



# 12

## Teaching Communication Skills

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### **12.01 The Importance of Communication**

#### **Learning Outcome**

*Discuss the importance of communication for students with severe disabilities and identify the primary purposes of communicative interactions.*

### **12.02 Features of Communication**

#### **Learning Outcome**

*Identify the features of communication and explain the characteristics of each.*

### **12.03 Identifying and Assessing Communication Skills and Abilities—Deciding What to Teach**

#### **Learning Outcome**

*Identify strategies for assessing communication needs as they relate to students with severe disabilities and provide examples of how assessment data lead to the identification of target behaviors for instruction.*

### **12.04 Developing an Instructional Plan—Deciding How to Teach**

#### **Learning Outcome**

*Discuss strategies for developing a plan to teach communicative behaviors.*

## **THE IMPORTANCE OF COMMUNICATION**

Communication is “the transmission of thoughts or feelings from the mind of a speaker to the mind of a listener” (Borden, Harris, & Raphael, 1994, p. 174). People communicate with each other for a variety of reasons: to express needs/wants, to share information, to develop friendships and relationships, and to be socially appropriate (Light, 1988). When communicating, people use a variety of strategies. Gazing toward desired objects, nodding/shaking the head to answer questions, laughing in response to jokes, pointing to interesting things in a magazine, using words/sentences, and sending/receiving emails are all examples of strategies that people use to communicate.

Sometimes, people mistakenly assume that the only way to communicate is through speech and that, therefore, some individuals are too young or too disabled to

communicate. However, this is not the case. In fact, all individuals, regardless of age or disability, communicate. For example, consider each of the following scenarios:

- Alex, a typically developing one-month-old, communicates an interest in his mother's voice by smiling and laughing.
- Jane, a four-year-old with a severe cognitive delay, throws a toy across the room and then watches for the reaction of her teacher.
- Cordell, a 13-year-old with a severe physical disability that results in an inability to communicate effectively via speech, uses a computer with voice output to interact with his friends and family.

As noted by these examples, neither age nor disability precludes an individual's ability to communicate. Further, there are no prerequisites to communication (Downing, 2010). The understanding that all individuals communicate and the belief that all individuals, regardless of disability, have a basic right to communicate was articulated in a philosophy statement by the National Joint Committee for the Communication Needs of Persons with Severe Disabilities (1992) whose members represented several national organizations, including the American Speech-Language-Hearing Association (ASHA), the American Association on Mental Retardation (AAMR), the American Occupational Therapy Association (AOTA), the American Physical Therapy Association (APTA), the Council for Exceptional Children's Division for Children with Communication Disorders (CEC DCCD), the Association for Persons with Severe Handicaps (TASH), and the United States Society for Augmentative and Alternative Communication (USAAC). In addition to the general philosophy statement, the National Joint Committee identified 15 basic communication rights of individuals with severe disabilities that should be ensured in all daily interactions and interventions. These 15 basic rights are known as the Communication Bill of Rights and include items such as the right to request objects/activities/preferences/feelings, the right to be offered choices, and the right to be communicated with in ways that are functional and appropriate (National Joint Committee for the Communication Needs of Persons with Severe Disabilities, 1992). Interested readers can access the general philosophy statement and the 15 basic rights of individuals with severe disabilities in its entirety at this weblink: [www.asha.org/NJC/bill\\_of\\_rights/](http://www.asha.org/NJC/bill_of_rights/)

In order to ensure the communication rights of individuals with severe disabilities, professionals must possess knowledge and skills regarding communication. This chapter discusses critical issues regarding meeting the communication needs of individuals with severe disabilities, including an understanding of (a) the different features of communication, (b) strategies for assessing the communication needs of students with severe disabilities, and (c) strategies for developing intervention plans and teaching communicative behaviors.

In the following section, information regarding three students of different ages and abilities is provided. These students are introduced here and will be discussed again at the end of the chapter in order to illustrate the application of the information provided.

### Case Study: Laura

*Laura is a four-year-old who loves to play with dolls and puzzles. Laura lives with her mother, father, brother (age seven), and sister (age nine) and attends an inclusive preschool four days a week for three hours each day. Laura, who has autism and a severe cognitive delay, is primarily non-verbal. Her current communication skills include pointing and leading communication partners to desired objects/activities. Laura's parents and preschool teachers state that, although Laura seems to enjoy playing with her siblings and classmates, she has difficulty communicating her wants/needs in a way that they can understand.*

### Case Study: Manuel

*Manuel is a second grader who loves sports and hanging out with friends. He lives with his dad, who used to play professional football, as well as his grandmother and grandfather. Manuel has cerebral palsy with some control over the movement of his arms and legs. Manuel has a moderate intellectual impairment and communicates expressively using a speech-generating device (SGD). He also communicates by pointing to picture symbols presented on a non-electronic communication display. Manuel is able to use a limited number of vocalizations when interacting with familiar communication partners. However, his vocalizations are not usually understood by communication partners who don't know him well. Despite his challenges related to communication, Manuel is very social and enjoys interacting with friends and family.*

### Case Study: Nick

*Nick is an 11th grader who is passionate about movies, computers, and video games. Nick lives with his mother, father, and younger sister (age 12). Nick has a moderate intellectual impairment. He uses verbal language as well as picture symbols to communicate. Nick's teachers and parents indicate that Nick does well when activities are highly structured and when there are visual supports to aid in his comprehension. Nick's teachers and parents also report that when Nick gets tired of doing work (at school or at home), he will often hit others.*

## FEATURES OF COMMUNICATION



Watch the video "Are You Listening?" at [www.youtube.be/mlp0R3NxaxU](http://www.youtube.be/mlp0R3NxaxU).

In order to understand the multifaceted nature of communication, it is helpful to describe it across several features. This includes describing the extent to which communicative behaviors are intentional and symbolic. It also includes describing communication modes, communicative functions, conversational functions, communicative complexity, and comprehension. The following sections will define and describe each of these features of communication.

### Preintentional or Intentional Communication

One feature of communication that is important to understand is that communication can be either *preintentional* or *intentional*. Preintentional communication consists of reflexive or unlearned behaviors that are interpreted by communication partners (Prizant & Bailey, 1992) and might include facial expressions, body posture, and vocalizations. As an example of preintentional communication, consider Davin, an elementary aged student with severe physical disabilities whose arm and leg muscles tense up when he becomes excited. For Davin, the tensing of his muscles communicates excitement. However, since the tensing of muscles is a reflexive response, the communication is preintentional.

Unlike preintentional behaviors, intentional behaviors are deliberate and are intended to have an effect on a communication partner (Prizant & Bailey, 1992). Intentional communicative behaviors may be expressed non-verbally or verbally. For example, consider Natalie, a high school student with a moderate cognitive delay, who demonstrates non-verbal intentional communication when she points to her favorite soda when offered a choice between two beverages. Alternatively, consider Jauqin, who demonstrates verbal intentional communication when he says "apple juice" after being offered a choice between two beverages. Table 12-1 provides additional examples of preintentional and intentional communicative behaviors.

When considering the differences between preintentional and intentional communicative behaviors, it is important to note that preintentional behaviors place heavy

**TABLE 12-1**  
Definition and Examples of Preintentional and Intentional Communication

Level of Intentionality	Definition	Examples
Preintentional	Reflexive or unlearned behaviors that are interpreted by communication partners (Prizant & Bailey, 1992)	<ul style="list-style-type: none"> <li>• Darcy, a three-month-old, grasps her sister's hand when her sister places her finger in Darcy's open palm. Her sister thinks that means that Darcy wants to play and so her sister sits beside Darcy to play peekaboo.</li> <li>• Hui Zhong, an eight-year-old, runs out of his classroom and down the hall to the school kitchen where he tries to open the locked refrigerator. His paraeducator thinks that he is hungry and so she takes him back to the classroom and gives him a snack.</li> </ul>
Intentional	Deliberate and intended to have an effect on a communication partner (Prizant & Bailey, 1992)	<ul style="list-style-type: none"> <li>• Camie, a two-year-old, is sitting in her high chair when she throws her sippy cup onto the floor and then looks to her dad to see his reaction. Her dad says, "Be careful!" and puts the cup back onto the table. As soon as he does that, Camie throws the sippy cup back onto the floor and then looks at her dad and laughs.</li> <li>• Andrew, a seven-year-old, takes his friend's hand and places it on the top of a toy that he needs help operating.</li> </ul>

demands on communication partners to interpret. On the other hand, intentional communication does not place as much of a demand on the communication partner for interpretation. This, in turn, provides intentional communicators with more control over their environment.

### Presymbolic or Symbolic Communication

Another important feature of communication relates to whether the communicative behaviors engaged in by an individual are symbolic or presymbolic. As the name suggests, *symbolic* communication involves the use of symbols to communicate. A symbol is "something that stands for or represents something else" (Vanderheiden & Yoder, 1986, p. 15). Examples of symbols used in communication include spoken words, written words, line drawings, photographs, sign language, objects, and tactile symbols. The ability to use symbolic communication provides an individual with a way to communicate about the things that are not present in the environment as well as a way to communicate feelings.

