Orientation and Mobility Content for Children and Youths: A Delphi Approach Pilot Study

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Abstract: A panel of 20 experts in orientation and mobility (O&M) reached consensus on concepts and skills that O&M specialists should teach to students who are blind or have low vision. Panelists also agreed on visual, environmental, and behavioral conditions that would require a formal O&M assessment.

A seminal orientation and mobility (O&M) text (Hill & Ponder, 1976) has indicated that the ultimate goal of O&M instruction is to "enable the student to enter any environment, familiar or unfamiliar, and to function safely, efficiently, gracefully, and independently" (p. 1). The O&M Code of Ethics (AER Division 9, 1990) does not specify content to be taught but stresses that for O&M specialists, the students' need for knowledge is paramount. With such a broad mandate, instructional content can be difficult to define. Existing curricula include lists of O&M concepts and skills (see, for example, Pogrund et al, 1995), but individual items on these lists may be debated within the field.

"Disagreement" on the content that is appropriate for O&M instruction probably dates from development of the modern field of O&M in rehabilitating wounded World War II veterans. Long-cane techniques were developed at Valley Forge Army Hospital in Phoenixville, Pennsylvania, while additional strategies using interrupted and reflected sound were developed at Avon Old Farms in Connecticut (Bledsoe, 1997; Welsh, 2005). The initial philosophical differences between the two programs possibly influenced disagreements on what constituted

"proper" O&M instruction. As the field matured, new issues arose from the evolution of the built environment, advancements in technology, and acknowledgement of the needs of additional populations, for example individuals with multiple disabilities or those with low vision. Sidewalk and traffic patterns in the 1940s were very different from those of today. Traffic is now more plentiful and complex, intersections more demanding, and new technologies (for example, accessible pedestrian signals) more common. Such innovations as global positioning systems, bioptic telescopic systems for driving, and hand-held ultrasonic devices like the MiniGuide are examples of items that have required O&M specialists to reexamine the scope of their instruction and how to incorporate the new technology. The development of alternative mobility devices (see, for example, Skellenger, 1999) also demonstrates how the field has adapted to new methodologies.

The field of O&M has also broadened its mandate to include younger children, individuals with multiple disabilities, and people who have low vision. The regulations of the Individuals with Disabilities Education Act (IDEA) define O&M instruction as a "related service" (IDEA Final Regulations, 1999, §300.24 (b)(6) "Related services") and require that such services be considered for each child at individualized education program (IEP) meetings (IDEA Final Regulations, 1999, §300.347 "Content of IEP"). As O&M has been designated part of the core curriculum for students with visual impairments, it is important to look at the content of O&M instruction for students and youth separately from that for adults with visual impairments. The effect of visual impairment on the development of children and youth is significant enough that they are taught concepts and skills different from those for people who lose their vision as adults.

At a time of a severe shortage of personnel, O&M specialists must often determine which students' needs are greatest or who would benefit the most from instruction. Years of making such

decisions might affect instructors' views of which services should be provided, with consequent differences of opinion on the correct job description for an O&M specialist. Since O&M instruction for very young children focuses more on concept development than instruction in formal travel techniques, some educators might prefer to leave early childhood services to other professionals.

University personnel preparation programs in O&M have also developed coursework that addresses new trends in the field. In an effort to provide quality training without requiring too many courses in a degree program, some programs have focused on one issue more than another. While each program addresses all areas, some may focus more on teaching children with low vision, others on teaching those with multiple impairments. As a result, recently trained O&M specialists may emerge with different perceptions of O&M priorities. Also, since the actual teaching experiences of trainees are used to communicate instructional priorities, the student teaching placements of O&M trainees might influence how O&M specialists define O&M practice. In determining instructional priorities for children and youth, the focus on adult services by some university programs and internship placements may not fully prepare O&M specialists for the need to decide on critical instructional content for children and youths.

These factors have resulted in a range of opinion on the role of O&M specialists and what they should be teaching children and youths with visual impairments. The study presented here sought to define areas of consensus by expert panelists on what should constitute the instructional purview of an O&M specialist. The authors did not expect to define a clear, accepted body of knowledge that encapsulated all O&M content. Instead, the focus was on illuminating the point at which consensus among the experts was no longer apparent: the point at which the field separates philosophically. A series of questions also determined where consensus existed about the timing of formal

O&M assessments and instruction for students.

