

M O D U L E 2

*IMPACT
OF DEAF-BLINDNESS*

CRITICAL FACTORS

FORMS OF DEAF-BLINDNESS

*SUGGESTIONS
FOR LEARNING*

Deaf-Blindness: Implications for Learning

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KEY CONCEPTS



- *Understand the effects of deaf-blindness*
- *Use sensory cues other than vision and hearing*
- *Be alert for signs of vision and hearing loss*
- *Provide additional explanations*
- *Focus on direct experience and repetition*
- *Teach formally what children often learn incidentally*

In people who are deaf-blind, the two major channels for receiving information—hearing and vision—are not functioning or are impaired. This limitation on the ability to receive information can have far-reaching effects, including an influence on the child's general development. It challenges deaf-blind individuals, their families, and their teachers to find alternative means and strategies for exchanging information. Deaf-blindness can also have an impact on the development of motor skills and the ability to move about freely and with purpose and challenges the individual to develop systems and skills for moving from place to place safely. The combined effects of a vision and a hearing loss make deaf-blindness a unique disability. In this module, the effects of deaf-blindness on general development, communication, orientation, and mobility will be explored.

IMPACT OF DEAF-BLINDNESS

Because degrees of vision and hearing loss vary greatly from individual to individual, the effects of deaf-blindness vary greatly as well. In general, however, the loss of both vision and hearing affects certain aspects of the development of individuals that need to and can be addressed in effective educational programs. From limiting a child's access to sensory input to influencing his or her emotional growth, deaf-blindness can often be seen to present the child with particular challenges.

ACCESS TO SENSORY INFORMATION

Sensory experiences make children aware of the environment and are the basis on which they build knowledge about the environment, themselves, and other people with whom they come into contact. Each sense provides access to distinct and useful information, but the depth and breadth of the information acquired through each sense are not equal. This notion can best be illustrated by dividing the senses into two categories—near senses and distance senses—as is often done in the literature on deaf-blindness.

Taste, touch, and smell are classified as near senses. To acquire information through a near sense, an item must be immediately and

physically present. For example, to taste a cookie, one must have it in one's mouth.

Touch is not as physically constricted as taste because most people can extend their limbs to reach something and feel items that come into contact with their bodies. But items just inches beyond one's body or reach are nevertheless "out of touch."

Smell stretches the notion of nearness in that scents that are well beyond an arm's length can often be detected. Still, the sensory information that can be gained from smell is limited compared to the information that can be acquired from the distance senses of vision and hearing.

Vision and hearing are the primary channels through which most people collect information. These senses have decided advantages over the near senses: No sensory channel other than vision can take in so much information all at once; one cannot always feel an entire object at the same time, but one can see all of it in one look. And some information obtained through sight cannot be obtained through the other senses, for example, in the case of things that are too distant, like clouds, or too dangerous, like fire. Hearing also has unique qualities, for it is the only sense that can literally "bend around corners" and attend to several kinds of input at the same time; for example, someone can listen to someone talking, while being aware that the radio is on in the next room and the baby is crying upstairs (Freeman, 1985, p. 8). Children who are deaf-blind and cannot receive complete information from the distance senses may develop incomplete or distorted concepts of the world around them and therefore need opportunities to obtain additional information in alternate ways.

COMMUNICATION AND MOVEMENT

Communication and movement are among the essential building blocks of development, and they are inextricably linked. When infants see objects or hear sounds, they are stimulated to interact with their environment—that is, to communicate and to move and explore. When their ability to see and hear is impaired and they cannot easily perceive such stimulation, their motivation is diminished, they may not communicate and move as frequently, and they may not strongly develop the skills involved in communicating and moving.

Emerging movement and communication skills are linked in several ways. First, communication involves some form of move-

ment—from blinking an eye to nodding the head to changes in body positions or facial expressions to moving the lips for speech. Second, through early movement skills, infants gain experience in using actions to influence other people and objects in their environment, which is a form of communication. Third, through movement, young children also have opportunities to associate daily experiences with symbols, words, and concepts—a fundamental aspect of communicating with others. Fourth, emerging communication skills motivate and encourage infants to explore and help them develop the strength, confidence, and skills they need for moving in and learning about their world.

Infants learn that their early facial or body movements, such as smiling at a family member, raising their arms to be picked up, reaching for a toy, or pulling back from an unpleasant sensation, are ways to control what is happening around them. As others respond to their movements or movement helps them achieve their desired aims, infants feel encouraged to continue to move about and communicate.

As children's communication skills increase, others can convey information about people, places, and things that are farther away, as well as more abstract ideas and feelings, and the children can communicate more complicated ideas and feelings to others. This expanded communication can motivate children to learn skills for moving about in new and increasingly complex environments. Experience in more complex environments, in turn, presents greater opportunities for developing more sophisticated communication skills. As their communication and mobility skills increase, children can have more chances to interact with their families and other children at home and at school and eventually in the general life of their communities. Because communication and mobility skills are essential for the development and overall well-being of children, the modules that follow emphasize the ways in which individual children can learn and practice them.

LEARNING

Incidental Learning

When you enter a room where a party is under way, you can gain a great deal of information through vision quickly and with little effort. Even a quick scan of the room will give you information about how

many people are there, how they are dressed, whether you know them, who is talking to whom, and so on. A closer look at the guests' facial expressions will give you an indication of their moods. Then, you can view the furnishings, food, and size and arrangements of the room.

If there is a window in the room, you can probably tell what the weather is like and perhaps how well nearby traffic is moving. If a television is playing, you may catch a glimpse of an event occurring halfway around the world.

As you step into the room, you can also obtain much information through hearing. You may be able to hear some conversations, and the tones of the voices will tell you about the various speakers' moods. You also may be able to detect familiar voices and know that friends are nearby. If the window is open, you may hear the wind blowing, a plane passing, or street traffic. If the television is on, you may hear the speech of a foreign leader delivered from a faraway city.

All this information is incidental and is available to people who are sighted and hearing almost effortlessly. Although incidental information may seem trivial, it guides the individual's interactions with the environment, increasing his or her knowledge and the experience base. An individual who is deaf-blind, however, does not have effortless access to such information—even with the assistance of an interpreter. Moreover, the details that this person can absorb through the remaining senses or that can be conveyed to him or her are not captured instantaneously. Instead, a person who is deaf-blind will need to be made aware of elements of the environment that are not readily accessible and to be formally taught many things that sighted and hearing people learn incidentally. The example of Claudio illustrates this point:

Claudio, aged 8, has physical disabilities in addition to being deaf-blind. One afternoon he was involved in his teacher's lesson on vegetables. The teacher was careful to use real vegetables and helped the students form the correct signs with their hands after they felt each vegetable. When Claudio held the potato, he smiled and signed "Rock." The teacher corrected him and signed "Potato." Claudio rejected the correction and signed "Wrong, rock." The teacher then signed "Not wrong—this really is a potato." Claudio persisted, convinced he was right and hurriedly signed "No, teacher wrong. Potato is hot. Potato is soft. Wrong. Wrong. Rock!"