Conversely, *presymbolic* (also referred to as non-symbolic) communication does not involve the use symbols. Examples of presymbolic communication include crying, laughing, vocalizing, body language, facial expressions, reaching, and pointing. Although presymbolic communication can be effective in some instances, it can also be limiting because it only allows an individual to communicate about the "here and now." For example, consider Jake, a presymbolic communicator who is able to point, reach, and lead others by the hand to indicate what he wants. Although Jake is able to indicate his wants/needs using this presymbolic communication, he's unable to communicate if the objects/items are not present in the environment. For example, Jake will be unable to communicate when he gets hungry while at the park. Nor will he be able to communicate that he needs to use the bathroom while walking down the street. Furthermore, it will be difficult for Jake to communicate and/or explain his feelings (e.g., why he's frustrated or excited).

### Modes of Communication

Another important feature of communication relates to the mode (or form) that is used when communicating. Communication modes can be verbal/vocal, gestural, and/or graphic. Examples of the verbal/vocal mode of communication include crying, cooing, babbling, and spoken words. Communicative behaviors that are gestural include facial expressions (e.g., smiles, frowns), physical position (e.g.,

backing away from an activity that is non-preferred or unfamiliar), conventional gestures (e.g., head nods to indicate “yes,” pointing to desired objects), and the use of sign languages/sign systems. Communicative behaviors that utilize the graphic mode include written words (also known as traditional orthography), line drawings, photographs, product logos, parts of objects, miniature objects, and real objects.

When considering the use of graphic symbols for individuals with severe disabilities, there are several issues that should be considered including the cognitive and linguistic demands that are associated with any particular type of symbol (Lloyd & Karlan, 1984). Studies comparing symbol systems are in basic agreement on a general hierarchy that exists with regard to the degree to which a graphic symbol is similar to its referent (translucency) and/or the guessability of a symbol to an untrained viewer (transparency). This hierarchy is particularly important to consider given that symbols that are more translucent/transparent may be easier to learn. Mirenda and Locke’s (1989) research suggests that objects are the most translucent/transparent, followed by color photographs, black-and-white photographs, miniature objects, black-and-white line drawings, Blissymbols (a series of meaning-based shapes that can be combined into black-and-white line drawings to create messages), and traditional orthography, respectively. Some inconsistencies in this hierarchical relationship have been noted in subsequent studies, which may be a result of differences in participants across studies (e.g., age of participants, disability, language comprehension, visual–perceptual skills, cultural factors) as well as the characteristics of the symbols across studies (see Johnston & Cosbey [2012] for a review). Thus, individualized assessment (discussed later in this chapter) is warranted when identifying the most appropriate graphic symbols for an individual. Furthermore, it is important to recognize that, when using graphic symbols with individuals with severe disabilities, more transparent/translucent symbol systems can be used as a bridge to support learning more abstract symbol systems (Rowland & Schweigert, 2000). For example, consider Tabor, a student who uses real objects as symbols for communication. In order to support Tabor’s understanding of more abstract symbol systems, his IEP team decided to consistently pair color photographs of objects with the real objects when used for communication. Tabor’s team discovered that pairing the real objects with photographs of the objects helped Tabor understand the use of photos as symbols thereby allowing the team to transition Tabor from using real objects to using photographs to communicate.

Recognizing that there are many multiple modes of communication provides an opportunity to talk about augmentative and alternative communication (AAC). AAC refers to the use of aids or techniques that supplement or replace an individual’s vocal or verbal communication skills (Mustonen, Locke, Reichle, Solbrach, & Lindgren, 1991). AAC includes *aided* communication modes as well as *unaided* communication modes. Unaided communication modes do not involve the use of additional equipment or materials. Unaided modes of communication include facial expressions, body language, gestures, sign languages, and sign systems. Conversely, aided communication modes do use additional materials



Watch the video “Assistive Technology in Action—Meet Elle” at [www.youtube.com/watch?v=g95TO20hnmo](http://www.youtube.com/watch?v=g95TO20hnmo).

or equipment. Aided modes of communication include a continuum of devices ranging from no-tech systems that do not involve technology (e.g., photographs, line drawings, written words), to light-tech (also referred to as low-tech) systems that utilize technology that is relatively simple in form (e.g., simple battery-operated devices, single-message voice output communication aids), to high-tech communication systems (e.g., speech-generating devices that contain more advanced technology, laptops/tablets with software that allows them to be used as AAC systems). Figure 12-1 provides examples of the range of no-tech, light-tech, and high-tech systems.

Individuals with severe disabilities who have significant communication limitations have benefited from AAC (Johnston, McDonnell, Nelson, & Magnavito, 2003; Johnston, Nelson, Evans, & Palazolo, 2003; Marcus, Garfinkle, & Wolery, 2001; Mirenda & Ericson,

FIGURE 12–1

Examples of No-Tech, Light-Tech, and High-Tech AAC Systems

AAC Systems	Examples	Illustrative Products/Websites
No Tech	<ul style="list-style-type: none"> <li>• communication books that include multiple pages of symbols</li> <li>• communication boards that are portable or are mounted on a wall, desk, or wheelchair tray</li> <li>• communication wallets with symbols inserted into the photograph holders of the wallet</li> </ul>	Communication Wallets and Books: <a href="http://www.gokeytech.com/communication_wallets_&amp;_books.htm">www.gokeytech.com/communication_wallets_&amp;_books.htm</a>  Mid-Sized Communication Book: <a href="http://www.mayer-johnson.com/category/communication-accessories/20-page-spiral-bound-without-grommet">www.mayer-johnson.com/category/communication-accessories/20-page-spiral-bound-without-grommet</a>
Light Tech (Low Tech)	<ul style="list-style-type: none"> <li>• single-switch speech-generating devices in which one message is emitted when the switch is accessed</li> <li>• simple scanning systems in which symbols are systematically presented (e.g., via a cursor or backlighting) and the individual selects the symbol by accessing a switch upon the presentation of the desired symbol</li> </ul>	BIGmack® and LITTLEmack® Communicator: <a href="http://www.ablenetinc.com/Assistive-Technology/Communication/BIGmack-LITTLEmack">www.ablenetinc.com/Assistive-Technology/Communication/BIGmack-LITTLEmack</a>  Cheap Talks 4 & 8: <a href="https://enablingdevices.com/catalog/assistive-technology_devices_used_in_education/cheap-talks-accessories/cheap-talks-4-8-direct-scan-jacks">https://enablingdevices.com/catalog/assistive-technology_devices_used_in_education/cheap-talks-accessories/cheap-talks-4-8-direct-scan-jacks</a>
High Tech	<ul style="list-style-type: none"> <li>• systems designed solely for the purpose of communication that utilize recorded speech</li> <li>• systems designed solely for the purpose of communication that utilize computer-generated speech</li> <li>• systems that were not designed solely for the purpose of communication (e.g., laptop/tablet computers) that can be used for communication with the addition of software that allows for speech output and display of symbols</li> </ul>	GoTalk 9+: <a href="http://www.attainmentcompany.com/sites/default/files/imagecache/product/GT9Plus_AC.png">www.attainmentcompany.com/sites/default/files/imagecache/product/GT9Plus_AC.png</a>  ECO2: <a href="https://store.prentrom.com/product_info.php/cPath/11/products_id/53">https://store.prentrom.com/product_info.php/cPath/11/products_id/53</a>  DynaVox Vmax+: <a href="http://www.dynavotech.com/products/vmaxplus/">www.dynavotech.com/products/vmaxplus/</a>  iPad/iPhone with Proloquo2Go Software: <a href="http://www.assistiveware.com/sites/default/files/p2g_600x340.png">www.assistiveware.com/sites/default/files/p2g_600x340.png</a>

2000; Rowland & Schweigert, 2000). However, some parents and professionals grapple with decisions regarding the use of AAC with individuals with disabilities. Specifically, parents and professionals may (a) express concerns that teaching individuals to use graphic or gestural modes of communication will decrease their motivation to learn/use verbal language, and (b) struggle with regard to whether an individual should be taught to use a graphic and/or a gestural mode of communication.

When thinking about the impact of AAC on verbal language, it is important to note that Millar, Light, and Schlosser (2006) conducted a review of literature examining the impact of gestural and graphic modes on spoken language. Their review focused on research involving individuals with developmental disabilities and revealed that more than 85% of participants in the studies that were reviewed demonstrated either no change in their verbal language or an increase in their verbal language when taught to use either graphic or gestural communication. Thus, Millar et al (2006) concluded that concerns that teaching graphic/gestural communication will negatively impact spoken language were not founded.