Method

A Delphi approach was used to find areas of consensus on (a) what an O&M specialist should teach a student who is blind, (b) what an O&M specialist should teach a student with low vision, and (c) when formal O&M assessments should be made and instruction begun. A Delphi study uses a panel of experts who respond to a survey of several rounds to create consensus on one or more issues. Borg and Gall (1983) have recommended use of the Delphi method "whenever consensus is needed from persons who are knowledgeable about a particular subject" (p. 43). By requiring continuous commitment through several rounds, the Delphi method induces respondents to be more thoughtful than does a single-round survey.

The expert panel included 10 university faculty members, 10 knowledgeable adult consumers, and 10 practicing O&M specialists. The faculty members were chosen for their expertise and involvement in research and in the preparation of O&M specialists; in addition, most had extensive experience teaching O&M to children. The adult consumers (who had low vision or were blind) were known to the experimenters and were judged to be excellent, independent travelers who also demonstrated an interest in the delivery of O&M services (for example, through employment in the field of visual impairment and blindness). Each practicing O&M specialist had taught for more than 20 years, had received awards from peers or agencies, was involved in national initiatives to further O&M service delivery, and/or presented at conferences on service delivery.

Three rounds of surveys were e-mailed to the panelists. Round 1 consisted of 148 concepts and skills aggregated from existing O&M curricula, textbooks, and assessments and presented in 16 categories (body image, orientation, mobility skills, wayfinding, concept development, environmental knowledge, auditory skills,

tactile and kinesthetic skills, use of distance vision, use of and access to transportation, interpersonal interaction, preparation for low-vision driving, use of resources, independence and self-determination, problem solving, and recreation and leisure). Each panelist indicated whether each skill or concept should be taught by an O&M specialist, and indicated separately whether this instruction would be suitable for individuals who were blind or had low vision. Panelists were also encouraged to add concepts and skills not listed and to delete items they found inappropriate for teaching by O&M specialists. In addition, they were asked a series of questions about assessment for O&M instruction of students who are blind or have low vision.

In each of rounds 2 and 3, panelists received a compilation of the concepts and skills from the previous round and the level of agreement among the panelists about inclusion of each item. Additions to the list were provided, along with responses to the questions about assessment. In both rounds, panelists voted on keeping or eliminating individual items, having been reminded of the need for consensus on any item to retain it on the list. Agreement level was also determined for answers to each question regarding the assessment of students. The study ended with round 3, as there were no further deletions from the "keep pile." For the purpose of the study, "consensus" indicated 85% agreement among panelists.

For each round, instead of definitions of "blind" and "low vision," descriptions of hypothetical students were provided for panelists to keep in mind as they made decisions. The hypothetical student who was blind had no useful vision was functioning at grade level, and had no additional disabilities. The hypothetical student with low vision had a visual acuity of 20/400 O.U. (in both eyes), was functioning at grade level, and had no additional disabilities. While a single hypothetical example cannot adequately represent all students with low vision, this one was chosen as a starting point for the investigation. Some of the difficulty in reaching consensus on

items to do with low vision might have stemmed from panelists imagining very different conditions among students with low vision (for example, with or without canes, with or without telescopes, with or without braille).

The hypothetical students served as a very general starting point for this investigation into the provision of O&M services. No indication was given about when a specific concept or skill would be taught to either group: an item on the list might be taught earlier or later in the child's life; the intent was to identify items that would be taught by an O&M specialist at whatever time seemed appropriate for the student.

Results

Rounds 1, 2, and 3 had 26, 20, and 20 participants, respectively. The 20 experts who participated in all three rounds included 5 consumers (2 who were blind, 3 with low vision), 8 O&M university faculty members, and 7 practicing O&M specialists. The 4 potential panelists who chose not to take part and the 6 panelists who did not participate beyond round 1 spanned the three categories of expertise and so did not reflect a discernible bias in the participants who elected not to continue (most of them because of a lack of time). In round 1 the panel added 130 items to the original 148 concepts and skills.

Items on which consensus was reached for both students who are blind and students with low vision are listed in Box 1; in Box 2 are those items on which agreement was reached only for students who are blind; Box 3 contains items agreed on only for students with low vision. To facilitate analysis of the lists of concepts and skills for which consensus was reached, 8 categories suggested by the content of the items were created. This was done after data collection and so does not reflect the opinions of the panelists. Boxes 1 to 3 reflect consolidated lists of items, arranged alphabetically within each category, for ease in reading and comparison of the lists.

