

AER Orientation and Mobility Division IX Scope of Practice

**Ad Hoc Committee on Scope of Practice:
Justin Kaiser, Jennifer Cmar, Sandra Rosen, Dawn Anderson**

Introduction

Orientation and mobility (O&M) is a set of concepts, skills, and techniques for safe, efficient travel by individuals with visual impairments¹ in all environments and under all conditions (Jacobson, 2013). *Orientation* is the awareness of one's position in space and *mobility* is how one moves through that space (Wiener, Welsh, & Blasch, 2010). Individuals with visual impairments use O&M skills and techniques to travel safely and independently through the environment. O&M instruction focuses on the development of sensory perception and interpretation of visual, auditory, tactual, olfactory, kinesthetic, vestibular, and proprioceptive information. Independent travel often involves the use of orientation and mobility devices and tools (e.g., long canes and dog guides) and orientation technology (e.g., global positioning systems [GPS] and mobile apps).

O&M specialists are professionals who have specialized knowledge and skills related to teaching individuals with visual impairments to travel in their natural environments. O&M specialists introduce travel skills in increasingly complex environments to prepare people to travel as independently as possible in their home, school, workplace, and community. O&M services involve ongoing comprehensive assessments which lead to an individualized curriculum and instruction based on the person's current and future needs, strengths, limitations, and preferences. The practice of O&M is dynamic in response to new technologies, ongoing research, and best practices.

This scope of practice paper includes descriptions of (a) the population served by O&M specialists; (b) importance of O&M for individuals with visual impairments; (c) service delivery models for O&M instruction; (d) roles and responsibilities of O&M specialists; (e) domains of assessment and instruction in which specialists engage with individuals across the entire lifespan, birth through old age; (f) the different environments in which O&M services are provided; and (g) educational and certification requirements for O&M professionals.

¹ In this document, the phrase "individuals with visual impairments" (or "individuals") refers to students, clients, and consumers who are blind or have low vision who may be served by orientation and mobility specialists.

Statement of Purpose

The purpose of this document is to:

1. define the scope of practice in O&M;
2. specify the settings in which O&M services are provided;
3. inform consumers, families, educators, health care providers, community members, policymakers, and other professionals about the roles and responsibilities of O&M specialists;
4. promote collaboration between O&M specialists and other professional service providers; and
5. outline O&M specialists' education, certification, and recertification requirements.

Who O&M Specialists Serve

O&M specialists provide services to the diverse population of individuals with visual impairments, which may include:

- individuals who are totally blind and those who have low vision
- people of all ages, including infants and their families, preschool and school-age children, transition-age youth, working-age adults, and older adults
- people with adventitious or congenital visual impairments, including those who have electronic retinal prostheses
- individuals with disabilities in addition to vision loss, including those who are deaf-blind
- individuals with cerebral visual impairment (CVI)
- individuals from culturally and linguistically diverse backgrounds

O&M specialists adapt instruction to the specific characteristics, needs, and abilities of the individual. Children with visual impairments need to learn basic travel skills and environmental awareness so they can actively explore environments as their travel skills progress to more advanced levels. O&M specialists also work with the families of individuals with visual impairments to answer their questions and support their needs outside of direct instruction provided to the individual. Many individuals who have visual impairments and additional physical, intellectual, or sensory disabilities require O&M instruction. Instructional strategies and O&M techniques may need to be adapted to the specific physical, motor, or cognitive abilities of the individual, and are often best learned within familiar, daily routines.

Why O&M is Important

O&M skills give individuals the freedom to participate in all facets of society. O&M instruction promotes movement, which is vital for concept development, exploration, and environmental

awareness in young children. Beginning at an early age and continuing throughout adulthood, O&M instruction facilitates the development of concepts, skills, and knowledge required for individuals to achieve their present and future employment and life goals. O&M instruction is provided in a multitude of community settings (beyond the classroom, school campus, or rehabilitation center) to truly prepare these individuals for efficient, independent travel. Individuals who are confident in their travel skills are empowered to pursue social, vocational, and recreational endeavors, leading to an improved quality of life. In the United States (U.S.), O&M is designated as a service under federal law for children and adults with visual impairments. O&M is included in the Rehabilitation Act of 1973 and listed as a related service in the Individuals with Disabilities Education Act (IDEA, 2004). IDEA mandates that O&M services be provided in order to prepare children to travel in school, home, and community environments.