When thinking about whether to teach an individual to use a gestural and/or a graphic mode of communication, it is noteworthy that most of us use all three modes of communication throughout the day. For example, when ordering food at a restaurant, we are likely to use the verbal mode of communication (e.g., asking the waiter about the daily soup special), the graphic mode of communication (e.g., pointing to an item on the menu to indicate your choice), and the gestural mode of communication (e.g., raising and waving your hand to indicate the need for a waiter to return to your table). Given that we all use multiple modes to communicate, it may make sense to ensure that the same range of communicative options is

available to individuals with severe disabilities. Another issue to consider when deciding whether to use a graphic and/or gestural mode is that the most effective and efficient mode(s) may depend on the individual and the demands of the environment. For example, a relative advantage of the gestural mode of communication, such as sign language, is that the individual's communication system is always with them (since gestural communication relies solely on the hands/body). Thus, a gestural mode of communication may be more effective or efficient in environments that make it difficult to carry or use a graphic mode (e.g., while swimming in a pool). Conversely, a relative advantage of the graphic mode of communication is that the listener may more easily identify communication attempts since the listener does not need to know sign language. Thus, in situations where an individual's communication partners don't know sign language, a graphic mode of communication may be more effective and efficient. Another relative advantage of the graphic mode is that it can compensate for visual or motor problems of a user. For example, the size or color of the symbols used in graphic mode can be modified for individuals with visual impairments. And, for individuals with physical disabilities, the graphic mode of communication requires a more limited range of movements relative to gestural modes.

Sometimes, despite careful consideration of the strengths/needs of individual and the environment, a team may still be undecided with regard to which mode of communication to use in a given situation. In this case, the team might consider providing a "trial" period with both the graphic and gestural modes of communication. This will involve teaching the individual some vocabulary items using a graphic mode and some vocabulary items using a gestural mode and then comparing the data to see which mode is most effective and efficient in a given environment.

### Communicative Functions

Another important feature of communication relates to the purpose or function of communication. Regardless of whether we use a verbal, gestural, and/or graphic mode of communication, we use communication for a variety of purposes.

The following transcript illustrates that a wide range of functions can be expressed in even the simplest of conversations. In this example, Carl, a young man with moderate disabilities, is conversing with a friend about a baseball game that he watched on TV.

**CARL:** Hey. (Function: REQUEST ATTENTION)  
**FRIEND:** Hi, Carl. What's up?  
**CARL:** Baseball on TV. (Function: COMMENTING)  
**FRIEND:** Yeah, did you watch the game last night?  
**CARL:** Good game! (Function: COMMENTING)  
**CARL:** Game tonight? (Function: REQUEST OBJECT/ACTIVITY)  
**FRIEND:** Yeah, do you want to come to my house to watch it with me?

As noted by this example, the ability to use communication for a variety of purposes allows us to exert control over the environment and express a wide range of thoughts and feelings. If an individual is only able to express a limited range of functions (e.g., only able to request objects/activities), then his ability to communicate effectively is also limited.

### Conversational Functions

As mentioned previously, communication involves the sharing of thoughts between speakers and listeners. In order to interact meaningfully with communication partners, individuals need skills that address this shared nature of communication. These

skills can be referred to as conversational functions and include (a) turn-taking, (b) initiating, maintaining, and terminating topics, and (c) repairing communication breakdowns.

### Turn-Taking

Turn taking refers to the back-and-forth nature of an interaction. Turn-taking can occur with any mode of communication (verbal/vocal, gestural, graphic). For example, while blowing bubbles with a small child, turn-taking using the gestural mode of communication might be observed when, after blowing the first set of bubbles, a parent notes that the child looks expectantly and points to the bubble container to indicate the desire for more bubbles. Turn-taking using the graphic mode of communication might be observed when an individual with autism points to a line-drawn symbol representing “my turn” as he takes turns playing a handheld-computer game with a peer. Finally, turn-taking using the verbal/vocal mode of communication might be observed during a conversation between a teacher and a child as they engage in a back-and-forth exchange about the game that the child played during recess.

### Initiating, Maintaining, Terminating Topics/Interactions

Another important skill related to conversational functions is the ability to initiate, maintain, and terminate a topic or an interaction (Roth & Speckman, 1984). Initiation refers to the ability to initiate topics and includes the ability to secure the attention of the communication partner. Topic maintenance involves the continuation of the topic and can be achieved by taking a turn with or without adding new information to the established topic (Mentis, 1994). Finally, topic termination refers to the ability to end an interaction. Topic termination can be achieved by remaining in an interaction with a communication partner but switching to a new topic or by completely ending the interaction with a communication partner. The ability to initiate, maintain, and terminate topics/interactions is an important aspect of communication because it facilitates the fluency, and thereby influences the success, of the interaction.

### Repairing Breakdowns

The ability to recognize and repair breakdowns in communication is another important skill related to conversational functions. Breakdowns can occur for multiple reasons. Breakdowns might take place because the speaker was unintelligible, the listener became distracted, the topic was not well established, and/or the listener didn't understand or recognize the communication mode used by the speaker (Halle, Brady, & Drasgow, 2004). In order to increase the likelihood of a successful communicative interaction, speakers must recognize and then repair communication breakdowns. Strategies for repairing breakdowns in communication include (a) repeating the original message, (b) revising the original message (e.g., changing to a graphic mode if the listener doesn't understand the verbal utterance), and (c) adding information to the original message (e.g., augmenting a verbal message with a gesture) (Brady & Halle, 2002). The ability to recognize and repair breakdowns is particularly critical in light of research suggesting that individuals with severe disabilities have more breakdowns in communication and fewer strategies to repair breakdowns when they do occur (Halle, Brady, & Drasgow, 2004).

### More Complex Communication

As individuals progress in their use of symbolic communication (regardless of whether it is through verbal, gestural, or graphic modes), their ability to more clearly articulate their thoughts and feelings will require increasingly complex forms of communication.

For example, although being able to request a beverage by saying “Drink, please” is a powerful skill, it is even more powerful if you are able to be specific with regard to your request by saying, “I’d like a large, iced, sugar-free, vanilla latte with soy milk, please.” Increasing the complexity of communication can include

- changes to individual words (e.g., adding an “-s” to the word “dog” to communicate that you saw more than one dog while at the park)
- changes to how words are put together in a sentence (e.g., adding the word “big” to the word “slide” to comment on the size of the slide at the playground)
- learning and using new words to more clearly express meaning (e.g., using “sweater,” “jacket,” or “hoodie,” instead of “coat” to indicate which item of clothing you want to wear)

As mentioned previously, increasing the complexity of communication provides an individual with a way to more clearly articulate his or her thoughts and feelings. Increasing the complexity of communication also creates more opportunities to develop and enhance relationships. In addition to being of benefit to the individual, increasing the complexity of communication can also be of benefit to the communication partner because it helps him or her more accurately understand the thoughts/feelings of the individual, thereby decreasing the likelihood of communication breakdowns.

### Comprehension

Thus far, we have focused primarily on features of communication that allow an individual to express thoughts and feelings. However, another critical feature of communication relates to understanding the message that is coming from others (comprehension). Comprehension skills include following directions, understanding a story, and understanding non-literal language/expressions. Many individuals with disabilities show significant delays in comprehension (Buekelman & Mirenda, 2005; Wood, Lasker, Siegel-Causey, Buekelman, & Ball, 1998). Just as expressive communication can involve different modes (verbal, gestural, graphic), comprehension can also utilize different modes. When considering issues related to comprehension across different modalities, it is important to note that the verbal and gestural modes of communication are transient (e.g., messages communicated in these modes are fleeting and the message “disappears” shortly after it is communicated). As a result, these modes require memory/recall and may therefore be particularly challenging for individuals with disabilities to comprehend (Mirenda, 2003). Conversely, information communicated via the graphic mode is permanent, which may result in fewer cognitive demands for an individual. Given that an individual’s ability to comprehend communication may vary across modes, it will be important to examine skills/abilities across all modes and consider using multiple modes (e.g., pairing graphic symbols with verbal language) to support an individual’s comprehension.

In summary, communication comprises several different features. Understanding these features provides a framework for describing the strengths and areas of need that individuals with severe disabilities might have. Strategies that may be helpful in describing/assessing an individual’s communication strengths and areas of need are discussed in the following section.

## IDENTIFYING AND ASSESSING COMMUNICATION SKILLS AND ABILITIES—DECIDING WHAT TO TEACH

An important step in helping individuals with severe disabilities develop functional communication skills is to identify or assess their current communication skills and abilities. When examining strategies for assessing communication skills and abilities,

it is helpful to conceptualize assessment strategies as existing on a continuum. On one end of the continuum are strategies that utilize formal procedures, and on the other end of the continuum are strategies that utilize informal procedures (McCormick, Loeb, & Schiefelbusch, 2003).