Clearly, Claudio was describing a potato as it would be served at mealtime, which probably was his only experience with potatoes. Therefore, for him the critical features that identified a potato were texture (soft and dense) and temperature (warm). Claudio logically concluded, on the basis of his personal sensory experiences, that the hard, cold, gritty object that his teacher handed him was not a potato. The critical features of the object more closely matched those that Claudio had come to associate with a rock.

The lesson was an unexpected learning experience—for the teacher. She understood that Claudio needed to be able to recognize a potato in all its forms and states. He would have to be taught where and how potatoes grew, where to shop for them, and different ways of cooking them. Claudio's sighted and hearing classmates could learn such information from casual observations in a garden or on family grocery shopping trips or by watching family members cook meals. Claudio would need to be actively involved in and receive appropriate communication about all these experiences to have a full understanding of a simple potato.

Concept Development

Information that is gained through sensory experiences, including incidental information, provides the basis for concept development. The primary senses of vision and hearing greatly aid the development of the most elementary as well as the most abstract concepts.

Peggy Freeman, an expert on deaf-blindness and the mother of a young woman who is deaf-blind, discussed the impact of vision and hearing on the early development of the concepts of object permanence (knowing that things exist whether or not they are present) and cause and effect (what makes things happen):

The baby drops his rattle, he watches it roll until it is out of sight under a chair, he watches Mummy retrieve it from under the chair and give it back to him; or she hides it under a cushion and he finds it.... The child with a visual impairment who does not see where an object has gone will not know where to find it again, or even know that he could. If he is also deaf, you cannot tell him what is happening either. When he throws a toy it has gone—forever. He does not know when we hand it back to him that it is the same one that he threw away....

Secondly, it is by seeing that a child realizes his hands can be

used to achieve what he desires.... It is when he sees the relationship between a piece of string and the toy to which it is attached that he will understand its role in getting him the toy. (Freeman, 1985, pp. 25, 26)

Teachers and parents or other caregivers of children who are deaf-blind need to find alternative strategies for teaching these and other basic concepts. The strategies may vary from child to child, so it is important to observe carefully how a child best receives information and respond to his or her learning strengths. As you interact with a child who is deaf-blind consider

- supporting and enhancing the use of any residual vision and hearing (pay attention to color, contrast, size, distance, loudness, pitch, and so forth)
- providing other sensory and multisensory cues (scent, texture, vibration, temperature, and the like)
- repeating activities many times
- encouraging exploration
- ensuring appropriate communication for activities and experiences.

Communication and language skills are critical to understanding more abstract concepts, such as those related to movement, position, time and distance, and speed and motion. For students who are deaf-blind to learn such concepts, teachers and caregivers must build on their concrete experiences and previous learning, provide the language to label new concepts, and help them to generalize what they learn and to use new information accurately.

Mental Imagery

Individuals who are deaf-blind are further challenged as they attempt to construct mental images of simple objects. Natalie, for example, has myopia and a constricted visual field and can see only a small section of a car—not the whole car. To create a total visual image of a car, she must piece together the various parts. If Natalie were to examine the car tactilely, she would still have to “assemble” the parts in her mind.

A possible teaching strategy would be to use a small model of a car. It is important to note, however, that Natalie may not grasp the relationship between a real object and a model unless she has reached

the cognitive level of symbolic thought. If Natalie is not yet able to understand the relationship between a model car and a real car, her teachers can use other means to help her develop an image of a car. For example, for Natalie to get a sense of the size of a real car, they can have her lightly touch the exterior of a car as she walks its perimeter, starting and stopping at a clearly identifiable point. They can also determine which features (such as the type of door and the number and position of seats, and the inside space) may be essential for someone who is deaf-blind to distinguish a car from other vehicles, such as buses, vans, or trucks, and help Natalie explore and identify them.

Just as Natalie sees small parts of large objects, she encounters a parallel situation with her hearing. When someone speaks to her, even in close proximity, she hears only parts of the words. The consonant sounds that allow the listener to distinguish between similarly constructed words, such as *man* and *pan* or *tin* and *did*, are inaudible to her. A total communication approach that emphasizes both speech and sign language is vital for providing Natalie and children with similar vision and hearing losses with complete information (see the next module for more information on total communication).

EMOTIONAL DEVELOPMENT

Bonding and Attachment Behaviors

Sensory impairments can have a profound influence on a child's emotional and social as well as cognitive development. In early infancy they can interfere with the interactive dialogue between the child and his or her parents: The infant is often unable to perceive and respond to the parents' voices or facial expressions, and it may not be possible for them to establish eye contact. This interference can disrupt a basic developmental foundation for communication and relationships. Barraga (1992, p. 33) noted that the interplay between the infant and his or her parents "provides a basis for establishing trust and security, and may supply the framework from which the infant organizes responses into a 'cognitive map' of self in relation to someone else and knowledge that there is a larger environment."

For infants who are deaf-blind, physical contact, such as touching, patting, and stroking, is especially important. Van Dijk (1989) encouraged parents to make touching and handling as meaningful as possible to their infants. He argued that deaf-blind people may

engage in stereotypical behaviors, such as clinging, clutching themselves, and other self-stimulating behaviors, in an attempt to seek security because their nurturing needs had not been met in infancy.

Sense of Self and Body Image

As was already noted, early relationships affect an infant's sense of self, or self-concept. When combined vision and hearing losses limit early interactions, the establishment of a sense of self is a formidable task, since, as Warren (1984, p. 206) stated, "the blind child... does not have the visual experience of the relationship of his body parts or of the similarity of the parts and whole of his or her body to those of other people." Children who are deaf-blind may have difficulty forming the concept of where they end and someone else begins or what their bodies and beings truly encompass. As McInnes and Treffry (1982) noted, many do not develop the perception that their extremities are parts of them. It can take effort for these children to develop this body awareness and sense of self, which hearing and sighted children seem to develop automatically.

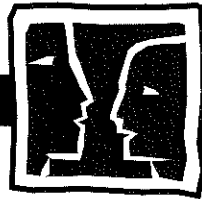
The following example illustrates the difficulties that some children who are deaf-blind may have with body image:

While waiting for the school buses to arrive, a teacher decided to play a version of hide-and-seek with a group of students, aged 7 to 11, who were deaf-blind. The teacher explained that she would hide somewhere in the classroom. From her hiding place, she watched the students look for her in the most unlikely places. They opened books and desk drawers, checked inside shoe boxes, ran their hands along the shelves of the bookcases, and tried to find her in places in which even their own smaller bodies could not possibly fit. The teacher was surprised that these bright students—who were at their grade level for many academic skills—had distorted concepts of the size of people in relation to other objects.

As a result of her discovery, the teacher began to use hiding and obstacle-course games, art and measuring activities, and any spontaneous opportunity to teach the students to become more aware of their bodies. She also recognized the importance of physical education and exercise in the students' programs, as well as activities that are designed to teach body image and environmental awareness (see Ideas for Enhancing Awareness of Body Image in this module).

