged daily life utilization of the mobility skills learned by their siblings.

It is highlighted in all of the studies that students with visual impairment suffered mobility problems. The specialists should evaluate to what extent the visually impaired students possess orientation and mobility skills and instruction should be provided accordingly (Tuncer, 2004). For effective instruction and encouragement of movement, teachers should assess and improve students' skills (Zebehazy, Zimmerman & Fox, 2005). There is no study available in our country about the evaluation of orientation and mobility skills of the visually impaired. Hence, this study aims to determine the performance levels of visually impaired students' mobility skills. The research is limited with the wall trailing, protection techniques, guiding skills, cane skills and being a guide for the ones with low vision for the visually disabled individuals to act safely without encountering any accident. The necessary basis for the Ministry of Education to revise the curriculum and develop mobility skill assessment tools and instruction materials is created as a result of revealing the current performance levels of the visually disabled students regarding their mobility skills.

Method

The research is a descriptive survey study that tries to reveal the existing state. The studies that aim to collect data for determining certain characteristics of a group are called survey studies (Büyüköztürk, Kılıç Çakmak, Akgün, Karadeniz & Demirel, 2012). This study aims to determine the characteristics (performance levels) of the mobility skills of visually impaired students. All stages of the implementation process are performed by the researcher. A survey was conducted by assessing the mobility skills of the visually impaired students. Subjects were identified, the environment was arranged and criterion-referenced tests were developed to perform the study.

Participants and the Setting

The participants were students from the first to fifth grade studying at the primary schools for the visually impaired in Ankara during the 2010-2011 school year. The student list grouped as the blind and low vision was compiled after collecting the health reports and classroom observations. Participants were informed about the objectives of study and volunteer students were included in the study. Table 1 displays the number of students whose mobility skills were evaluated.

Table 1. The Number of Mobility Skills Assessed Students Studying at the Schools for the Visually Impaired in Ankara

	Blind Students		**Low Vision Students (Guide)**	
	Male	**Female**	**Male**	**Female**
Mitat Enç School for the Visually Impaired	8	13	8	8
Göreneller Primary and Vocational School for the Visually Impaired	20	12	14	4
Total	28	25	22	12

The research was conducted in the schools for the visually impaired during the course hours and in the empty corridors (wall edges, open space, stairs). Narrow passageways were created with materials to assess the skill of passing through narrow passageways with a guide, chairs were brought to the research area to practice the skill of seating with a guide. Students' height appropriate canes were used to assess their cane skills.

Mobility Skills Criterion-Referenced Test

Criterion-referenced measurement tools can assess the skills of students, their behaviour and targeted knowledge level to be assessed (Fiscus & Mandell, 1997). They are composed of items, criteria and questions. The steps of analysed skills form the item part of the test. Criteria were set while preparing the measurement tool and questions were formulated. The questions can be prepared in two different ways according to the method used to identify the performance level of students. According to single opportunity method, the question section of the criterion-referenced test aiming to determine the performance level of students includes main instructions and independent column related to the skill. On the other hand, multiple opportunity method covers independent, verbal clues, modelling and physical assistance in the question section (Varol, 1996).

A criterion-referenced test was prepared for the study according to the single opportunity method regarding each mobility skill. The items section included the analysis of mobility skills; criterion was set and main instructions as well as an independent column was created in the questions section. Table 2 demonstrates a measurement tool sample developed for the two of mobility skills.

Table 2. Measurement Tools for Mobility Skills

Instructions:	**Criterion**	**Independent**
"Trail the wall "	**100%**	
1. The student stands along (parallel) the wall (no more than 25 cm) 2. Extends straight forward his/her arm on the wall side (with a 45 degree) 3. Cups her/his fingers 4. Touches the wall softly with the little and ring finger /back of hand (pressing gently) 5. Trails the wall		
"Walk to the Wall by Touch Technique"	**100%**	**Independent**
1. Holds the cane according to touch technique a) Holds the stick in the palm with index finger and thumb straight and on the cane, b) Extends the arm forward, c) Moves the hand to the belly level, d) Turns the hand aside, 2. Moves the cane in an arc a) By keeping the hand on the belly level, moves the cane in an arc to the right (Cane tip should contact the ground 2.5 cm. away from the shoulders, no more than 2.5 cm. above the ground), b) By keeping the hand on the belly level, moves the cane in an arc to the left 3. Walks using the touch technique a) Steps with left foot while moving the cane to the right, b) Steps with right foot while moving the cane to the left.		

The Practice

Performance level of students was identified by single opportunity method to determine whether students have mobility skills and to see how well they perform independently. Instructions were provided as for the performance level of the specific mobility skill, whether this skill was performed independently or not was examined and "+"(correct) was placed under the independent

column on the related step of the criterion-referenced test for the independent steps. On the other hand, "-" (incorrect) was marked under the independent column for the incorrect or dependent steps. Right or wrong student reactions were considered neutrally. The researcher conducted all stages of the research and the third and fourth grade undergraduate students studying at the G.U. Gazi Faculty of Education Special Education Program alternately captured videos.