O&M is particularly important considering the employment rate of individuals with visual impairments in the U.S. and in other countries (e.g. Australia, New Zealand) is far lower than that of the general population. Although many factors likely contribute to these divergent employment rates, researchers have identified difficulty finding and accessing transportation as a prominent barrier to employment for people with visual impairments (Crudden & McBroom, 1999). Moreover, researchers have documented a link between employment outcomes and O&M, particularly independent community travel (Cmar, 2015; McDonnall, 2011) and self-efficacy in planning and using transportation (Cmar, McDonnall, & Crudden, in press).

Among older adults, O&M instruction is important for addressing personal and environmental factors that contribute to falls. Visual impairment is a risk factor for falling for older adults, leading to increased disability, longer hospital stays, increased rehabilitation time, and a higher risk of dependency and death (World Health Organization, 2007). The fear of falling leads to activity limitations, reduced independence, and decreased societal engagement (World Health Organization). O&M specialists address environmental barriers and teach individuals alternative techniques for navigating various environments to build their confidence.

How O&M Services are Provided

O&M specialists may work for different types of organizations including, preschools, public schools, schools for the blind, private and state rehabilitation centers, community organizations, and the Department of Veterans Affairs; they may also work as independent contractors. They work autonomously and/or as part of a team of professionals. O&M specialists generally provide direct instruction, but they may also provide assessment and consultation services. Infants and their families generally receive O&M services within their home.

Regardless of where they work, O&M specialists primarily instruct one individual at a time. One-on-one instruction is necessary for providing optimal, individualized instruction and monitoring safe travel in diverse environments. O&M specialists use various service delivery models (e.g., center-based, itinerant, and consultation) to provide instruction.

Center-based O&M services are offered at schools for the blind, some government agencies, some private rehabilitation centers, community organizations, and in the U.S., the Department of Veterans Affairs Blind Rehabilitation Centers. Center-based models often involve a residential component, but some offer day programs as well. Instructional settings for center-based services typically include the school and agency facilities, and areas in the surrounding community. Center-based O&M specialists usually provide instruction in environments that are selected for having ideal characteristics for O&M instruction. Individuals who learn O&M in a center-based model must transfer their skills and knowledge to their home environments after finishing their training.

Itinerant O&M specialists provide services to individuals in their home communities. The itinerant service delivery model is used for infants, preschoolers, children, and adults, and is commonly used for children who attend mainstream preschools and schools. Rather than providing instruction in pre-established training areas, itinerant O&M specialists familiarize themselves with areas in and around individuals' communities. Some of the desired environmental characteristics for O&M lessons may not be available near individuals' homes; therefore, completion of some aspects of training may require travel to farther locations.

What O&M Specialists Do

Assessment

O&M specialists conduct initial and ongoing comprehensive assessments of individuals' travel skills and needs. The assessment process includes interviews with individuals, family members, and other people who interact with them; review of medical records; evaluation of travel skills using formal and informal tools; evaluation of auditory perception and other sensory systems; and evaluation of current and future travel needs. When appropriate, O&M specialists may recommend assessments by other professionals (e.g., audiologists, counselors). Assessment results guide subsequent O&M goals and services.

Functional low vision mobility assessment

O&M specialists conduct functional low vision mobility assessments for individuals who have some remaining vision. The purpose of this assessment is to evaluate how an individual uses his or her vision in a variety of travel situations, including familiar and unfamiliar environments, different times of day, and varying lighting conditions. To gain the most comprehensive picture

of one's visual functioning, components of a functional low vision mobility assessment include review of records (e.g., eye reports), interviews with the individual and others (e.g., family members, teachers), and observations of the individual performing specific tasks in natural settings. Areas of assessment include visual field, visual acuity, depth perception, visual efficiency (e.g., scanning), color perception, contrast sensitivity, glare, and light sensitivity, as relevant to functional mobility performance. Assessment results are used to make recommendations and plan individualized instruction.