Motivation

From early infancy, visual and auditory stimuli provide children with motivation to interact with the environment. Infants smile when they see their parents' faces, pull themselves to standing when they see favorite toys, and localize their parents' voices and crawl to find them. Visual and auditory stimuli make the world an enticing place to infants, who are motivated to explore and interact in their environments because of this beguiling stimulation. Children who are deaf-blind, however, have severely limited access to these powerful stimuli; therefore, caregivers and teachers need to provide other means to interest them in engaging in interactions with other people and their environment. In addition to physical contact with other people, enticing stimuli for these children may include objects that vibrate, move, smell, and have textures, but it is important to use those that an individual child prefers.



T H E O R Y i n t o P R A C T I C E

IDEAS FOR ENHANCING AWARENESS OF BODY IMAGE

Because children who are deaf-blind may need help to develop a clear sense of their bodies and the environment as a result of limited sensory input, activities that promote their awareness in these areas are particularly valuable. Here are some examples:

- During play and exercise periods with young children, include games, such as "Simon Says" and "Take a Giant Step," or interactive songs, such as "Head, Shoulder, Knees, and Toes," using the children's individualized communication systems.
- Carry out a regularly planned program of mat activities that require the children to crawl, roll, do push-ups and sit-ups, stretch, bend, and turn, using the children's individualized communication systems.
- Teach the children to be responsible for putting on, taking off, and storing their outer garments.
- Provide the children with opportunities to explore further the concept of body image by asking them to find parts of the teacher's body, such as the head, hair, shoulders, and extremities, using their individualized communication systems.
- Teach the children to use common communication gestures, including waving, pointing, and nodding yes or no, using their individualized communication systems. ■

Perception of Safety

One's perception of safety is closely tied to one's motivation and willingness to interact with one's environment. The failure to interact with the surrounding environment will greatly influence a child's formation of basic concepts, establishment of relationships with others, knowledge of the surrounding world, and development of physical dexterity. Basic behavioral principles state that if experiences and interactions have been positive, they are likely to be repeated (Kazden, 1980). Positive experiences may further motivate a person to seek new experiences. However, if the individual does not feel safe, he or she will probably avoid certain situations.

Children who are deaf-blind may not always feel safe, and their daily routines can condition them to withdraw from the world because they are more vulnerable to potential danger. Dual sensory impairments often prevent access to the simplest cues for self-protection—a quick glimpse of a ball in flight or a low-hanging branch or the whine of a speeding bicycle. Deaf-blind individuals do not have the temporal margin of safety—those few seconds of advance warning—afforded by vision and hearing, so they cannot quickly move out of harm's way.

Many parents and teachers who work with students who are deaf-blind become overprotective because of their concerns for the children's safety in such situations as traffic, bodily attacks, and fires. Even with the best intentions, it is possible to stifle a child's curiosity, to patronize him or her, and to eliminate natural possibilities for learning and self-development. The modules in Unit 3 that emphasize orientation and mobility (O&M) skills offer numerous strategies for enhancing the safety of children who are deaf-blind, encouraging their involvement at home and in the community, and promoting their independence.

Learned Helplessness

Parents and teachers may not only overprotect children who are deaf-blind, they may "overdo" things for children. This tendency can result in children developing what is called learned helplessness, the feeling that their lives do not make a difference and that they have no control over the environment. In a sense, they are "taught" to become unnecessarily dependent on their caregivers (Seligman, 1975; van Dijk, 1989).

People who are deaf-blind may fall into a pattern of learned helplessness because their access to visual and auditory information is severely limited, and they may be unaware that their actions can

and do affect their environment. Thus, they may find it easier to let others intervene, resolve problems, and make decisions, and sometimes come to expect others to do so.

Teachers can unintentionally foster learned helplessness in their students, as the following example illustrates:

Rita is deaf-blind and attends a preschool class. Teachers, teaching assistants, and fellow classmates bring her anything she needs for classroom activities, including snacks and lunch. As she completes an activity, materials vanish from her desk. Rita cannot see or hear these comings or goings and is often not told what is taking place. She has no idea where things come from or what will appear next. What should Rita think when hands cross her desk all day long, making things appear or disappear? It is difficult to imagine that she feels any control over her environment. Rather, she has learned to expect that everything will be done for her.

To foster Rita's independence, her teachers would have to let her know what activities are being planned and encourage her to participate in every step of the process: planning activities, gathering supplies, preparing snacks, and returning supplies. Her parents would need to encourage her independence at home as well. Rita could be given the assistance she needs while she is helped to become more interactive and involved in her daily activities and opportunities to exercise choices, so she could have some control over her environment.

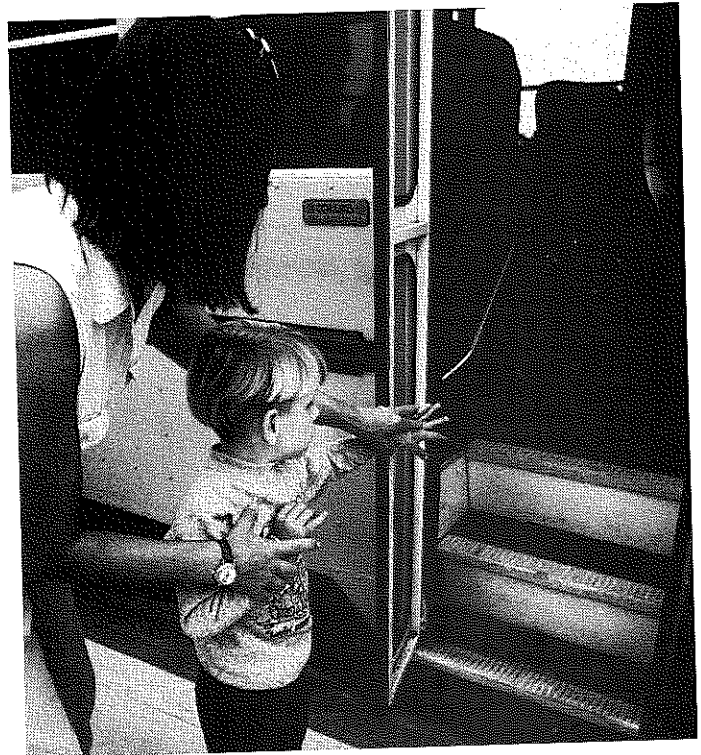
Isolation

Deaf-blindness may be the most isolating disability, given that society's chief forms of communication rely on visual and auditory devices, such as printed language, television, radio, telephones, and computers, and that purposeful independent movement is strongly related to the ability to see. As a result, people who are deaf-blind frequently may not participate fully in social activities.