Interobserver Reliability

To collect the data on interobserver reliability, an instructor from the special education program agreed to participate. The researcher informed the instructor about each step of the test. The test was copied for the instructor and 20% of the video recordings were viewed to fill in the test form independently. Interobserver reliability was measured using the formula of Agreements / Agreements + Disagreements x 100 (Kırcaali-İftar & Tekin, 1997). Accordingly, the value is expected to be 70% or more. Tests by the researcher and instructor were compared and a full consensus was identified; the reliability of research was measured as 100%.

Results

The study assessed the performance level of students' "wall trailing skills, protection techniques, guide skills and cane skills". Table 3 exhibits the performance level of mobility skills.

Table 3. Performance Level of the Visually Impaired Students' Mobility Skills

Wall trailing and protection techniques:	**Percentage (%)**
Trailing a wall	18,80
Walking by upper hand and forearm protection technique	17,34
Walking by lower hand and forearm protection technique	14,15
Guide skills:	
Walking with a guide	8,08
Seating with a guide	0
Transferring sides with a guide	0,36
Reversing direction with a guide	5,65
Ascending stairways with a guide	0
Descending stairways with a guide	0
Passing through narrow passageways with a guide	0
Passing through doorways with a guide	0
Cane skills:	
Diagonal technique-trailing	3,13
Touch technique	1,41
Ascending stairways with a cane	0
Descending stairways with a cane	0
Contacting-Examining objects with a cane	1,99

Results on Trailing and Protection Techniques

When the performance level of students' wall trailing skills is analysed, it is seen that the majority (75.5%) performed one step of this skill. Only 5 students (9.4%) performed two steps of the skill. The number of those who could not perform any steps was 8 (15.1%). The performance average was calculated as 18.8%. Nearly half of the students (47.2%) could not accomplish any steps of upper hand-forearm protection technique. Only 15 students performed one step (28.3%) and 9 performed two steps (17%). The number of students achieving three or four skills at the satisfactory skill level was 4 (7.6%). The performance average regarding this area was 17.3%. Thirty-five students (66%) could not perform lower hand-forearm protection technique. Eleven students (20.8%) executed one step, while those who executed two steps were only 2 students (3.8%). The number of students having performed three steps was 5 (9.4%). Accordingly, the performance average was 14.1%.

Results on Guide Skills

The visually impaired students' performance as for walking with a guide skill shows that 22 students (41.5%) could not perform any steps. Thirty-one students (58.5%) mastered one step of the skill. The performance average was 8.08%. The majority of students (98.1%) could not perform any of the transferring sides with a guide skill. Only one student performed one step. The performance average was calculated 0.36% for this skill. Forty-one students (77.4%) could not accomplish any step of the reversing direction with a guide skill. Twelve students (22.6%) achieved only one step. The performance average for this area was found as 5.65%. The performance level of 53 students concerning "seating with a guide", "ascending stairways with a guide", "descending stairways with a guide", "passing through narrow passageways with a guide, passing through doors with a guide" shows that they could not perform any steps of these skills independently. All in all, it is seen that students could not perform all of the guide skills at once.

Results on Cane Skills

Forty-five students (84.9%) could not accomplish any step of the wall trailing with diagonal technique trailing. Six students (11.3%) performed one step and 2 of them (3.8%) performed two skills. Average performance level of these skills was found as 3.13%. Most of the students (92.5%) could not execute any steps of trailing with touch technique. Two of the students (3.8%) performed one step; while two students (3.8%) achieved two steps. The average performance level was found as 1.41%. Performance of students in "ascending stairways with a cane", "descending stairways with a cane" skills demonstrates that none of these skills were performed independently. Fifty-two students (98.1%) could not perform any steps of contacting-examining objects with a cane skill. Only one student accomplished one step of the skill.

Results on Guiding Skills for Low Vision

Guiding skills performances of the students with low vision display that students could not accomplish any steps of the "descending/ascending stairways as a guide, passing through narrow passageways as a guide, seating skills as a guide, passing through doorways as a guide" skills independently. As for the skill of "being a guide", 14 students out of 34 performed one step independently, 20 students could not perform any of the steps independently. Ten students individually performed one step of "reversing direction as a guide" skill. Twenty-four students could not perform any step of the "reversing direction as a guide" skill. Moreover, it was detected that some of the students with low vision walked with the visually impaired without touching them; some were over-protective and directed the visually impaired by pulling while holding their shoulders or back putting them in potential danger.

Discussion, Conclusion and Suggestions

Indoor mobility skills of the visually impaired students such as the performances of wall trailing, protection techniques, sighted guide skills and cane techniques were evaluated in this research. The findings reveal that most of the students do not retain the wall trailing and protection techniques to travel safely within indoor routes and to protect them from various dangers. Instead of extending their arm with a 45-degree to the wall, they were observed to follow the route by touching their hands or arm on the wall. Additionally, it is seen that protection techniques for outdoors were not used properly. When the students are instructed to "walk with forearm protection technique", many walked by extending their arms forward or by moving their arms too close to their head. The results of the research are similar to the mobility levels of the visually impaired students in the researchers conducted by Altunay (2000) and Çotuk (2015). These researches performed necessary instruction by determining that the visually impaired students do not have the skills to walk by wall trailing with hand and forearm protection technique.