Environmental assessment

O&M specialists conduct environmental assessments to evaluate areas where people with visual impairments currently travel or may travel in the future. Environmental assessments focus on aspects of an environment that could support or hinder independent travel such as signage, sound, texture, and organization; and safety features and hazards. A key element of this assessment involves observations of an individual performing tasks in the environment; however, O&M specialists may also use checklists, interviews, and questionnaires to gain a more thorough understanding of the individual's functioning. For individuals with low vision, environmental assessments may also include visual attributes such as lighting, glare, color, and contrast. Based on the assessment results, the O&M specialist recommends modifications to the environment (e.g., home, workplace) that could promote safety and independent functioning.

Planning and Instruction

O&M specialists design and adapt the difficulty of the lesson depending on the individual's skill level, complexity of the environment, and amount of feedback provided to the individual. They preview and select training environments based on individuals' immediate and future needs, while considering their cognitive, physical, and psychosocial functioning (Wall Emerson & Corn, 2006). When planning lessons, O&M specialists individualize the structure and pace of instruction and incorporate relevant aspects of different learning theories (e.g., behavior theory, cognitive learning theory, social cognitive theory, and discovery learning theory). O&M specialists establish a rapport with individuals that fosters a positive learning environment. They provide opportunities for independence and self-advocacy throughout O&M instruction so individuals learn to do things for themselves and do not become overly reliant on others.

O&M is a critical component of the Expanded Core Curriculum (ECC), the concepts and skills that require systematic, sequential instruction to account for the information that many children with visual impairments do not learn incidentally through visual observation and experience (Hatlen, 1996). O&M instruction often includes content in the ECC areas of self-determination, social interaction skills, independent living, sensory efficiency, career education, recreation and leisure, compensatory skills, and assistive technology.

Collaboration

Individuals with visual impairments often receive services from multiple professionals in the medical, educational, and rehabilitation fields. These professions often have overlap in their scope of practice, allowing for a common understanding and an ideal catalyst through which collaboration can occur.

O&M specialists collaborate with a variety of individuals who have a shared role in promoting optimal educational and rehabilitation outcomes for individuals with visual impairments, including but not limited to:

- Individuals with visual impairments and their families, significant others, and caregivers
- Daycare providers and preschool teachers
- Teachers of students with visual impairments, vision rehabilitation therapists, low vision therapists, and assistive technology specialists
- Teachers of the deaf/hard of hearing, teachers of students who are deaf-blind
- General and special education teachers and paraprofessionals
- Interpreters, interveners, and support service providers
- Physical therapists, occupational therapists, and speech-language pathologists
- Optometrists, ophthalmologists, and audiologists
- Medical doctors
- Administrators
- Legislators
- Traffic engineers
- Rehabilitation counselors
- Employers
- Social workers, mental health professionals, and counselors

Collaboration may occur at any point in the education and rehabilitation processes, such as screening, assessment, referral, program planning, consultation, and service provision. As a related service provider and member of the Individualized Education Program (IEP) team for school-age children and youth, the O&M specialist collaborates with other IEP team members. O&M specialists involve parents/family members and individuals (as appropriate) in the assessment and program planning processes. This collaborative approach allows individuals and their parents/families to provide input into O&M goals and training.

Advocacy and Community Education

O&M specialists advocate with and on behalf of individuals with visual impairments to promote equal access to information and accessible travel environments. Opportunities for advocacy or outreach could include providing in-service trainings or public education initiatives within one's community at the local, state, and even national levels. For example, an in-service for adult care

professionals may cover human guide techniques, low vision simulations, and recommendations for environmental adaptations. O&M specialists are aware of accessibility standards and guidelines that affect travelers with visual impairments, and they advocate for modifications to travel environments and public transportation systems that will promote accessibility.