### Formal and Informal Assessment Procedures

Assessments at one end of the continuum utilize formal procedures that are standardized (i.e., must be administered in a prescribed fashion) and norm-referenced (i.e., compares one individual's skill/abilities with other individuals' skills/abilities). The tasks/test items within assessments that utilize formal procedures are carefully developed with attention to reliability and validity, and are particularly well suited to making decisions regarding eligibility for special education services. However, sometimes, formal assessments underrepresent the actual skills/abilities of an individual (Downing, 2010) and do not provide IEP teams with specific information regarding an individual's use of communicative skills in everyday environments. Further, assessments that use formal procedures tend to examine broad areas of skills and, therefore, their utility in terms of assisting IEP teams to identify targets for intervention and progress monitoring is limited. Given the limitations of formal assessment procedures, IEP teams often use them in conjunction with informal assessment procedures. Informal assessments are not standardized but allow teams to obtain information that can be used to make judgments about an individual's communication skill/abilities. Informal assessments are particularly helpful in enabling teams to identify behaviors and document engagement in those behaviors across environments.

In addition to variations in the extent to which an assessment is formal or informal, assessments also differ with regard to the collection of data. Common means of collecting data include indirect and direct observation strategies.

### Indirect and Direct Observation Assessment Strategies

Indirect strategies provide information via subjective reports from people who are familiar with the individual with disabilities. Indirect strategies that are used to obtain information regarding the communication skills/abilities of individuals with severe disabilities include interviews, checklists, rating scales, and questionnaires. Indirect strategies can be very helpful in obtaining initial data about an individual's skills/abilities across a range of environments (e.g., home, school, community) and are also useful when the person conducting the assessment is less familiar with the student and the environment. Information collected from indirect strategies is subjective (and is therefore dependent upon the memory and/or perceptions of the person completing the assessment). As a result, it is often helpful to use indirect strategies in conjunction with direct observation strategies.

As the name suggests, direct observation strategies involve watching the individual and recording specified behaviors. Direct observation strategies can include observations of the individual's communicative skill/abilities when presented with planned opportunities as well as observations of the individual in the context of his/her natural environment. Assessment strategies that use planned opportunities to examine a student's communication skills/abilities typically involve arranging the environment to elicit specific behaviors. For example, the Pragmatic Behavior Checklist (McCormick, Loeb, & Schiefelbusch, 2003) lists 19 communicative functions, strategies for eliciting each function, and a space to indicate the mode of communication used by the individual with disabilities in response to the elicitation. In addition to using tools that have already been created, IEP teams can also create their own opportunities to assess communication behaviors. For example, consider Jake, whose teacher was interested in assessing his ability to engage in the pragmatic function of requesting assistance. In this situation, Jake's teacher offered him a CD player

(listening to music was a highly preferred activity for Jake) without a CD. After offering the CD player, Jake's teacher observed that Jake initially pushed the play button. But, when that effort did not result in music, he screamed loudly and then looked back and forth between the teacher and the CD player. At that point, the teacher provided a CD and helped Jake to play the music. The teacher created this same opportunity on multiple occasions and with several different communication partners and Jake repeated these same communicative behaviors. Based on this, the teacher concluded that although Jake did engage in the pragmatic function of requesting assistance, his existing form of communication (screaming and looking back and forth between the communication partner and the CD player) needed to be changed given that it was not socially appropriate and may not always be understood by communication partners.

In addition to planned opportunities, direct observation strategies might also involve observation in natural environments. When conducting assessments that involve observations in natural environments, members of the IEP team observe the individual in the context of natural interactions and then record information related to his/her communicative behaviors. Common strategies that include observation in the natural environments include (a) communication dictionaries, (b) communication/language samples, and (c) participation inventories.

### Communication Dictionary

A communication dictionary (sometimes referred to as a communicative signal inventory or a gesture dictionary) is an observational assessment that results in the creation of a document that helps communication partners recognize and respond to communicative behaviors. In order to create the document, the team observes the individual with disabilities, creates a list of communicative behaviors (which may be preintentional or intentional), specifies the purpose of each communicative behavior, and indicates how communication partners should respond to each communicative behavior (Siegel & Cress, 2002). Table 12-2 provides an example of a completed communication dictionary for Andrew, a 14-year-old with severe disabilities. As noted in Table 12-2, Andrew engages in several presymbolic behaviors. Some of the behaviors appear preintentional while others appear to be intentional. In addition to assessing current skills/abilities, the communication dictionary is helpful for monitoring progress and for supporting communication partners with regard to how to respond when behaviors occur. Furthermore, the communication dictionary provides a framework to discuss which communicative behaviors should be replaced or shaped so that they are more intelligible or socially appropriate.

**TABLE 12-2**  
Example of a Completed Communication Dictionary

What I Do	What It Might Mean	How Communication Partners Should Respond
<ul style="list-style-type: none"> <li>• Clench my fists and the muscles in my arms/face</li> </ul>	<ul style="list-style-type: none"> <li>• People are too close to me and/or people are bothering me.</li> </ul>	<ul style="list-style-type: none"> <li>• Step away from me and leave me alone for a minute.</li> </ul>
<ul style="list-style-type: none"> <li>• Hit my head with my open palms</li> </ul>	<ul style="list-style-type: none"> <li>• I need help.</li> </ul>	<ul style="list-style-type: none"> <li>• Provide assistance.</li> <li>• Teach an alternative way to request assistance by prompting me to point to a symbol representing "help".</li> </ul>
<ul style="list-style-type: none"> <li>• Wave both hands/arms in the air</li> </ul>	<ul style="list-style-type: none"> <li>• I like what is happening.</li> </ul>	<ul style="list-style-type: none"> <li>• Continue with the activity.</li> </ul>
<ul style="list-style-type: none"> <li>• Point to the sink</li> </ul>	<ul style="list-style-type: none"> <li>• I need a drink.</li> </ul>	<ul style="list-style-type: none"> <li>• Provide a drink of water.</li> </ul>

### Communication/Language Sample

Similar in many ways to a communication dictionary, a communication/language sample is an observational assessment that provides information regarding an individual's language abilities and conversational skills (Linder, 1993; Miller, 1981). A communication/language sample is a collection of an individual's use of communication/language during conversational exchanges with the goal that the sample is representative of the child's actual skills/abilities (Miller, 1981). When conducting an assessment using a language sample, an IEP team member first transcribes what the student and his/her communication partners said/did. (For students who have more advanced forms of communication or who engage in frequent communicative interactions, it may be helpful to videotape or audiotape the interaction and then use that tape to complete the transcription.) Once the student's and communication partner's communicative behaviors have been transcribed, the team can then analyze/describe the forms and functions of the individual's behaviors.

### Participation Inventory

A participation inventory (also referred to as a discrepancy analysis) is another observational assessment. A participation inventory provides a way for IEP teams to document and describe how and when an individual communicates while simultaneously allowing for a comparison of communicative behaviors of same-age peers without disabilities (Buekelman & Mirenda, 2005; McCormick, Leob, & Scheifelbush, 2003). Table 12-3 provides one example of a participation inventory. As indicated in Table 12-3, in order to complete this assessment, the team starts by creating a task analysis of the activity where the assessment will be implemented. Then, the team selects and observes a peer model who engages in the activity in a manner that represents the desired performance in order to identify the "peer performance standards" (Buekelman & Mirenda, 2005, p. 139) for the activity. After this is done, the team observes and

**TABLE 12-3**

Example of a Participation Inventory Form

Task Analysis of Activity	Individual's Behavior	Peer Behavior	Discrepancy		If Discrepancy Exists, What Can Be Done to Eliminate/Decrease It?
			Yes	No	
Enter the library	Independent	Independent		X	
Listen to a reading of the "book of the week"	Independent with setup	Independent with setup		X	
Answer questions about the "book of the week"	Unable to participate	Verbal assistance	X		<ul style="list-style-type: none"> <li>• Teach communication partners to create opportunities.</li> <li>• Provide graphic symbols corresponding to activity.</li> </ul>
Share comments about the "book of the week"	Unable to participate	Verbal assistance	X		<ul style="list-style-type: none"> <li>• Teach communication partners to create opportunities.</li> <li>• Provide graphic symbols corresponding to activity.</li> </ul>
Find a book to check out	Independent	Independent	X		
Go to check-out desk	Physical assistance	Verbal assistance	X		<ul style="list-style-type: none"> <li>• Provide graphic visual supports to assist with comprehension of the task.</li> </ul>
Read/look at a book until end of class	Independent	Independent		X	

**TABLE 12-4**  
Examples of Communication Assessments for Individuals with Severe Disabilities

Assessment	Indirect Observation	Direct Observation	Formal	Informal
Mullen Scales of Early Learning (MSEL; Mullen, 1995)	X	X	X	
Preschool Language Scale (PLS-5; Zimmerman, Steiner, & Evatt Pond, 2011)	X	X	X	
Early Social Communication Scales (ESCS; Mundy, Delgado, Block, Venezia, Hogan, & Seibert, 2003)		X		X
Inventory of Potential Communicative Acts (IPCA; Sigafoos et al., 2000)	X			X
The Triple C: Checklist of Communicative Competencies (Revised) (Bloomberg, West, Johnson, & Iacono, 2009)		X		X
Communication Matrix (Rowland & Fried-Oken, 2010)		X		X
Communication and Symbolic Behavior Scales Developmental Profile (CSBS DP; Prizant & Wetherby, 2002)	X	X	X	
Communication and Symbolic Behavior Scales (Wetherby & Prizant, 2003)	X	X	X	
Child-Guided Strategies: The van Dijk Approach to Assessment (Nelson, van Dijk, Oster, & McDonnell, 2009)		X		X
Communication Complexity Scale (Brady et al, 2012)		X		X
Pragmatic Behavior Checklist (McCormick, Loeb, & Schiefelbusch, 2003)		X		X
Communication/Language Sample (Linder, 1993; Miller, 1981)		X		X
Participation Inventory (Beukelman & Mirenda, 2006; McCormick, Loeb, & Schiefelbusch, 2003)		X		X

documents the participation of the individual with disabilities. Upon completion, the team is able to ascertain whether discrepancies exist between the participation of peers and the participation of the individual. Areas of discrepancy can become the focus of intervention efforts.