Even simple social contact requires much effort for deaf-blind individuals, especially for those who do not have strong communication and mobility skills. Imagine, for example, a deaf-blind woman in a social gathering that includes many hearing and sighted people. Unless others have introduced themselves to her or she is told who is attending the event, she may not be aware of the kind and size of a room or who is in the room with her. Without the assistance of an

interpreter who knows sign language or basic assistance in orienting herself to her surroundings, she will not be able to interact easily with the other guests. Even with a skilled tactile sign interpreter, it would be difficult for her to participate in group conversations because the pace is brisk, many people are speaking at once, and information conveyed by facial and body language may be difficult to discern. Social cues, signaling that it is time to circulate from group to group, may be difficult to interpret, and even if they are understood, mobility in an unfamiliar crowded room may present a formidable challenge. If food is served, the woman may need clear information about where it is and may have to stop conversing (communicating tactilely) to use her hands to eat the food. Without effective communication and mobility skills and accommodations by the group, it is likely that a person who is deaf-blind would feel isolated in this kind of social situation.

In the modules that follow, numerous strategies to help people who are deaf-blind counteract potential isolation are explored: effective ways to communicate, environmental adaptations that foster full participation, efficient means of movement, and a variety of means to support independence. Teachers can play a key role in helping deaf-blind students and students who are hearing and sighted interact as true peers. (For a sense of the importance of this role, see *Growing Up with Deaf-Blindness*.)



▲ *By helping her student have direct physical contact with an object, this teacher is contributing to the child's concept development and ability to form mental images.*

CRITICAL FACTORS

The effects of deaf-blindness on the individual and his or her development are influenced by a number of factors. Four key factors in particular contribute to the impact of deaf-blindness on an individual child:

- age at onset of vision and hearing loss
- degree and type of vision and hearing loss

- stability of each sensory loss
- educational intervention.

The first three factors are physical, and the last factor is environmental. Understanding them will help families, teachers, and other service providers to design more effective instructional programs for children who are deaf-blind. (For more information about the causes of deaf-blindness, see Appendix A.)

Growing Up with Deaf-Blindness

Robert J. Smithdas

When I was 4½ years old, I was stricken with cerebrospinal meningitis and became totally blind and lost nearly all my hearing. I could not hear my own voice, and only loud sounds, such as hammering or thunder, penetrated my silence. But within four years, what little hearing that remained disappeared overnight, leaving me totally deaf.

I was fortunate while growing up that my parents and other members of my family did not inhibit my curiosity and initiative. Within reason, I was permitted to explore my environment and experiment with new objects, such as tools, and was included in as many family activities as possible. I was equally fortunate that most of my teachers at the Western Pennsylvania School for the Blind, which I eventually attended, were also flexible. They restricted me only when there was a possibility of danger or inappropriate action.

During my first year in school, I was given private instruction in reading and writing braille. Later, I learned the manual alpha-

bet and print-on-palm to communicate with my family. All my school assignments were given to and completed by me in braille.

I did not participate in the classroom, however, because the speech I had developed before I lost my hearing began to blur and become unintelligible. Some of my classmates learned to communicate with me via fingerspelling, but I was excluded from their play activities. This situation might have led to an intense sense of isolation if I had not been fond of reading and doing hobbies.

At 16, I was sent to the Perkins School for the Blind, where I learned the Tadoma method of lipreading by vibration and received intensive speech therapy. The skills I have learned (speech, fingerspelling, basic sign language, print-on-palm, braille, and Tadoma) and keeping mentally and physically active have helped me overcome the isolation imposed by deafness and blindness. But most important, I know I am accepted as a human being who is part of society and the lives of others. ■

AGE OF ONSET

The earlier in life a disability develops, the more significant the effects are for learning, and this is especially so regarding disabilities of vision and hearing. Reduced access to precise information from interactions with people and objects may affect the development of basic concepts during critical developmental periods. The development of motor skills and cognitive skills is affected most by early losses of vision and hearing. As a result, the formulation of concepts and mobility skills requires more time and repetition in the face of these sensory losses. Early intervention provides a child who is deaf-blind with ways to get information that is vital for concept development. Early support for parents gives them tools to help their infants and toddlers who are deaf-blind develop. (For more information on infancy and toddlerhood, see Modules 7 and 16.)

The loss of vision and hearing in adulthood can present difficulties, but concept development and mobility are less likely to be affected because most basic concepts have been learned and new information can be obtained by adapting the mode for receiving it. Adjustments in mobility and daily routines can be learned, building on previously learned information and concepts.

DEGREE, TYPE, AND STABILITY OF EACH LOSS

Even a small amount of residual vision or hearing can be helpful for gaining information and learning new concepts and skills. Most people who are called deaf-blind have either some useful hearing or some useful vision; few lose all their hearing and vision. In either case, they have access to some of the same environmental information as do other people. All information that can be obtained and used supports the development of concepts and greater independence in decision making for daily activities.

Some disorders, diseases, and other conditions that contribute to deaf-blindness are progressive. For example, the hearing loss from Usher syndrome is usually stable, but the vision loss from retinitis pigmentosa (RP) is progressive. Neurological disorders may be stable or progressive, and some or all the resulting disabilities may increase quickly or gradually over time. Information-processing abilities may change or become more limited; in addition, tactile perception and processing may decrease.

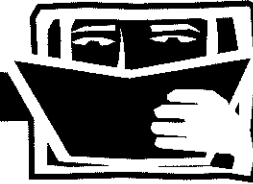
When progressive losses occur for whatever reason, people who are deaf-blind may need to adjust how they obtain and use environmental information. They can adapt independent travel techniques, find new ways to perform tasks, and learn new ways to communicate.

Progressive losses may be confusing or upsetting to individuals who do not know what to expect. Instruction in new skills as they are needed, for example, in using braille or a cane or a hearing aid, can help a student with a progressive loss prepare for life with reduced sight or hearing through a knowledge of new strategies for obtaining auditory and visual information and for performing daily tasks.

Older students with progressive vision and hearing losses may find it helpful to discuss the emotional issues with a counselor who is sensitive to the life changes that must be made, such as dealing with the inability to listen to the radio, watch television, or read. Counselors can also help students deal with the perceptions of and interactions with peers. For example, a student with Usher syndrome among classmates who are deaf may be reluctant to use a long cane or begin to use large print or braille to read because these obvious symbols of vision loss can set the student apart from other students who use vision for virtually all communication. Few teenagers, including students who have Usher syndrome, want to be different from peers, and they may resist the adaptations they need to travel and read.

Children who do not have strong communication skills may have a more difficult time understanding and managing the adjustments they must make to progressive losses of vision or hearing. Teachers who are aware of the medical factors in students' lives can be alert to behavior that signals decreasing vision or hearing (see Signs of Vision Loss and Signs of Hearing Loss in this module and Appendix A for information on various causes of deaf-blindness, including progressive forms).

Students with limited communication skills may not be able to express what is bothering them. Therefore, it is important to watch for changes in behavior that may signal frustration, confusion, or a different level of functioning that is due to decreasing sensory information. Ongoing observation and documentation of behavior, as well as periodic formal assessments, allow teachers to detect rapidly any changes in students' vision or hearing and to help students adjust to these changes.