Service to the Profession

O&M specialists have a number of other roles and responsibilities including service and research. Service to the profession may include supervising interns, mentoring new professionals, and taking on leadership roles in schools, agencies, or within professional organizations (e.g., Association for Education and Rehabilitation of the Blind and Visually Impaired [AER], Academy for Certification of Vision Rehabilitation and Education Professionals [ACVREP], National Blindness Professional Certification Board [NBPCB], and Council for Exceptional Children [CEC]). O&M specialists also conduct or participate in research adding to the evidence base of best practices and informing public policy.

Domains of Assessment and Instruction

O&M specialists conduct assessments and provide instruction in multiple domains, including concept development, sensory awareness and development, sensorimotor development and facilitation, orientation, mobility systems and techniques, assistive technology, environmental access, social, and psychosocial.

Concept Development

Sighted children acquire much of their conceptual knowledge through incidental learning, or visual observation of the world around them. O&M lessons for young children focus on development of environmental, body, spatial, directional, and related concepts. To facilitate concept development through senses other than vision, children with congenital visual impairments need direct instruction, opportunities for guided exploration, and a multitude of hands-on experiences. People with visual impairments that occurred later in life (i.e., adventitious visual impairments) have prior visual experiences that may help them understand many O&M concepts and environmental features.

Sensory Awareness and Development

Perceptual learning is necessary for all children to learn about the world around them. Much of that learning occurs through viewing people, objects, and other aspects of the environment. For children who are blind and visually impaired, this learning must focus on input from other sensory and perceptual systems including, auditory, tactile, haptic, olfactory, proprioceptive, and vestibular.

Audition is the sensory system that can be used to access information about people, objects, and the environment from beyond arm's reach, but does not fully replace the ability to look at something in the distance. Auditory information is used for localization, identification, and discrimination of specific sounds. Auditory spatial perception is how individuals may use sound to estimate distance and direction in the environment (Voss, 2016). O&M specialists focus on guiding children's discovery of sound and its usefulness in understanding the world (e.g. clicking or tapping a cane to learn about the qualities of a given space).

Children with visual impairments initially explore their environment tactually. Since tactile stimuli must be in close range to be contacted, exposure to novel textures may be limited especially without mobility. Tactile information can be used to identify landmarks for orientation purposes and avoid obstacles as individuals move through the environment.

Proprioception and vestibular awareness contribute to children's balance. Proprioception also forms the foundation for good posture, gait patterns, and coordination. Proprioceptive and vestibular functioning are important building blocks in efficient movement.

The majority of individuals that O&M professionals serve have some functional low vision. For those with low vision, visual efficiency training may improve functional use of remaining vision. Skills such as attending, shifting gaze, pursuit, tracking, tracing, scanning, and focusing may improve with instruction and practice. O&M specialists also provide rehabilitation services to individuals who use other sensory substitution devices or assistive technologies, including those who have electronic retinal prostheses, in interpreting visual environmental information and using this information for travel in conjunction with a long cane or other mobility device.

Sensorimotor Development and Facilitation

Sensorimotor functioning is the coordinated, interrelated functioning of the body's sensory systems (e.g., vision, hearing, proprioception) and motor (movement) systems to perform activities in daily life. A strong foundation of efficient sensorimotor skills forms the basis for the development of posture, balance, orientation, and is integral to a child's development of concepts about the world and to his or her ability to learn in school.

Vision is a critical component in the early process of the neurological development of sensorimotor skills. Children who are born without functional vision often fail to develop efficient sensorimotor skills, including upright posture, gait, and mature coordination. This lack of development, in turn, can interfere with the efficient performance of many daily activities.

O&M instruction assists children who have visual impairments to develop sensorimotor skills that are critical to their physical development, to be able to navigate various environments, and to function successfully at home, in school, and in the community. When sensorimotor skills are impaired due to physical or health issues outside of visual impairment, O&M specialists work in

collaboration with occupational therapists, physical therapists, and other appropriate professionals.

Orientation

Orientation is how individuals establish and maintain an awareness of where they are through sensory input and environmental feedback. Landmarks and information points are environmental features that O&M specialists use to help travelers with visual impairments determine where they are in the environment. Sensory information from the environment, such as auditory, visual, or tactual input, can also serve as landmarks or information points. Spatial orientation refers to how someone understands the relative position and relationship of objects in space, both to one another and to himself or herself. Since people with visual impairments do not have continuous visual feedback of objects' positioning in space, they must learn to establish and maintain a dynamic mental understanding of the environment to be efficient and independent travelers.