In summary, communication assessments for individuals with severe disabilities can be formal or informal. Furthermore, the process used for gathering assessment data can rely on either indirect or direct observation strategies. Table 12-4 provides examples of communication assessments for individuals with severe disabilities and illustrates the variations across assessments with regard to (a) whether they rely on indirect and/or direct observation strategies, and (b) whether they are formal or informal. Once assessment data have been collected, they can be used to identify targets for intervention and to develop intervention plans.

### Linking Assessment to Intervention

Thus far, we have discussed the features of communication and assessment strategies. Although discussed separately, an understanding of communicative features and the use of assessment strategies may be the most informative when used in combination. For example, consider a team that is trying to decide which graphic symbol system is most appropriate for Delaney, a six-year-old child with autism. The team's knowledge of features of communication (e.g., modes of communication, symbolic communication, graphic symbol hierarchies) provided some guidance in their decision-making.

However, the team realized that this knowledge should be paired with assessment data. An interview with Delaney's parents revealed that she was able to identify various family members in a photo album, and observation of Delaney in the classroom revealed that she was able to identify peers from a class photo. This information suggested that Delaney recognized color photographs and that this might be an appropriate initial symbol system for her. In addition to interviews and observations, the team decided to create structured opportunities to further assess (and perhaps confirm) the appropriateness of photos as a graphic symbol system. The strategy that they used for creating structured opportunities involved matching to sample (see Reichle & Wilkinson, 2012, for a comprehensive review). When creating opportunities using matching to sample, the team presented Delaney with an object and then placed two photographs (one of the photographs was of the object) in front of her. The team then asked Delaney to match the object with its corresponding symbol. After conducting multiple trials with a variety of different objects and photographs (and randomizing the position of the photographs so that Delaney couldn't use position as a cue for responding), the team was able to confirm her understanding of the relationship between photographs and the objects that the photographs represent. Based on this information, Delaney's team decided to teach her to use photographs to communicate. This example illustrates how Delaney's team used their knowledge of features of communication and assessment data to identify targets for intervention. Table 12-5 provides additional examples of how an understanding of features of communication and assessment data can be used in identifying targets for intervention. Once an appropriate target for intervention has been identified, the next step is to develop and implement an intervention plan.

## DEVELOPING AN INSTRUCTIONAL PLAN—DECIDING HOW TO TEACH

Once a target behavior or skill has been identified, the next step is to develop an intervention to teach the skill. Teaching the skill will involve identifying opportunities for instruction, prompting the behavior, delivering consequences, fading prompts, and monitoring progress (see Chapter 5).

### Identify Opportunities for Instruction

In order to identify opportunities for instruction, the IEP team must consider several factors, including (a) the environment where instruction will occur, (b) the communicative partners, (c) who will initiate the instructional opportunities, and (d) the number of opportunities per session/frequency of intervention sessions (for a comprehensive review, see Jones & Feeley, 2012).

The environment in which instruction occurs can be conceptualized on a continuum from the natural environment where the communicative behaviors will be expected to occur once acquired, to an environment that is separated from the natural environment. An advantage to providing instruction in the natural environment is that, because the skills are acquired in the context of relevant environmental characteristics, the likelihood that the skills learned will generalize and be maintained is stronger. Conversely, an advantage to providing instruction separate from the natural environment is that the IEP team members can control for distraction and other variables that may impact skill acquisition for a student. When making decisions regarding the environment in which instruction occurs, it is important to recognize that teams are not limited to one or the other. Instead, teams may choose to intervene across multiple environments (Jones & Feeley, 2012). For example, consider John who is learning to point to a black-and-white line-drawn symbol representing "want" to request desired food items. In order to maximize on the relative advantages of natural and separate environments, the team might decide to provide some

**TABLE 12-5**  
Examples of How to Use Assessment Data to Identify Targets for Intervention

If assessment data indicate that . . .	Then . . .
. . . an individual's communicative behaviors are preintentional and many communication partners do not respond to his/her communicative attempts . . .	. . . help communication partners interpret and respond to communicative behaviors. Consistently responding to communicative signals will lead to more intentional acts on the part of the child (e.g., Bates, Benigni, Bretherton, Camaioni, & Volterra, 1979; Bell & Ainsworth, 1972).
. . . an individual's communicative behaviors are intentional and are emitted for the pragmatic function of obtaining attention; however, the behaviors are socially inappropriate and involve harming others (e.g., biting others) . . .	. . . replace existing challenging behaviors by teaching the individual to use a different form of communication to request attention (e.g., Carr & Durand, 1985; Reeve & Carr, 2000).
. . . the individual is competent when communicating through the use of a tablet computer with software that allows it to be used as an AAC system; however, in its current configuration, the AAC system doesn't include the needed vocabulary to engage in social niceties (e.g., greetings, saying "please") . . .	. . . include vocabulary related to etiquette on the AAC system and provide instruction on the use of this vocabulary (van der Meer et al., 2013).
. . . the individual uses a communication book with graphic symbols; however, his/her current vocabulary does not allow him/her to communicate effectively and efficiently across a range of environments . . .	. . . expand on his/her vocabulary. Ensure that the vocabulary that is needed to communicate essential messages as well as vocabulary that relates to new activities, interests, etc. is taught and is included in the communication book (e.g., Beukelman & Mirenda, 2005).
. . . the individual uses his/her communication skills to request, reject, and answer questions. However, he/she does not engage in the pragmatic function of commenting or asking questions . . .	. . . expand upon the functions expressed to include commenting (e.g., Buzolich, King, & Baroody, 1991; Davis, Reichle, Southard, & Johnston, 1998) and asking questions (Light, Binger, Agate, & Ramsay, 1999).
. . . the individual does not engage in conversational turn-taking . . .	. . . teach the individual to initiate and maintain conversations (e.g., Hunt, Alwell, & Goetz, 1988; Hunt, Alwell, & Goetz, 1991; Storey & Provost, 1996).
. . . the individual does not repair communication breakdowns when they occur . . .	. . . teach communicative repair strategies such as repetition (e.g., Duker, Dortmans & Lodder, 1993) or using an alternate mode of communication (Sigafoos et al., 2004).
. . . an individual's verbal language skills are not adequately meeting his/her communication needs; further, modeling and verbally prompting his/her verbal language is not effective . . .	. . . teach another mode (e.g., graphic, gestural) of communication to supplement existing verbal language skills (e.g., Johnston, McDonnell, Nelson, & Magnavito, 2003; Marcus, Garfinkle, & Wolery, 2001).
. . . an individual intentionally communicates a desire to obtain objects/activities but the communicative behavior is difficult to interpret (e.g., a subtle change in facial expression when a desired object is presented) . . .	. . . teach the individual to use symbolic communication to request desired objects/activities (e.g., Johnston & Schumann, 2012; Sigafoos et al., 2004).
. . . an individual is able to maintain and terminate topics/interactions; however, he/she does not initiate interactions . . .	. . . teach the individual to initiate interactions with communication partners (e.g., Krantz & McClannahan, 1998; Krantz & McClannahan, 1993).
. . . an individual has difficulty understanding verbal directions . . .	. . . pair verbal language with graphic symbols in order to increase comprehension (e.g., MacDuff, Krantz, & McClannahan, 1993; Pierce & Schreibman, 1994).
. . . an individual's verbal language is usually intelligible; however, communication partners sometimes have difficulty understanding the individual if he/she brings up novel topics/events . . .	. . . teach the use of the graphic mode (e.g., pictures from magazines, movie tickets, photographs) to support verbal language about new topics (Dowden, 1997; Feeley & Jones, 2012).
. . . an individual uses a speech-generating device but unfamiliar communication partners do not understand how he/she uses the AAC system to communicate . . .	. . . teach the individual to introduce his/her AAC system to unfamiliar communication partners by presenting an introduction card that provides a greeting, the individual's name, and information regarding how the individual uses the AAC system to communicate (e.g., Doss et al., 1991).
. . . communication partners have difficulty engaging in communicative interactions with the individual . . .	. . . teach communication partners how to provide communicative opportunities, wait for and recognize communication signals, and teach the individual more advanced behaviors (e.g., Olswang, Pinder, & Hanson; 2006; Pennington, Goldbart, & Marshall, 2004).

instruction during lunchtime in the school cafeteria (a natural environment), some instruction during a small group activity in the classroom (a slightly less natural environment), and some instruction during one-to-one sessions with an IEP team member (a separate environment).