The cane as the basic mobility tool for the visually impaired provides auditory, tactile and kinesthetic feedback (Glanzman & Ducret, 2003; Leong, 1996). Canes can give information about the surface properties (roughness breaks on the surface) (Rodgers & Wall Emerson, 2005). Cane use is one the necessary skills of orientation and mobility instruction for the visually impaired to predict what is ahead along with the obstacles and surface changes (eg. steps or sidewalks) (Sauerburger & Bourquin, 2010). However, this study concluded that the visually impaired students did not have full competence of cane skills. Learning how to use canes at early ages will enable the visually impaired students to effectively use these skills in numerous environments. Lack of cane instruction at early ages could cause vitally important consequences such as body collision, hitting the student from the back while descending, fainting after hitting the head to the window.

Many people who are not visually impaired try to take give their arms to the visually impaired people they encounter and they try to guide them (Altunay Arslantekin, 2013). This causes the visually impaired people to encounter dangerous situations more frequently. The research reveals that the students with low vision and limited visual perception do not have the skills to walk with a guide. Considering that students with low vision at the schools for the visually impaired 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 arm (eg. when the student with low vision puts his arm behind his back, the visually impaired student 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 stairs). The research also evaluated the mobility skills and determined that students do not possess some environmental concepts.

The skills assessed in this study are essential in the lives of visually impaired and help them move safely and effectively. Effectual observation of the orientation and mobility skills should aim to comprehend how failures during movement affect safe and independent movement of the individuals. The results of this study uncovers that students in both schools do not possess the mobility skills and do not act according to the dimensions of mobility skills as; safety, feedback provision, natural appearance, ease of movement.

Incompetence of students in mobility skills could result from schools' focus on gaining academic skills, lack of systematic integration of orientation and mobility to the instructional activities and inadequacy of practice opportunities for the prospective teachers studying at the Program of the Visually Impaired Education. Studies on mobility skills in the schools for the visually impaired that were conducted independent from the routes to be used indoors and outdoors could cause problems in the use of these skills (Altunay, 2000). Instruction during the steps of continuity and generalization facilitates students to use their mobility skills properly and continuously and to generalize them in

different environments. Mobility skills unperformed during these steps and those performed independent from the routes are forgotten in time.

The reasons why the students can not realize their mobility skills completely can be thought as focusing on redounding students with academic skills, not performing systematic instructional activities on mobility skills, and the limited instruction of preservice teacher in the Department of Education for the Visually Impaired that remain at acquisition level. The gym teachers who have not received relevant education try to practice the education of orientation and mobility skills in the schools for the visually impaired. However, the research performed by Zebehazy et al. (2005) determined that the experienced specialists are able to detect the mistakes of the visually impaired individuals' mobility skills. In order to eliminate the problems in the orientation and mobility skill education, the National Professional Standard for Orientation and Mobility Skills Instructors is developed and published on the official gazette (Görme Engelliler Yönelim ve Bağımsız Hareket Eğitmeni (Seviye 5), 2013). The Ministry of Education should employ orientation and mobility skills specialists in schools and inclusion practices for the visually impaired. The Ministry of Education and the specialists should also review the curriculum and develop teaching materials in order to redound students with orientation and mobility skills.

In order to enable the visually impaired to live as independent individuals, studies on orientation and mobility skills should be performed starting from the infancy. With the birth of the baby with visual disability; performing studies that support the development of attention, motor, language and concept skills and orientation and mobility skills shall prevent stereotypical behaviors, posture and walking disabilities and make it easier to notice, analyze and interact with their environment. Family instruction studies should also be performed to enable the student to use his orientation and mobility skills in his daily life. In the following years, the high school and college students' need for orientation and mobility skills is increased. It is important to extend the scope of orientation and mobility skills studies so as to enable the student to participate in social life when in traffic, shopping malls and social activities, and to use public transportation vehicles. The self-confidence of the people who act independently in environments he is used to or not shall be developed after the studies to be performed.

The research is limited with 53 students who have very low or no vision (blind) and 34 students with low vision at first and fifth grade in a school in Ankara for the visually impaired, and with analyzing the indoor mobility skills. Considering the limitation of the study, it is considered appropriate (a) to review the outdoor mobility skills, (b) to review the orientation skills, (c) to expand the study so as to review the students in the inclusion environments and the other schools for the visually impaired, (d) to review the orientation and mobility skills of the preschoolers, (e) and to determine which prerequisite skills and notions they have in terms of the orientation and mobility skills. The results of the research helped introduce the project aimed at developing an orientation and mobility evaluation tool (YÖBDA) which is supported by TÜBİTAK (Scientific and Technological Research Council of Turkey).

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