Individuals with visual impairments learn to problem solve to re-establish their orientation in case they become lost or confused in different situations. O&M specialists vary the amount of input they provide depending on the individual's skill level to facilitate problem solving while promoting confidence and independence. Drop-offs are a performance assessment where an O&M specialist disorients an individual in a familiar or unfamiliar environment and observes as he/she tries to reorient himself or herself to the environment. Drop-offs are used to facilitate problem solving and independence from the instructor.

Mobility Systems and Techniques

O&M specialists provide instruction in the use of various mobility tools and techniques, and on selecting appropriate mobility systems for one's needs and skills.

Long cane

The specialized knowledge of the long cane and its techniques is unique to the profession of O&M. With appropriate O&M training, the long cane can provide individuals with visual impairments with information about objects, surface changes, and surface integrity in the immediate environment (Blasch, LaGrow, & De l'Aune, 1996). The long cane also serves as a means of identification of the user as a person with a visual impairment. Long canes come in a variety of materials, lengths, and colors, and they have different features (e.g., folding, telescoping) and types of tips. O&M specialists prescribe an appropriate long cane for individuals while accounting for factors such as height, gait, walking speed, proprioceptive and tactile sensitivity, travel environments, and personal preferences.

O&M specialists teach techniques for using the long cane in a multitude of travel situations and environments. The methods used to maneuver the long cane in a specific situation depend on

factors such as the type of ground surface being traversed, the traveler's need to locate landmarks, and the presence of stairs, obstacles, or narrow openings in the travel path. Long cane techniques include diagonal, two-point touch, constant contact, touch and drag, touch and slide, and three-point touch technique (Fazzi & Barlow, 2017; Jacobson, 2013). Long cane instruction also includes techniques for traversing congested areas, and navigating doors, curbs, stairs, elevators, and escalators. O&M specialists teach individuals with low vision how to maximize use of residual vision while using the long cane. Through careful monitoring of individual progress, O&M specialists structure lessons in a manner that promotes overlearning of cane techniques and facilitates skill generalization across environments and situations.

Human guide

O&M specialists teach techniques for traveling with a human guide (i.e., walking with another person who serves as a guide through an area) in various travel situations and environments. They provide instruction on effective guiding strategies to family members and other individuals who interact with individuals with visual impairments. Instruction may also include modified human guide techniques, such as those appropriate for young children and people who use mobility devices (e.g., support canes, walkers, crutches, and wheelchairs).

Dog guides

The concepts and skills learned through O&M training provide a foundation for preparing individuals for travel with a dog guide. O&M specialists share information about dog guides and dog guide schools with interested individuals. This information may include differences in travel techniques used by dog guide and cane users. O&M specialists may be asked to conduct evaluations of individuals who apply to dog guide schools. O&M specialists work with existing dog guide handlers who request assistance with orientation. The O&M specialist's role is to assist the handler. If problems arise with the dog guide, O&M specialists advise handlers to seek assistance from their dog guide school.

Transportation systems

Many individuals with visual impairments use public transportation to travel to and from school, work, and other settings, within their communities and beyond. O&M specialists structure public transportation instruction according to each individual's characteristics and needs. O&M specialists are knowledgeable of various modes of public transportation and may provide instruction on any of the following transportation options: buses, rail systems (e.g., light rail, heavy rail, subway, trolley), taxis, paratransit services, ride-sharing services, airplanes, and hired drivers. O&M instruction includes specialized strategies for all aspects of public transportation use, including identifying an appropriate mode of transportation for an intended trip, trip planning, locating and navigating transit stops and stations, vehicle familiarization, non-visual strategies for using different types of transportation, completing public transportation transfers, problem solving, and the use of technology.

Indoor techniques

Indoor O&M instruction begins with the introduction of foundational travel skills in quiet, controlled indoor areas with few distractions. Instruction focuses on skills needed to navigate rooms, hallways, stairs, elevators, and other elements typically found within buildings. Indoor instruction includes long cane techniques, self-protective techniques, self-familiarization, search patterns, locating dropped objects, contacting and exploring objects, negotiating obstacles, and non-visual strategies for establishing line of travel.