Another variable that must be considered with regard to the context of instruction relates to communication partners. As was the case with environment, communication partners can be conceptualized on a continuum from natural communication partners who represent the range of partners with whom the individual will interact once the behavior is acquired (e.g., peers at school) to less natural communication partners who may not represent the full range of people with whom the individual will interact (e.g., the paraeducator in a classroom). Similarly to the environment factor, an advantage to utilizing natural communication partners is that the likelihood that the skills learned will generalize and be maintained is stronger. Conversely, an advantage to utilizing less natural communication partners is that the IEP team can control variables related to the delivery of prompts, consequences, etc. Again, when making decisions regarding communication partners, it is important to recognize that teams are not limited to one choice or the other. Instead, teams may choose to intervene by using multiple communication partners and/or by training natural communication partners to provide instruction (Jones & Feeley, 2012). For example, consider the previous example of John who is learning to point to a black-and-white line-drawn symbol representing “want” to request desired food items. In order to maximize on the relative advantages of natural and less natural communication partners, the team might decide to utilize the cafeteria staff as natural communication partners during lunchtime in the school cafeteria, train peers to provide instruction during “family style” snack time during a small group activity in the classroom, and have a paraeducator serve as the communication partner during one-to-one sessions.

A third variable that is important to consider as it relates to providing opportunities for instruction is who will initiate the instructional opportunity. When contemplating who initiates instructional opportunities, IEP teams may choose to have the individual, the communication partner, or a combination of the individual and the communication partner initiate the instructional opportunities. An advantage of relying on the individual to initiate the opportunity is that you are ensured that the student is motivated by and attending to the stimulus. Conversely, an advantage of having the communication partner initiate the opportunities is that it allows the partner to control the number of opportunities that are provided. Finally, although it requires a bit more planning, utilizing a combination of the individual- and the communication partner-initiated opportunities capitalizes on the advantages of both (Jones & Feeley, 2012). As an example, consider John who, as discussed previously, is learning to point to a black-and-white line-drawn symbol representing “want” to request desired food items. In order to maximize on the relative advantages of individual- and communication partner-initiated opportunities, the team might decide to sometimes put desired food items within sight but out of reach (thereby creating a student-initiated opportunity), while other times to provide the specific prompt of “Do you want this?” (and thereby creating a communication partner-initiated opportunity).

A final variable that is important to consider as it relates to providing opportunities for instruction is the number of opportunities per intervention session (sometimes referred to as trials) and the number/frequency of intervention sessions. Decisions regarding the number of opportunities per session and the frequency of intervention sessions are likely to be highly dependent upon the behavior being taught (more complex behaviors may need more trials/sessions), the skills/abilities of the individual (some students may need more trials/sessions than others), and the urgency of skill acquisition (e.g., skills that need to be acquired quickly because of their impact on the safety of the individual or his/her communication partners may need more trials/sessions than others) (Jones & Feely, 2012). Once the team has identified the

opportunities for instruction (including the environment where instruction will occur, the communicative partners, who will initiate the instructional opportunities, and the number of trial/sessions), the next step is to determine how to prompt the communicative behavior.

### Prompting the Communicative Behavior

Prompts are strategies that are used to increase the likelihood that an individual will engage in the desired behavior. The types of prompts that are available when teaching communication behaviors include response prompts (prompts directed at the individual's behavior) and stimulus prompts (prompts that involve altering the environment).

#### Response Prompts

Regardless of whether or not someone has a disability, response prompts can be very effective when teaching a skill. A music teacher that moves a student's hand to help the student press the correct key on a piano is using response prompts. A Spanish teacher that asks the class to repeat a phrase in Spanish after she says the phrase is using response prompts. Finally, a parent who gestures toward the closet just as his child takes off his coat (and just before the child tosses it on the floor) is using response prompts.

Response prompts can be used when teaching communication skills to individuals with severe disabilities. There is a variety of response prompts that can be used to teach communication skills, including models, verbal prompts, gestural prompts, and/or physical prompts.

**Models.** Modeling is when the communication partner shows the individual what to do by demonstrating the communicative behavior. Modeling can be used as a prompt strategy regardless of the mode of communication. For example, when prompting a child who communicates via the verbal mode, a communication partner can provide a verbal model of a request for a desired activity by saying, "I want to go outside." Alternatively, when prompting a student who communicates via the gestural mode, a communication partner can provide a gestural model of a rejection of a non-preferred food item by shaking her head. Finally, when prompting a student who communicates via the graphic mode, a communication partner can provide a graphic model of a comment about an activity by pointing to the symbols corresponding to the message, "That was fun!"

Descriptive talk is a specific strategy that utilizes modeling (Hepting & Goldstein, 1996). Descriptive talk can include parallel talk or self-talk. Parallel talk is a form of a modeling intervention strategy in which the communication partner is near the individual with disabilities and provides a running commentary in short, simple phrases to describe individual's actions, thoughts, and feelings. For example, while building sand castles at the beach, a parent might say, "Wow! You just built a big castle! Oh, you made a tower. The tower fell down!" Self-talk is similar in many ways to parallel talk. However, instead of describing the actions/thoughts/feelings of the individual with disabilities, the communication partner describes his/her own actions/thoughts/feelings. For example, a teacher might say, "I'm going outside. It's cold. I think I need my coat and my gloves." Expansion is another intervention strategy that utilizes modeling. When using expansion, the communication partner listens to the communication of the individual with disabilities and then repeats it in a slightly more advanced or elaborated form (Hepting & Goldstein, 1996). The expansion may involve adding words to the utterance or providing a correct pronunciation of a word. For example, if an individual who uses a graphic mode of communication points to the symbol "eat" on his/her communication board, a communication partner might expand on this utterance by pointing to the symbols "eat" plus "hamburger."

In addition to the teacher modeling the desired behavior, other communication partners (e.g., peers) can provide models (e.g., Garfinkle & Schwartz, 2002; Lee, Odom, & Loftin, 2007). Sometimes it is difficult for the teachers to provide the model because of their role in the interaction. For example, when teaching a child to request attention by raising his hand, it is awkward for the teacher to model raising her own hand and then provide attention to herself as a consequence. In situations such as this, it may be helpful to consider having peers model the desired communicative behaviors. It is important to remember that, if peers will be serving as models, the peers must receive training on how to model the desired behaviors. If the context of instruction makes it difficult to utilize peer models (e.g., the peers don't have the skills needed to model, there are no peers in the environment), and it is deemed age appropriate, the teacher might consider the use of a helping doll/puppet (Goossens, Crain, & Elder, 1992). When using a helping doll/puppet, the teacher manipulates the doll/puppet to model the desired behaviors (e.g., pointing to graphic symbols, making signs/gestures) and engages in interactions with the helping doll/puppet as if the doll/puppet were a student.

**Verbal Prompts.** A verbal prompt is when the teacher verbally comments, asks questions, or provides instructions. As was the case with modeling, verbal prompts can be used regardless of the individual's mode of communication. Verbal prompts might set the occasion for a response, direct the student to respond, or explicitly state the required behavior (Sigafos, Mustonen, DePaepe, Reichle, & York, 1991). An example of a verbal prompt that sets the occasion for a response is observed when a teacher sees an individual looking at a puzzle that is in sight but out of reach and asks the question, "What do you want?" An example of a verbal prompt that directs the student to respond occurs when a child who uses gestures to communicate starts to scream when he sees a favorite candy bar on the shelf at the store and the parent says, "Show me what you want." Finally, an example of a verbal prompt that explicitly states the required behavior occurs when a child who uses the graphic mode of communication is seen to have difficulty operating a toy and the paraeducator says, "Point to the 'HELP' symbol."