HELP at a GLANCE

SIGNS OF VISION LOSS

- Bumps into objects.
- Moves hesitantly or walks close to the wall.
- Gropes for objects or touches them in an uncertain way.
- Squints or tilts the head to see.
- Requests additional or different kinds of lighting.
- Holds books or other visual material close to the face.
- Drops objects or knocks them over.
- Shows difficulty in making out faces or the numbers that designate rooms or floors.
- Looks ungroomed or sloppy, with stains on clothing or uncombed hair.
- Acts confused or disoriented, for example, walks into the wrong room by mistake. ■

If a student, especially one with limited communication skills, seems to be experiencing additional losses of vision or hearing, what can a teacher do to help?

- Work constantly with the student's family members to learn which behaviors they are noticing at home and how they interact with the child.
- Increase physical closeness while teaching; use more one-to-one individualization, particularly for learning new skills; and encourage more "hands-on" work, especially if the child has been using residual vision for many tasks.
- Demonstrate more activities and be sure that the student has access to tactile information (in addition to visual or auditory information) for the activity or object being presented.
- Review the environment to see what adaptations may be needed, including increased lighting on the child's communication board or desk and the reduction of noise.
- Adapt materials or activities to include (1) more tactile information (for example, by outlining picture figures on a communication board with puffy paint), (2) increased visual information (for instance, by photocopying enlargements of



HELP at a GLANCE

SIGNS OF HEARING LOSS

- Gives no response when spoken to.
- Often gives irrelevant or incorrect responses to questions.
- Seems unable to follow spoken directions to carry out an activity.
- Often says "huh?" or "what?" and requires repetition.
- Seems unaware that others are talking and interrupts conversations.
- Seems to have a behavioral problem or is irritable.
- Expresses confusion or uncertainty when unable to understand.
- Holds head in an abnormal position to listen "better"; seems unable to locate the source of a sound.
- Watches a speaker's face intently.
- Seems inattentive, but pays more attention to visual things.
- Speaks more loudly or softly than expected for a situation. Has an unusual vocal tone or resonance or patterns of speaking.
- Uses gestures to get attention and objects more than would be expected.
- Seems to have language problems (structure, syntax, vocabulary).
- Seems to withdraw from interactions in groups.
- Has frequent colds, earaches or ear infections, and allergies.
- Breathes through the mouth more than through the nose.
- Complains or shows signs of ear pain, fullness in the ear, dizziness, or balance problems. ■

pictures or print materials), and (3) increased auditory information (such as by moving closer to the student or putting a room-size carpet remnant on the floor to reduce noise).

- Introduce new activities or changes in routines or classroom arrangements carefully. Give the student time to adjust to the new routines and introduce them as many times as is necessary.
- Give the student more time to perform newly adapted tasks.
- Provide the student with more tactile feedback and frequent assurance that you are nearby, with a pat on the shoulder, for example. For a child whose sensory information is diminishing over time, this kind of reassurance is comforting and can

help reestablish environmental predictability that once came primarily with visual or auditory information.

Any student whose loss of vision or hearing (or both) is progressive needs help in confirming that many aspects of the world are the same as they were, but access to them is changing. The student needs to know that the teacher is still present and ready to interact with and assist him or her, although with more tactile than visual and auditory features. Observing the student's behavior and adapting tasks as necessary are the best tools for helping the student adjust to the progressive visual and auditory changes he or she is experiencing.

EDUCATIONAL INTERVENTION

The amount and type of educational intervention a child who is deaf-blind has had will influence the overall effects of his or her combined vision and hearing losses. If adequate assistance and information are provided for parents of an infant or toddler who is deaf-blind, the child's understanding of the immediate environment and relationships with people in it can be enhanced, and the child can participate more fully. If consistent, ongoing, and appropriate instruction is provided, the child can learn skills for independent communication, movement, and overall daily living.

FORMS OF DEAF-BLINDNESS

Teachers can work with students more effectively when they are familiar with the major forms of deaf-blindness and the implications of these forms for children's educational needs. In the descriptions that follow, the interplay among the age of onset, the degree of sensory loss, and the stability of each loss can be seen.

EARLY DEAF-BLINDNESS

People tend to think of early onset when they hear the term "deaf-blind." This is the most obvious form, since it is the most extreme, although it is not the most frequent. People with early deaf-blindness

- have both visual and hearing losses at birth or by age 2
- have severe to profound losses of both vision and hearing

- lack access to much environmental information, except within arm's reach.

The most well-known person with early deaf-blindness is Helen Keller, who had an infection with a high fever at around 18 months that left her without useful vision and hearing. Although Keller had

been learning the ordinary things that infants and toddlers learn before age 18 months, her access to her environment changed dramatically after she became deaf-blind. She no longer learned new concepts by observing and listening to people, events, and things around her. Several years later, it took many hours at the water pump with her new teacher Anne Sullivan before Keller remembered the word that she had just begun to learn to say before her illness, "wa-wa" for water. With intense individualized instruction, she developed many skills for independent living.

Clearly, there are many implications for the development and learning of a child with this form of deaf-blindness. However, the major overall implication is that the observation and imitation of

actions and language (both spoken and signed) probably will not occur naturally because visual and auditory inputs are inaccessible, which may limit learning and cause delays in the development of skills. Some techniques that parents and teachers can use to facilitate development are these:

- Parents and teachers can interact with the child using movement, physical closeness, and touch to promote the development of communication. (Even tactile sign language may be used early.)
- One-to-one interaction (typical for parents with young children) promotes the development of relationships with significant people and can easily be expanded to include siblings, extended family members, and neighbors.



▲ *The use of physical closeness and one-to-one individualization is a particularly effective strategy, especially when teaching new skills.*

- Information from smell and taste can supplement information from touch and movement.
- Parents and teachers can introduce concepts with hands-on demonstrations and repetition.

EARLY, LESS SEVERE HEARING AND VISUAL IMPAIRMENTS

Most people who are identified as deaf-blind have some useful residual vision, residual hearing, or both. People in this category

- have the combined partial impairments from birth or early childhood
- have mild to moderate losses of both senses
- usually receive incomplete or indistinct visual and auditory information (blurry, vague, muffled)
- can learn to interpret even minimal visual and auditory information meaningfully with training and assistive devices
- can use this information for developing language, communication, mobility, and conceptual skills
- are likely to have gaps in concept development because of the reduced information available to them
- can benefit from multisensory input to fill in the gaps in concept development.

Parents and teachers often assume that if vision losses are corrected with eyeglasses and hearing losses are amplified with hearing aids, children should not be regarded as deaf-blind. Some children use residual vision with eyeglasses and hearing with hearing aids well, but some do not. Many factors can interfere with the children's information gathering, including background noise, such as traffic noise from a major street or an air-conditioning system, and variable lighting, as when natural lighting from windows is dimmed on a cloudy day.