O&M specialists introduce tactile, auditory, and proprioceptive alignment strategies during indoor travel and later apply them to outdoor environments. Part of this instruction includes teaching individuals to recognize when they are straying from their intended line of travel (i.e., veering), and strategies for recovery from veering using information from the environment. Orientation skills, such as use of indoor numbering systems, cardinal directions, and landmarks and clues, are often introduced during indoor instruction. Advanced lessons take place in indoor areas with large crowds, wide-open spaces, and complex features to focus on skills such as problem solving, self-advocacy, and soliciting assistance.

Outdoor techniques

Initial outdoor travel lessons facilitate refinement of previously learned cane techniques and introduction of new skills and techniques. Ideally, this instruction begins in a quiet, residential area and then gradually progresses to complex outdoor areas with more traffic, such as semi-business and business areas. Outdoor instruction includes techniques for sidewalk travel, detecting curbs and blended curbs, negotiating residential blocks, sidewalk recovery, cardinal directions, outdoor numbering systems, and using landmarks and clues. Instruction in rural communities may include techniques for traveling in areas without sidewalks or paved travel paths.

Street crossing techniques

The ability to cross streets is critical for pedestrian travel, and individuals with visual impairments use specialized strategies to complete this task. O&M specialists have expertise in non-visual street crossing strategies appropriate for different types of intersections, including but not limited to those with 2-way stop signs, 4-way stop signs, traffic signals (including Accessible Pedestrian Signals), channelized turn lanes, and medians; roundabouts; and crossings with no traffic control. O&M specialists understand the implications of changing technologies, including modern intersection design and quiet vehicles, on street crossing techniques used by individuals who are blind or have low vision.

O&M specialists provide instruction on all aspects of street crossings, such as intersection identification, crosswalk identification, intersection analysis, risk assessment, alignment

techniques, determination of the best time to cross, initiation of the crossing, maintaining alignment during the crossing, recovery from veering, and resuming travel after completion of the crossing. The use of tactile and auditory information is emphasized during street crossing instruction. O&M specialists also stress the importance of analyzing risks present in street crossing situations and advise individuals on alternatives to crossing when the level of risk is unacceptable.

Assistive Technology

Technology has immense potential to enhance orientation, mobility, and independence among individuals with visual impairments. Thus, O&M specialists provide instruction on the use of high-tech and low-tech devices, as appropriate for each individual's needs. These devices include but are not limited to long canes; adaptive mobility devices; auditory, electronic, and tactile maps; tactile graphics and models; compasses; low vision aids (e.g., monoculars); electronic travel aids; sensory substitution devices; and electronic orientation aids. Electronic orientation aids include accessible wayfinding technologies such as standalone GPS devices designed for pedestrians with visual impairments and wayfinding applications for mobile devices.

Despite its vast capabilities, technology is not a replacement for the underlying concepts, skills, and techniques of O&M. Before recommending training with a new device, O&M specialists assess individuals' prerequisite skills and readiness for adding technology to their repertoire of tools and techniques. O&M specialists inform individuals of strengths and limitations of technological devices to promote realistic expectations of the capabilities of technology, and they caution individuals against over-reliance on technology to the exclusion of other skills. O&M specialists remain abreast of technological advances in order to advise and instruct individuals on the most appropriate, current device(s) for their needs.

Environmental Access

Many individuals with visual impairments cannot use visual information (e.g., print signs) to access environmental information; thus, they need access to information about travel environments in a format (e.g., braille or synthesized speech) that they can perceive using senses other than vision. To promote environmental access, O&M specialists teach various methods for accessing tactile and auditory environmental information such as tactile maps, tactile graphics, braille signage, Accessible Pedestrian Signals, and tactile warnings. O&M specialists may also incorporate GPS and other technologies (e.g., talking signs and environmental beacons) into their instruction to supplement other information sources.