Of the total 278 (before consolidation) original and added concepts and skills, about half (143, consolidated to 106) were agreed upon as representing appropriate content for O&M instruction for students who are blind (see Boxes 1 and 2). Only half as many items (75, consolidated to 57) were agreed upon as representing appropriate content for students with low vision (see Boxes 1 and 3). Since panelists were encouraged to add items for either of the hypothetical students, this might reflect a general lack of focus on O&M services for students with low vision.

The concepts and skills agreed upon as valid instructional items for students who are blind were spread roughly equally across the 8 categories. Complexity ranged from such basic skills as reaching for sounds to applying knowledge of environments in planning travel through unfamiliar areas. Some items may seem to overlap, but panelists felt that each was different enough to warrant inclusion. Although the scope of this article does not allow for a discussion of all items that did not reach consensus, many of these dealt with visual skills (for example, scanning, tracking, visual efficiency), interpersonal dynamics (for example, recognizing feelings of discomfort with a person, recognizing people you know, teaching others about your visual condition), and motor skills (for example, running, jumping, throwing).

For students with low vision, the list of concepts and skills on which consensus was reached included only 16 items (see Box 3) not also agreed upon for students who are blind. This suggests that the panelists believed students with low vision needed instruction in fewer concepts and skills than did students who are blind. However, it might be that if a greater variety of conditions pertaining to low vision had been presented, more concepts and skills for students with low vision would have reached consensus. There were 3 categories with no entries: spatial, motor, and mobility skills. That a number of vision-

specific items (including eccentric viewing, eye lead, functional visual acuities and fields, use of bioptic telescopic systems, use of functional fields of view) did not reach consensus might be explained if panelists imagined a wide variety of conditions among students with low vision that nevertheless matched the visual characteristics as given in the questionnaire. Of the 16 items not appearing in the list for students who are blind, 3 were not specifically vision related (relating spatial concepts to body dimensions, knowledge of street signs, and knowledge of vehicles).

Panelists answered several questions regarding when and how O&M assessments should be conducted. The six precipitating conditions or events provided to panelists were: no previous assessment conducted, a change of schools, a change in visual condition, a change in residence, an IEP meeting, and transition to a work environment. In round 2, consensus was reached on performing an assessment if none had been done before. In round 3, panelists agreed that an assessment should be made if a student changes schools or residences but that the decision to conduct a formal assessment should also consider student skill level, cognitive ability, and previous O&M instruction. Also in round 3, panelists reached consensus that in the event of an IEP meeting, an abbreviated assessment addressing specific topics relevant to the IEP should be performed. No consensus was reached on conducting an assessment for a change in visual condition or transition to a work environment.

The survey asked panelists what impact a child's visual status might have on the decision to conduct an assessment. In round 2, consensus was reached for providing an assessment if the child were functionally or totally blind, or had a visual acuity of 20/600 or worse. In round 3, panelists agreed, without specifying conditions, on an assessment if the child were identified as visually impaired by the school system, had a visual acuity of 20/200 to 20/599, or had a loss of peripheral or central visual fields. Consensus was not reached for children

with visual acuity of 20/70 to 20/199, photophobia, glare, or contrast sensitivity problems.

Consensus was not reached on a specific age for an initial O&M assessment. Most panelists indicated the identification of visual impairment as the appropriate time for such an assessment. All agreed that additional disabilities should influence the method but not the timing of assessment.

Panelists then reached consensus on behaviors that would precipitate a formal O&M assessment (see Box 4). These behaviors were placed into four categories following consensus: inter-and intrapersonal interactions, mobility performance, visual function, and changes in systems or processes.

The panel was asked how often a formal O&M assessment should be conducted in the absence of a precipitating event or behavior. Participants agreed that frequency depended on circumstances, but should be discussed at each IEP meeting. Options of "annually" and "every 2-3 years" were considered but not chosen. Finally, panelists were asked whether an O&M instructional sequence should be based on an individual situation or environment, or whether all students should learn a full range of rural and urban environments. For this question, panel responses were used to create a statement of practice. In round 3, consensus was reached on the acceptability of the following statement: "The cognitive and/or physical limitations of the student, student motivation, and anxiety can affect the instructional environments to which a student is exposed in training. Those environments most applicable to a student's current and foreseeable needs should be accessed during training."