Parents and teachers can and should continually monitor and interact with students with partial vision and hearing to ensure that they are getting the information they need to learn concepts accurately. They can use the following simple techniques to do so:

- To check the child's perceptions of what is occurring in the environment and his or her general concept development, ask

the child: "What just happened here? What did you see [or hear]?"

- To check the child's comprehension of a message, have the child retell what you described or demonstrate something you have just shown and explained.
- Repeat and rephrase what you have previously explained for more clarity.
- Provide multisensory information with each new experience or concept; adapt information for touch, movement (together or by imitation), smell, or taste if appropriate.

Children with partial vision and hearing can often participate in a variety of activities using their residual vision and hearing. With some structured training and much repetition, they can learn to interpret information more easily and automatically.

EARLY HEARING DISABILITY WITH LATER VISION LOSS

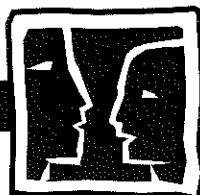
Some children have been deaf or have had significant hearing impairments from birth or early childhood and use vision for most information gathering and learning. A number of them may have significant vision losses later in life and become deaf-blind. A child who is deaf or hard-of-hearing and later loses vision

- has the hearing impairment at birth or by age 2
- has a mild to profound hearing loss that may contribute to delayed language and speech development
- has subsequent delays in learning reading and writing skills, as well as delays in developing related academic skills because of delays in language development
- can generally master daily living activities through visual imitation without major difficulty.

Significant educational implications are related to the last two items on the list. Parents and teachers can adapt daily living activities, like dressing and eating, with visual imitation. More formal adaptation may be required to teach communication effectively (see the following module for more information).

The leading cause of this form of deaf-blindness is Usher syndrome, which affects from 3 percent to 10 percent of all people who

have hearing impairments (Duncan, Prickett, Vernon, Finkelstein & Hollingsworth, 1988). The vision loss that accompanies Usher syndrome can become especially significant during the teenage years and adulthood (see Usher Syndrome for more information). Other causes of this form of deaf-blindness include early deafness, followed later by detached retinas; Refsum's syndrome; Friedreich's ataxia (which also results in a motor disability and progressive dam-



T H E O R Y
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P R A C T I C E

USHER SYNDROME

Usher syndrome involves both a genetic hearing loss and a genetic vision loss that is due to retinitis pigmentosa (RP). Although the hearing loss is usually obvious from birth or early childhood, the vision loss is often more gradual (Duncan, Prickett, Vernon, Finkelstein & Hollingsworth, 1988; Stiefel, 1991).

Two visual problems that children with Usher syndrome develop early are night blindness and the loss of peripheral vision. Central vision is affected later, and because children with Usher syndrome may have sharp acuity for reading print and for daily living activities, the diagnosis of Usher syndrome may not be made until adolescence or adulthood.

Two types of Usher syndrome are prevalent—Type I and Type II. In Type I, severe to profound hearing loss is

present at birth, but vision loss does not become obvious until adolescence, and by middle age, most individuals have lost much of their vision. In Type II, mild to moderate or even more significant hearing loss is usually present at birth, but the vision loss is more gradual than in Type I, and some people never become totally blind.

Because only peripheral vision is lost in childhood, and Usher syndrome is usually not diagnosed in childhood, children may experience difficult social and emotional circumstances as a result of misunderstandings. For example, they may be labeled clumsy because they bump into or stumble over objects or be considered inattentive or stuck-up because they cannot detect people or objects from the side.

In addition, children with Usher syndrome are often edu-

cated with other children who are deaf and hard-of-hearing and grow up participating in recreational activities in the deaf culture. Therefore, when their vision losses become severe in young adulthood, they may be unable to participate in these activities or to use sign language or speechreading and hence may feel isolated from the close-knit, supportive deaf community. Furthermore, their communication with their families can become limited, and family members often become over-protective. Therefore, counseling is important especially for deaf teenagers with RP to help them cope with the gradual and anticipated changes in their vision; to deal with possible comments and teasing from peers and others; and to make decisions about a number of issues, including driving and letting others know what visual adaptations they need. ■

age to the central nervous system); and early deafness with later trauma or loss of vision from an accident or medication (see Appendix A for specific conditions mentioned in this module that cause deaf-blindness).

Most people with significant early hearing losses have learned many basic concepts and skills using visual information and experiences, and many also use American Sign Language (ASL). As their visual impairments progress, they are likely to need to learn new ways to get written and signed information, including the use of tactile sign language or fingerspelling for communication directly with other people and reading in large print or braille (see Modules 3 and 8–10 for more information).

EARLY VISUAL DISABILITY WITH LATER HEARING LOSS

An individual who has been blind or visually impaired from birth may acquire a hearing loss later and become deaf-blind. Some causes of this form of deaf-blindness include

- damage to the ears from accidents or infections
- the use of medicines, such as mycin drugs, that can damage hearing
- syndromes like Leber's amaurosis (in which the hearing loss, if there is one, may occur in childhood).

Children with this form of deaf-blindness

- have mild to significant visual impairment or are blind at birth or by age 2
- have access to auditory information, especially language, and their parents tend to rely on spoken language, movement, and tactile information to support their concept and mobility development
- learn to read and write using braille or regular or large print, depending on the degree of vision loss and the amount of remaining useful vision, with spoken language as the basis for reading
- probably will not need an adapted reading method (braille or large print) if the visual impairment is mild and stable because a later hearing loss will not affect already developed reading skills

- can learn academic subjects normally in elementary and secondary school if their hearing loss does not occur until adulthood and they have no additional disabilities
- have already learned to perform daily living activities (such as selecting clothing, brushing teeth, or crossing streets safely) that would typically be learned through visual imitation using adaptations and demonstrations involving movement and tactile information combined with auditory information, including spoken descriptions
- will need to learn new ways to obtain auditory information, for example, by reading news in braille, rather than listening to television or radio, or by having a person read mail with fingerspelling.

LATER SENSORY LOSSES

People who lose both vision and hearing either as young adults or later in life also may be considered deaf-blind. Those whose sensory losses occur when they are young adults

- have already mastered essential movement and communication skills using vision and hearing
- can learn new adaptive life skills for movement and communication based on previously learned concepts and skills
- may have additional disabilities resulting from the same diseases or conditions that caused their visual and hearing losses, such as accidents, brain tumors, stroke, or spinal meningitis
- may find counseling helpful for psychological-emotional issues that are sometimes associated with the sudden or gradual loss of vision and hearing that interferes with long-established ways of communicating and performing daily routines
- may need to relearn academic or job skills without visual and auditory information or may need to train for different types of work entirely.

The ease with which individuals relearn concepts and skills for daily life varies greatly. Traumatic brain injury, for example, can cause neurological and processing difficulties that affect a person's ability to use auditory and visual information meaningfully. Strategies for getting information and completing activities can be adapted,

though, to include more information from touch, as well as taste, smell, and movement. Special training and assistance are often available through state rehabilitation agencies that serve adults with disabilities or through the Helen Keller National Center for Deaf-Blind Youths and Adults (see the Resources section for more information).