Social

When designing instruction, O&M specialists consider the potential influence of the social environment, including social interactions, family dynamics, and culture, on learning and adjustment. Social interactions include the daily interactions with and attitudes of others,

including family members and members of the public. O&M specialists facilitate development of efficient strategies for soliciting assistance and interacting with a variety of personnel, such as store clerks, transit operators, and pedestrians. Part of this instruction includes personal safety, preparation for dealing with reactions of the public, and development of appropriate responses.

Psychosocial

O&M specialists are aware of psychosocial variables that may influence individuals' adjustment to visual impairment or blindness, readiness for O&M instruction, and progression through O&M training. Among these variables are the age at which vision loss occurs, the level of vision loss, family and social supports, and interactions with others. O&M specialists understand the continual adjustment and readjustment that some individuals with visual impairments undergo, and the resulting impact on their self-esteem (Tuttle & Tuttle, 2004). They design instruction with regard to the psychosocial impact of congenital visual impairment, adventitious visual impairment, and vision loss due to sudden trauma, while accounting for individual differences.

O&M specialists are also aware of unique psychosocial issues affecting people with low vision. For instance, some individuals with low vision do not use a mobility device (such as a long cane) in all travel situations. Without the presence of the long cane, individuals' vision loss may not be noticeable to the public; thus, these individuals may struggle in some social situations, such as when they need to ask for assistance. O&M specialists facilitate structured opportunities during which individuals with low vision can practice social interactions and develop effective strategies for these types of situations (Welsh, 2010).

Settings

O&M instruction occurs in environments that are appropriate for the individualized needs and goals of individuals with visual impairments.

Natural Environments

Natural environments are the real-world settings in which individuals live, learn, work, play, interact, and travel. Service provision in natural environments is a vital element of O&M instruction. Natural environments are ideal settings for developing problem solving skills, promoting skill generalization, and providing exposure to unique environmental characteristics and diverse spatial layouts. Natural environments also provide opportunities for individuals to practice navigating real-world social environments. To best prepare individuals for authentic travel situations, O&M instruction may also take place at any time of day and in all types of weather conditions. The variety and authenticity of learning opportunities available in natural environments cannot be adequately replicated in contrived or controlled settings.

School, Home, and Community

O&M instruction occurs indoors and outdoors in school, home, and community settings. School settings may include preschools, elementary schools, middle schools, high schools, vocational schools, colleges, and/or universities. Within these school settings, individuals may receive instruction in a multitude of areas, including but not limited to classrooms, hallways, cafeterias, playgrounds, courtyards, and restrooms. Instruction in home environments may be provided indoors and outdoors, including one's yard, driveway, or neighborhood, and in common areas such as clubhouses or community parks.

O&M instruction takes place in a vast array of rural, urban, suburban, and small business community settings. These settings may include workplaces, hospitals, prisons, and correctional facilities. O&M instruction often occurs in commercial areas such as grocery stores, department stores, convenience stores, indoor and outdoor shopping malls, banks, office buildings, medical buildings, airports, trains, buses, bus stops, and transit stations. Instructional settings could also include areas in which recreation and leisure activities take place such as gyms, sports facilities, parks, trails, concert halls, and theaters. Instruction takes place at intersections, sidewalks, parking lots, driveways, escalators, elevators, revolving doors, and anywhere else that is appropriate for the individual. O&M specialists emphasize traffic safety across all settings.

Professional Preparation and Certification

In the U.S., university programs are the primary training model for O&M specialists. Programs use either a traditional campus model or a distance education model where classes may be primarily online with minimal face-to-face courses. University programs in O&M are primarily offered at the graduate level for a master's degree or certification only, but a few bachelor's degree programs are offered at the undergraduate level. Coursework typically includes all the content knowledge needed to complete an internship and pass a nationally standardized and validated certification test. An essential part of O&M coursework includes opportunities for college or university O&M students to demonstrate skills under blindfold and to teach other O&M students to perform techniques in a variety of natural environments. An internship supervised by an O&M specialist is typically required where the individual must demonstrate competency in a number of content areas and for direct instruction with individuals with visual impairments. Some O&M specialists hold multiple certifications. For instance, those who primarily work with children may be dually-certified as both a teacher of students with visual impairments and an O&M specialist.