Discussion

This study was undertaken to seek expert consensus on the concepts and skills to be taught by O&M specialists and to reach agreement on when and under what conditions O&M

assessments should be initiated. At a time when IDEA requires consideration of O&M services at each IEP meeting for students with visual impairments, it behooves educators to ascertain what constitutes these services and when assessments should be initiated to gather salient information for thoughtful consideration. A Delphi approach was used because it would canvas experts in the field, thus explicating current and promising practices that might be different from those of established curricula. Consumers were included because those who use concepts and skills often have insights not available to instructors.

For instruction of students who are blind, the final list of concepts and skills for which consensus was reached ranged from basic concepts to complex interactions of the students with tactile maps, traffic, and large environments. Panelists felt that O&M specialists should instruct students not only in performance of skills but in building their understanding of how environments are constructed and laid out, how the world works, and how they can use knowledge most efficiently to make their way through the world. Students need to learn how to maximize their perception of tactile, auditory, and kinesthetic information so as to assess situations dynamically and decide the best course of action.

For students with low vision, the concepts and skills for which consensus was reached focused on maximizing efficient use of visual information. This instruction was supplemented with items dealing with the same knowledge of environments, spatial relationships, and problem solving demonstrated in the list for students who are blind. The fact that twice as many generated items met consensus criterion for students who are blind than for students with low vision may reflect a belief that blind people require more intervention to navigate the world than do those with low vision (in this case, 20/400 acuity and unrestricted fields). This may also indicate a greater focus in the field on services for people who are blind rather than people

with low vision.

Responses to the questions about assessment indicate that they should be predicated on a student's individual situation rather than on age. Experts indicated that factors demanding an assessment would be (a) visual acuity of 20/200 or worse, (b) loss of central or peripheral fields, (c) change in schools or residences, (d) behaviors as outlined in Box 4, and (e) upcoming IEP meetings.

A screening instrument that details significant environmental changes, student behaviors, or changes in visual status is needed to assist educators in deciding when a formal assessment by an O&M specialist is warranted. Availability of such an instrument for completion by a teacher of students with visual impairments or by a resource teacher would raise the awareness of school personnel regarding the interaction of life events and mobility.

Curricula do not always represent promising practices in a field. University personnel preparation programs should consider that items for which consensus was reached in this study reflect current foci in O&M practice. Results should not be viewed as an exhaustive definition of an O&M specialist's role, but as a tool for illustrating where experts converge conceptually. Areas that lack consensus may be fruitful ground for discussion and further research. While the concepts and skills for which there was consensus in this study reflect a foundation of instructional content for O&M specialists, this should not preclude instruction in some of the concepts and skills that did not reach consensus. O&M specialists must weigh many factors in deciding whether children or youths might reach a higher level of independence if their instruction includes areas that others might consider to be outside their purview.

LIMITATIONS OF THE STUDY

There were several limitations to this study. The initial list of items that could apply to students who are blind or students with

low vision was generated by reviewing curricula and texts. Given such a list, panelists may have been less likely to devise items on their own, and this may have inadvertently led them to reflect biases held by the researchers. However, the addition of 130 items by the panel would seem to lessen the impact of any researcher bias.

The study experienced a 33% dropout rate among panelists. The nature of a Delphi study in general, and this one in particular, requires extensive contributions of time and thoughtful consideration. Panelists' feedback indicated that each round took several hours to complete. Future studies of this type could limit the scope of their topics so that respondents can focus on more precise issues. The present study was a needed first step in defining how the field of O&M is viewed, but further investigation into specific aspects of O&M content and instructional procedures is needed.

Panelists chosen for inclusion in the study represented consumers and professionals who were well regarded in their fields. While many had extensive experience working with children and youth with visual impairments, some did not have a particular emphasis on children and instead were selected for their background knowledge of O&M. All panelists tried to respond to each question but some voiced reservations about the validity of portions of their feedback; for example, an O&M specialist who had not encountered bioptic devices. Future studies might attempt to identify perceptions of the field with a focus on respondents who have specialized knowledge not only of O&M but of a specific population or approach. Limiting the visual characteristics of the hypothetical student with low vision in this study was necessary, but future studies might expand that aspect to see how experts in the field of O&M approach the instruction of students with different visual characteristics.

While the respondents in this study were considered to be experts in the field of O&M, defining instructional content for

an entire field is a difficult and complex task. The results of the study should be taken only as a "broad strokes" indication of how a small number of experts in O&M view their field. It provides a framework with which individual instructors, schools, and agencies may consider what content and services they choose to provide, but further definition, discussion, and agreement are needed to ensure that the field continues to evolve so as to best meet the needs of individuals with visual impairments.

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