DEAF-BLINDNESS AND ADDITIONAL DISABILITIES

Many children who are deaf-blind have additional disabilities, including motor and cognitive disabilities, usually for the same reasons they are deaf-blind. Additional disabilities may entail further learning challenges for children and instructional challenges for their families and teachers. In general, such multiple disabilities further remove the child from easy access to and understanding of the environment. Not only may the child have limited access to sensory information, but he or she may have difficulty processing interactions with people and objects and attaching meaning to these interactions. The profile of early deaf-blindness (including partial vision and hearing) applies to these students as well, and additional factors are considered here.

Some common reasons for deaf-blindness with multiple disabilities are rubella (German measles), cytomegalovirus inclusion disease (CMV), and prematurity (see Appendix A). Intervention that begins early and is consistent promotes concept development. Children who are deaf-blind and have multiple disabilities benefit from interactions with family members, other relatives, and neighbors in their communities. With these interactions, the children can learn important communication and movement skills to become more independent.

Motor Disabilities

Some children who are deaf-blind have significant motor disabilities, such as from cerebral palsy. It may be more difficult for them to get information from the environment because they do not move easily to explore and interact with people and objects in the environment and their motor disabilities may limit their ability to grasp and manipulate objects to get tactile information. Restricted movement, in addition to the lack of access to visual and auditory information, can dramatically delay concept building, communication, and the development of life skills. Children who are deaf-blind and have motor disabilities must have access to all the elements of their environments to understand what is happening around them, just as do all

other children. "Purposeful movement is communication with the environment... [and] the development of movement is inseparably linked to communication skills" (Langley & Thomas, 1991, p. 2). Parents and teachers therefore need to adapt environments and routines at home and at school so these students have access to information (Dunn, 1991). Some practical solutions are these:

- Keep the learning environment safe and uncluttered, to promote movement.
- Show children how to explore and encourage them to do so by moving with them to and through an activity.
- Set up instructional and play activities on low tables or the floor and ensure that children who move with wheelchairs, walkers, and other equipment can do so safely and easily in all areas.
- Help students position themselves at each activity area, so they can perform activities comfortably. Consult the physical therapist and the occupational therapist on the educational team to learn the best ways to do so.
- Encourage children to move very close to objects, people, and areas, so they can interact with and gain useful information from them.

Cognitive Disabilities

Cognitive disabilities also can challenge children who are deaf-blind and those who interact with them. Impairments of cognitive functioning hinder the way the brain processes information and responds to it. When a child lacks access to information from the environment, making sense of the available information is even more difficult. Some of the common causes of deaf-blindness, like those mentioned in the introduction to this section (rubella, CMV, and prematurity) can cause cognitive disabilities (Batshaw & Perret, 1986). Children who are deaf-blind and have impaired cognitive abilities

- may not always process the auditory and visual information they receive quickly or meaningfully, even with guidance.
- can have difficulty with learning "strategies" or tools because they do not always relate previous experiences to the present and do not respond from their previous exposure to and interpretation of similar information (McCormick, 1984, p. 179).

- may have difficulty learning abstract concepts, but can learn concrete and immediate concepts with repeated experience and interaction. Examples of concrete experiences include daily routines, such as getting ready for school, going to swim with family members at a local pool on a scheduled basis, and mealtime or bedtime routines.
- can benefit from functional curricular activities that develop essential life skills like dressing and feeding themselves, performing basic hygiene tasks, and understanding basic safety concepts (see Teaching Functional Activities).
- can benefit from community-based activities and instruction that occurs in natural settings, such as pools, playgrounds, and stores.
- need multisensory information from touch, movement, smell, and taste for every activity to supplement any visual or auditory information that may be accessible.

Functional and community-based activities that begin early and occur frequently are the most advantageous for children who are deaf-blind and have cognitive disabilities.

Neurological Disorders

Some forms of deaf-blindness are accompanied or caused by neurological disorders. Neurological disorders that affect the central nervous system (the brain and spinal cord, primarily) can affect the processing of information and can cause additional deterioration of vision, hearing, and cognitive and motor function (Batshaw & Perret, 1986).

In some cases, the reasons for neurological disorders are unknown. In other cases, identified genetic or congenital disorders bring about neurological problems. For example, prematurity may be accompanied by neurological problems, depending on the newborn's gestational age at birth and complications with oxygen in an incubator. Premature infants who were born early in gestation may not have had adequate time for their neurological systems to develop completely.

Head injury (traumatic brain injury) from an accident or another trauma may also cause disorders that include visual and hearing losses. A child with a head injury or similar neurological disorder (for example, childhood stroke, a rare occurrence) learns differently



TEACHING FUNCTIONAL ACTIVITIES

When a task or activity is strictly functional, it means that it must be done either by the student or for the student if the student cannot accomplish it. Examples of functional tasks and activities include these:

- Brushing teeth and hair, bathing, dressing, and eating.
- Functional communication skills, such as getting another person's attention appropriately, requesting something, or making a need known.
- Functional academic skills, including reading and writing one's name and address or knowing how much change one should get when one pays for an item.

- Leisure activities.

Teaching functional skills involves

- *Modeling*—showing the student how to perform an activity. For students with little vision and hearing, use full touch guidance and move with them using hand-over-hand guidance. For students with some vision or hearing or both, use close visual demonstration (with touch as a supporting sense) to clarify specific movements or concepts.

As you model, "explain" what you are doing and why, using the student's most effective communication mode (speech, signing, indicating a picture from the student's vocabulary board, gesturing, and so on).

- *Practicing*—after initial instruction, reinforcing the new activities by doing them over and over with the student until the activity patterns and communication about them become spontaneous. For some students, only parts of activities will become spontaneous. Let the students do those parts independently and assist with the rest.

- *Incorporating situations and routines that require the skills.* Design the instructional day so the most vital functional routines, natural and anticipated, are included. Students are more likely to perform functional activities successfully if the activities are routine, predictable, and meaningful on a daily basis. ■

from a child with more "traditional" forms of deaf-blindness. Children who are deaf-blind and have neurological impairments

- may have various degrees of vision, hearing, cognitive, and motor impairments
- may process and interpret visual and auditory information with minor errors or with more significant distortions
- may have organic forms of deaf-blindness resulting from impairment in the eyes and ears or may have brain damage such that even with intact eye and ear function, the brain does

not use any of the visual or auditory information it receives (sometimes called “cortical deaf-blindness”)

- may have sensory integration problems, or difficulty sorting and processing information from the senses when several forms of information are received at the same time (Morris, 1991)
- may resist touch or any kind of tactile stimulation (called “tactile defensiveness”)
- can benefit from the slow and repeated introduction of movement and tactile information and touch cuing, combined with any auditory and visual cues they can use
- can benefit from the structured, individualized, multisensory instructional programs that are described throughout these materials.