There are two recognized professional certifications for O&M. ACVREP provides the credential titled Certified Orientation and Mobility Specialist (COMS). This certification requires the completion of a college or university O&M program, an internship, and passing a certification

exam. NBPCB offers the National Orientation and Mobility Certification (NOMC) for instructors. This certification requires either the completion of an NBPCB-approved university program with an internship practicum or completion of a NBPCB-Supervised Cane Travel Apprenticeship with an internship. A certification exam is also required for the NOMC credential. The COMS and NOMC credentials both require continuing education for recertification. Both ACVREP (2013) and NBPCB (2006) provide a Code of Ethics to guide the practices of O&M professionals.

References

- ACVREP. (2013). Certified Orientation and Mobility Specialist (COMS) Handbook, Section 5, Code of Ethics for Orientation and Mobility Specialists. Retrieved from <https://www.acvrep.org/certifications/coms-code>
- Blasch, B. B., LaGrow, S. J., & De l'Aune, W. R. (1996). Three aspects of coverage provided by the long cane: Object, surface, and foot-placement preview. *Journal of Visual Impairment & Blindness*, 90, 295-301.
- Cmar, J. L. (2015). Orientation and mobility skills and outcome expectations as predictors of employment for young adults with visual impairments. *Journal of Visual Impairment & Blindness*, 109(2), 95-106.
- Cmar, J. L., McDonnall, M. C., & Crudden, A. (*in press*). Transportation self-efficacy and employment among individuals with visual impairments. *Journal of Vocational Rehabilitation*.
- Crudden, A., & McBroom, L. W. (1999). Barriers to employment: A survey of employed persons who are visually impaired. *Journal of Visual Impairment & Blindness*, 93(6), 341-350.
- Fazzi, D. & Barlow, J. (2017). *Orientation and mobility techniques: A guide for the practitioner*. (2nd ed.). New York, NY: AFB Press.
- Hatlen, P. (1996). The core curriculum for blind and visually impaired students, including those with additional disabilities. *RE:view*, 28(1), 25-32.
- Individuals With Disabilities Education Act of 2004, 20 U.S.C. § 140.
- Jacobson, W. H. (2013). *The art and science of teaching orientation and mobility to persons with visual impairments* (2nd ed.). New York, NY: AFB Press.

- McDonnall, M. C. (2011). Predictors of employment for youths with visual impairments: Findings from the second National Longitudinal Transition Study. *Journal of Visual Impairment & Blindness*, 105(8), 453-466.
- NBPCB. (2006). Code of Professional Ethics for NOMC Certification. Retrieved from <https://www.nbpcb.org/pages/codeofethics.php>
- Rehabilitation Act of 1973, Pub .L. 93-112, 87 Stat. 355, H.R. 8070, enacted September 26, 1973.
- Tuttle, D. W., & Tuttle, N. R. (2004). *Self-esteem and adjusting with blindness: The process of responding to life's demands*. Springfield, IL: Charles C Thomas Publisher, LTD.
- U. S. Department of Education. (2004). Building the Legacy: IDEA 2004. Retrieved from <http://idea.ed.gov/explore/view/p/,root,regs,300,A,300.34,.html>
- Voss, P. (2016). Auditory spatial perception without vision. *Frontiers in Psychology*, 7, 1-7. doi:10.3389/fpsyg.2016.01960
- Wall Emerson, R., & Corn, A. L. (2006). Orientation and mobility instructional content for children and youths: A Delphi study. *Journal of Visual Impairment & Blindness*, 100, 331-342.
- Welsh, R. L. (2010). Improving psychosocial functioning for orientation and mobility. In W. R. Wiener, R. L. Welsh, & B. B. Blasch (Eds.) *Foundations of orientation and mobility: Vol. 2*. (3rd ed., pp. 138-159). New York, NY: AFB Press.
- World Health Organization (2007). WHO global report on fall prevention in older age. Geneva: Ageing and Life Course, *Family and Community Health*, World Health Organization. Available from: www.who.int/ageing/publications/falls_prevention7march.pdf.