Another strategy that utilizes verbal prompts is Mand-Model (Duran, 1996; Halle, Alpert, & Anderson, 1984; Warren, McQuarter, & Rogers-Warren, 1984). When implementing Mand-Model, the teacher gives a "mand" (i.e., asks a question or gives the student a direction to respond) and waits for the student to respond. If the student does not respond by engaging in the target behavior, the teacher then models the target behavior. For example, consider the use of Mand-Model in teaching a student to say "doll" to request a doll. In this situation, the teacher creates an opportunity for communication (e.g., places a desired doll within sight but out of reach) and then gives a "mand" (e.g., the teacher says, "Tell me what you want."). If the student engages in the target behavior, the teacher provides praise and natural consequences (e.g., provides the requested item). If the student does not engage in the target behavior, the teacher provides a model (e.g., "Tell me, "doll."). If a model is given and the student then engages in the target behavior (e.g., says "doll"), the teacher provides praise and natural consequences (e.g., provides the doll). If the student still does not engage in the target behavior, another model is provided. If, after the second model, the student still does not engage in the correct response, the teacher offers corrective feedback and the natural consequence (i.e., provides the doll). Given that Mand-Model starts by having the teacher initiate the opportunity (see previous discussion regarding creating opportunities), Mand-Model is likely to be most effective with a student who does not initiate communication very often but who will imitate the desired behavior when a model is provided.

**Gestural Prompts.** A gestural prompt is when the teacher uses a motion to encourage engagement in the desired communicative behavior. Examples of gestural

prompts include looking expectantly at an individual to prompt them to take a turn in an interaction, tapping on or near a student's communication board to encourage them to point to a symbol to request, and pointing to the clerk at a store to prompt the individual to approach the clerk and ask for assistance.

One interesting use of a gestural prompt to encourage communication with graphic mode users is the use of a flashlight cue (Goossens', Crain, & Elder, 1992). When using a flashlight cue, the teacher prompts the student's behavior by shining a flashlight on the communication display. Depending upon the level of prompt needed, a teacher might use the flashlight to direct the student to respond (wave the beam of the flashlight back and forth across the communication board to signal the need to communicate) or explicitly indicate the required behavior (focus the beam of the flashlight directly on the symbol that should be used). As mentioned by Goossens' and colleagues (1992), an advantage of a flashlight cue as a prompt for communication is that it allows the teacher to prompt the individual from a distance. This might be particularly useful when prompting an individual to initiate an interaction in a manner that increases the likelihood of the communication partner to focus on the individual rather than the teacher. For example, consider a situation where a teacher is interested in teaching a student to approach a peer and initiate an interaction by pointing to a graphic symbol representing "Hi" in the hallway at school. If the teacher chooses to use the gestural prompt of tapping on the student's communication board to encourage him to point to the symbol, then the teacher will need to be in close proximity to the student when providing the prompt. Given that the teacher is in close proximity to the student, the peer may focus on the teacher rather than the student. However, if the teacher chooses to use a flashlight cue to encourage the student to point to the symbol, then the teacher can distance herself from the student when providing the prompt. Given that the teacher is not close to the student when the prompt is given, the peer may be more likely to focus on the student in this situation.

**Physical Prompts.** Physical prompts occur when the teacher provides physical contact in order to encourage an individual to engage in a behavior. When using a physical prompt the teacher uses a small amount of pressure to guide the individual's behavior. Physical prompts are typically not used with verbal communication because it is awkward (if not impossible) to place your hands in or around a student's mouth to guide them through the motions used to say a word or phrase. However, physical prompts can be used effectively when teaching graphic and gestural modes of communication. When using physical prompts, a teacher might choose to use hand-over-hand guidance (where the teacher places his hands on top of the hands of the individual with disabilities to guide behavior) or hand-under-hand guidance (where the teacher places his hands under the hands of the individual with disabilities to guide behavior). Depending upon the situation, hand-under-hand guidance may be particularly useful in that it allows the individual with disabilities to observe his/her own body engaging in the desired behavior (e.g., pointing to a symbol on a communication display, making a sign/gesture).

In summary, response prompts are prompts that are directed at the student's behavior and include models, verbal prompts, gestural prompts, and physical prompts. Another type of prompt available for use by teachers is stimulus prompts.

### Stimulus Prompts.

Stimulus prompts involve altering the environment in order to increase the likelihood that an individual will engage in the desired behavior. As was the case with response prompts, stimulus prompts can be very effective when teaching a skill regardless of whether or not someone has a disability. Setting the alarm on a clock to remind you to leave for class is a stimulus prompt. Placing your bottle of daily vitamins next to your coffee mug to increase the likelihood that you remember to take them each morning is another example of a stimulus prompt. Stimulus prompts are particularly well suited

for prompting graphic modes of communication. For example, if a teacher is expanding upon the number of symbols that an individual uses/understands, the teacher might use a stimulus prompt by making the new symbol stand out from the others (e.g., by increasing the size or color of the symbol). Then, over time, the teacher could fade the use of this stimulus prompt by gradually decreasing the size or color across time.

One specific use of stimulus prompts as they relate to graphic modes of communication is gradual exposure (Goossens, Crain, & Elder, 1992). When using gradual exposure, the teacher starts by creating a communication board with an array of relevant symbols. For example, in creating a communication board for use when eating at a restaurant, the teacher would include vocabulary that allows the individual to express needs/wants, to share information, to develop friendships and relationships, and to be socially appropriate in that environment (Light, 1988). The teacher then covers all but the most critical symbols for the initial stages of intervention (i.e., places pieces of paper with non-permanent adhesive over non-essential symbols). After the individual learns to use the initial set of symbols, the teacher exposes more and more symbols over time. Gradual exposure is particularly useful in allowing the teacher to be proactive with regards to vocabulary selection and the arrangement of symbols on the array while still recognizing that exposing an individual with severe disabilities to the entire array during the initial stages of intervention may be overwhelming.

### Prompt Fading

Prompt fading involves reducing prompts over time. Earles, Carlson, and Bock (1998) discuss that, when fading prompts, teachers should ensure that prompts are faded across three dimensions: force (how much help is provided), time (the delay between the instruction and the prompt), and space (the physical distance between the individual with disabilities and the teacher). For an example of prompt fading across these three dimensions, let's consider Carol, who is learning to touch a symbol to reject a non-preferred item. With regard to force, Carol's teacher might start by using hand-under-hand guidance to move Carol's hand directly to the symbol (a full physical prompt). Then, after Carol has been successful when provided with this level of support, her teacher might use hand-under-hand guidance to direct her hand in the direction of the symbol, but not directly to the symbol (a partial physical prompt). With regard to time, Carol's teacher might start by immediately providing the prompt. Then, after Carol has been successful when provided with an immediate prompt, her teacher might insert a prompt delay by waiting for a short amount of time (e.g., five seconds) for Carol to display the target behavior. Finally, with regard to space, Carol's teacher might start by being right next to her during instructional opportunities. Then, after Carol has been successful when her teacher is right next to her, her teacher might gradually increase the physical space between them. Regardless of the strategy(ies) used for fading prompts, it is important to recognize that if prompts are



Watch the video "Fading Prompt Procedure (Spoon)" at [www.youtube.com/watch?v=jc0iSDBGt-0](http://www.youtube.com/watch?v=jc0iSDBGt-0).

faded too quickly, the individual may begin to make errors. If this occurs, the teacher should simply return to the prompt level where the student was successful, re-establish success at that level for a bit longer, and then resume fading the prompts.

### Consequences

Consequences refer to what occurs after an individual engages in a behavior. When planning for communication interventions, the teacher should consider the consequences for correct responses as well as the consequences for incorrect responses. In terms of consequences for correct responses, the goal is for the consequence to increase engagement in the target behavior in the future. The consequence for a correct response should also correspond to the communicative function of the target behavior. For example, if a teacher is teaching a child to request desired items/

activities, then the consequence for emitting the request should be the provision of the desired item/activity (positive reinforcement). However, if a teacher is teaching a child to reject items/activities, then the consequence for emitting the rejection response should be the removal of the undesired item/activity (negative reinforcement). Finally, if a teacher is teaching a child to comment, then the consequence for emitting the comment should be acknowledgement and/or continued interaction with the communication partner. Sometimes, despite our best efforts with regard to prompting, an individual may engage in an error response. Error responses may involve engaging in an incorrect behavior or doing nothing at all. If an individual engages in an error response, the teacher should not provide the same consequence as would be provided for a correct response. Instead, the teacher should provide some type of feedback indicating that the response is incorrect. This feedback might be verbal (e.g., “Try again.”). Or the teacher might ignore the incorrect response, pause briefly, create a new opportunity for communication, and provide an additional prompt to increase the likelihood of a correct response.