Sensory integration problems occur when a child’s brain receives much more sensory stimulation than it can process at one time. The amount of information that causes a sensory overload differs for each child with sensory integration problems, however. Therefore, parents and teachers may need to monitor a child’s response to unusual or new sensory information and reduce some of the information the child receives for a time until the child can manage it, as the example of Nicky illustrates:

Nicky participated with the entire school in assemblies, but his teachers noted that during assemblies he would become rigid in his wheelchair and breathe heavily, as if hyperventilating—behavior that he did not exhibit anywhere else in school. A visiting teacher who worked with Nicky suggested that all the visual and auditory information in the large crowd of children might be difficult for Nicky to process with his remaining vision and hearing. After staff members turned his hearing aid to a lower volume for the next assembly, Nicky did not become rigid or breathe heavily during the assembly.

Nicky’s deaf-blindness and motor disability resulted from a head injury with neurological damage, and his difficulties with the noise and visual activity in assemblies were probably due to sensory integration problems. Reducing one of the sensory factors, the volume of sound, allowed Nicky to participate more effectively in this group situation.

SPECIAL HEALTH CARE NEEDS

Chronic, significant medical problems may occur with some forms of deaf-blindness. Children who have special health care needs because of their medical problems are sometimes referred to as “medically fragile” and may

- use respirator equipment for breathing
- be limited in their movement as a result of the equipment they need for health conditions, such as a respirator with a long tube attached directly to their chests
- be fed with gastrointestinal tubes
- have motor disabilities
- need frequent medical attention from a qualified medical service provider, such as a nurse
- have repeated absences from school for health care
- miss out on some family interactions because of hospitalizations
- benefit from being in ordinary instructional settings with appropriate medical supports
- benefit from as much community interaction and experience as is possible
- benefit from having experiences “brought to them” (such as visits from neighborhood children), so they do not miss opportunities for interaction.

Children who are medically fragile often need special support for participation. When you work with them, their participation depends on your understanding and accommodating these special needs. Here are some things you can do:

- Learn everything you can about a student’s medical needs and consider how the child’s medical and educational needs can be linked, so both are met.
- Find out how the family handles everyday activities at home and visit the family to get ideas.
- Check with the child’s physician to learn about health and safety considerations. Include the physician on the child’s educational planning team.
- Be sure that everyone who works with the student under-

stands emergency procedures. You can request an in-service session on monitoring the student for an emergency condition and how to know when the student needs medical help.

- To ensure that instructional routines and schedules accommodate the student's medical needs, you may have to alter activities to allow time to move the student and any equipment he or she uses, change the classroom setup to allow room for extra equipment, and schedule more rest periods for the student or for the entire class.
- Develop strategies for including the student in field trips, assemblies, and other out-of-class activities that all students attend. You may need to request one or more volunteers or a temporary aide, who can help with other students during these events, so you and the regular aide who is assigned to the student can concentrate on helping the student participate.
- As the teacher, it is important for you to monitor the student's participation in all class activities to ensure that the student has access to all the instructional opportunities that the other students have.

SUGGESTIONS FOR LEARNING

Given the variation in the effects and forms of deaf-blindness, the most effective way to understand the implications of being deaf-blind for an individual student is to get to know the student. By observing students in various environments and situations and while performing daily living, recreational, academic and/or job-related tasks, you will learn what information is important to them and how they gather information. Observe them explore, manipulate, respond to, and learn about new clothing, toys, household items, tools, foods, low- and high-tech communication systems, new classrooms, recreational facilities, and other environments in their communities. Observe them communicate their wants, likes, and dislikes through body language, facial expressions, and language systems. Keep in mind that you need to give them sufficient time to respond to information provided through the senses. These students may need considerably more time than you might expect because they need to explore objects and environments, using their sense of touch and

other senses to gather information slowly and systematically, and relate the new experiences to those of the past.

Children who are deaf-blind usually do not have the advantage of effortless learning and access to information. And they may not have access to visual and auditory information, or the visual and auditory information they receive may be limited, distorted, or incomplete. Therefore, they need to

- be taught many of the things that others learn incidentally
- be provided with direct experience, information, and repetition, so they can learn to predict situations and develop concepts
- be given opportunities to apply what they have learned to new and varied situations and environments
- complement visual and auditory information with information from the other senses
- maximize the use of tactile information
- be instructed in how to examine things systematically
- be motivated to explore and get involved with other people and things in the environment
- feel secure, so they can reach out and engage people and things and realize some control over their environments.

For students who are deaf-blind to get the most information possible from experiences and to compensate for the loss of the distance senses, it is essential that teachers help their students fully develop their communication and O&M skills. The modules that follow provide suggestions for ways in which these skills can be promoted and instruction can be delivered effectively.

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MODULE 2

Self-Study Questions

1. The incidental learning of students who are deaf-blind is limited primarily because the students
 - a. are not motivated to learn.
 - b. receive reduced information from the distance senses.
 - c. have developed learned helplessness.

2. The use of models may not be effective with students who are deaf-blind because
 - a. they are based on visual information.
 - b. the students are not yet able to think symbolically.
 - c. both a and b.

3. Van Dijk, a leader in the field of deaf-blindness, contended that the stereotypical behaviors exhibited by some individuals who are deaf-blind may be due to
 - a. the lack of early bonding and attachment with parents.
 - b. overstimulation.
 - c. health problems.

4. Knowing specific facts about the origins of a student's deaf-blindness can help service providers
 - a. decide on adult living preferences during transition years.
 - b. decide how much mobility training an individual should receive.
 - c. determine how much information a student may be getting and how concepts are learned.

5. Students who are deaf-blind as a result of combined losses of hearing and vision that are progressive
 - a. must constantly adjust how they obtain and use information.
 - b. will be able to continue to use their original methods of communication.
 - c. may need extensive genetic counseling to assist them with treatment options.

6. A child who has been blind since birth and loses hearing at age 10
 - a. is likely to need instruction in braille, so he or she will be able to continue participating in class and to keep up with written classwork.
 - b. will need an evaluation for O&M training and may need to learn many new mobility techniques.
 - c. has learned basic concepts through hearing spoken language and may be able to continue reading in the format he or she was used to, but is likely to need to learn new ways of getting information from classroom discussions.

7. Children who have combined significant vision and hearing losses from birth
 - a. readily gain basic environmental information through informal interactions with caregivers in the course of everyday activities.
 - b. usually need carefully structured one-to-one interaction with caregivers on a routine basis.
 - c. usually benefit from sign language input that relies on vision at close range ("near" or "close" vision).

8. Additional disabilities that children who are deaf-blind may have can affect learning by
 - a. preventing them from moving freely within their environments to explore and interact.
 - b. preventing them from sharing with siblings.
 - c. affecting their processing and understanding of information because of sensory integration problems.
 - d. all the above.

Answers to self-study questions for this module appear at the end of Unit 1.