### Response Efficiency

Sometimes, an individual with disabilities has the desired communicative behavior in his/her repertoire but may refrain from using that behavior in the context of natural interactions. One concept that may be helpful in this regard is *response efficiency*. Response efficiency refers to the hypothesis that when a person has the opportunity to choose between two or more possible responses (e.g., biting a teacher or signing “break” to request a break), the response that the person perceives as most efficient will be chosen (Mace & Roberts, 1993). In order to increase the likelihood that an individual perceives the target skill as the most efficient option, the teacher can control some variables related to efficiency. These include making sure that the effort required to engage in the target behavior is relatively low and ensuring that the quality, immediacy, and rate of reinforcement for engaging in the target behavior are relatively high (Johnston, 2006; Johnston, Reichle, & Evans, 2004). For example, consider a student who has the choice of throwing objects to request assistance (his current behavior) or touching a black-and-white line-drawn symbol representing “HELP” to request assistance (his target behavior). This student’s choice of whether to engage in the current behavior or the target behavior may be influenced by physical effort. That is, if the motor demands associated with searching the environment to locate and then point to the symbol are greater than the motor demands associated with throwing objects, the student may choose to continue to throw objects. Alternatively, the learner may refrain from using the “HELP” symbol because the quality of reinforcement provided is not significant enough. That is, if the student receives assistance and attention regardless of whether he throws objects or uses the symbol to communicate, he may continue to throw objects. Finally, the student may not use the “HELP” symbol to request assistance because the rate of reinforcement and/or latency of reinforcement for engaging in the target behavior is too low. That is, if communication partners respond immediately every time the student throws objects but do not always see the student when he touches his symbol and/or do not respond immediately, then the student may choose to continue to throw objects.

Table 12–6 provides a planning form that considers the four components of response efficiency when designing or troubleshooting communication interventions. In using this form, the first step involves collecting information on the efficiency of the current behavior. After obtaining information regarding the efficiency of the current behavior, IEP teams can design an intervention that competes with the current behavior across the four variables of response efficiency (Mace & Roberts, 1993). As noted in Table 12–6, the team should compare the efficiency of the current behavior to the efficiency of the desired behavior in order to ensure that the desired behavior is relatively more efficient. Given that the four components of

**TABLE 12-6**  
Designing Interventions with Consideration to Variables Related to Response Efficiency

Variable	Current Behavior: _____	Desired Behavior: _____	Circle the Behavior That Is More Efficient
<b>Response Effort</b>	The physical effort required to engage in the current behavior is (circle one) <b>High Medium Low</b> The cognitive effort required to engage in the current behavior is (circle one) <b>High Medium Low</b>	The physical effort required to engage in the desired behavior is (circle one) <b>High Medium Low</b> The cognitive effort required to engage in the desired behavior is (circle one) <b>High Medium Low</b>	<b>Current</b> <b>Desired</b> <b>No Difference</b>
<b>Rate of Reinforcement</b>	Observation reveals that the current behavior is reinforced ___% (insert percentage) of the time.	Intervention is designed to ensure that the desired behavior is reinforced ___% (insert percentage) of the time.	<b>Current</b> <b>Desired</b> <b>No Difference</b>
<b>Quality of Reinforcement</b>	The quality of reinforcement for engaging in the current behavior is (circle one) • <b>highly non-preferred</b> • <b>non-preferred</b> • <b>neutral</b> • <b>preferred</b> • <b>highly preferred</b>	Intervention designed to ensure that the quality of reinforcement for engaging in the current behavior is (circle one) • <b>highly non-preferred</b> • <b>non-preferred</b> • <b>neutral</b> • <b>preferred</b> • <b>highly preferred</b>	<b>Current</b> <b>Desired</b> <b>No Difference</b>
<b>Immediacy of Reinforcement</b>	The current behavior results in immediate reinforcement. <b>YES NO</b>	Intervention is designed to ensure that the desired behavior results in immediate reinforcement. <b>YES NO</b>	<b>Current</b> <b>Desired</b> <b>No Difference</b>

(Source: Johnston, S. (2006). Considering response efficiency in the selection and use of AAC systems. *Speech Language Pathology – Applied Behavior Analysis*, 1(3), p 201. Copyright 2006 by the American Psychological Association.)

efficiency (rate of reinforcement, quality of reinforcement, response effort, and immediacy of reinforcement) interact to affect the probability that an individual will engage in one behavior over another, it may not be necessary (or even possible) to ensure that the desired behavior is more efficient than the current behavior across all four variables (McDowell, 1988). Rather, teachers should strive to develop interventions where, overall, the desired behavior is more efficient than the existing behavior. In order to further illustrate how the variables of response efficiency might be used when developing interventions, a completed planning form is provided in Figure 12–11 as part of Nick’s case study near the end of this chapter.

### Monitoring Progress

A final aspect of designing and implementing an intervention plan is to monitor progress. Monitoring progress allows an IEP team to determine whether an intervention is producing the desired effects (e.g., an individual has acquired the skill being taught). Monitoring progress also provides a way for teams to determine if changes need to be made to an intervention (e.g., the intervention is not effective in teaching the desired behavior). The first step in monitoring progress is specifying the behavior that will be monitored. When specifying the behavior, it is important that the behavior is described in a way that will allow anyone to accurately measure the behavior. The second step involves choosing a measurement system. The measurement system that is chosen will depend upon the skill(s) being taught. One option to consider for monitoring progress is a frequency count. When using a frequency count, the teacher collects data on the number of times a behavior occurs (e.g., number of requests). However, in order to compare frequency counts across sessions, it is important that the length of the

session/number of opportunities per session remains constant. If it isn't possible to keep the length of the session/number of opportunities consistent across time, then the teacher should convert the frequency counts to percentages (e.g., percent correct requests). Another possible measurement system that might be particularly important with regard to communication is latency (e.g., how much time lapses between an opportunity and a response). Latency is important because an individual may lose his turn in an interaction if too much time lapses between an opportunity and a response. The third step in monitoring progress involves creating a data collection form that will allow the teacher to collect data on the individual's performance as well as the prompts that were provided. The final step involves displaying the data (e.g., in a graph) in a way that allows for analysis. (See Chapter 4 for a review of measurement and recording strategies). Examples of intervention strategies as well as strategies for monitoring and reporting progress are included in the context of the following case examples.

### Case Studies: Bringing It All Together

#### Case Study: Laura

*As mentioned at the beginning of this chapter, Laura's current communication skills consist of pointing and leading communication partners to desired objects/activities. Laura's favorite objects/activities are playing with dolls and puzzles. Results of assessment revealed that Laura seems to enjoy playing with her classmates but that she has difficulty communicating her wants/needs in a way that they can understand. Results of assessment also revealed that Laura can discriminate among colored line drawings (e.g., when presented with an array of colored line drawings, Laura can point to a stated line drawing when asked). Laura's intervention team designed an intervention during an initial meeting based upon her communication skills/abilities and the assessment results. Figure 12–2 provides a summary of Laura's intervention plan.*

**FIGURE 12–2**

Laura's Intervention Plan

<p><b>Targeted Communication Skill (Mode, Vocabulary):</b> Requesting desired activity (playing with puzzles) by pointing to a graphic symbol representing the activity</p> <p><b>Setting(s):</b> Preschool classroom, home</p> <p><b>Intervention Plan</b>  <u>Natural Opportunities for Instruction:</u> During free choice time in the classroom and while playing at home  <u>Communication Partners:</u> Peers in preschool classroom, brother, sister  <u>Skill Sequence/Steps</u></p> <ol style="list-style-type: none"> <li>Communication partner ensures that desired activity (puzzles) is within sight but out of reach.</li> <li>Communication partner says, "What do you want to play with?"</li> <li>Communication partner observes Laura's eye gaze to see what object/activity is desired.</li> <li>Interventionist (i.e., parent, teacher) physically prompts Laura to ask for the desired object/activity by pointing to the corresponding graphic symbol.</li> <li>Laura and her communication partner engage in the desired activity (puzzles) for a few minutes immediately following a correct response.</li> <li>Communication partner repeats steps b–e (above) approximately five times or until Laura becomes disinterested.</li> </ol> <p><b>Consequences</b>  <u>Correct Response:</u> Immediately provide the requested object.  <u>Incorrect Response</u></p> <ol style="list-style-type: none"> <li><u>No Response:</u> Give a verbal reminder (e.g., "Tell me what you want,") followed by a physical prompt to touch the symbol.</li> <li><u>Error Response:</u> Remove the symbol, wait for five seconds, begin a new opportunity, and provide an increased prompt level for the subsequent opportunity in order to ensure a correct response.</li> </ol> <p><b>Prompt Fading:</b> Insert a five-second time delay before providing a physical prompt.</p> <p><b>Progress Monitoring:</b> Laura's team will evaluate progress on a weekly basis. Graphs, data tables, prompting, and prompt fading will be discussed and revised as needed.</p>
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Laura's parents and teachers agreed to create opportunities for her to request desired objects/activities and agreed that—since Laura was very motivated to interact with her peers, her brother, and her sister—Laura's peers/brother/sister would serve as her communication partners for this intervention. Laura's parents and teacher provided training and support to her communication partners. Laura's parents and teacher stayed near Laura during the early stages of intervention to offer guidance/support, to collect data, to prompt, etc. Figure 12–3 illustrates the data collection and prompt fading that were conducted in the context of this intervention.

**FIGURE 12–3**

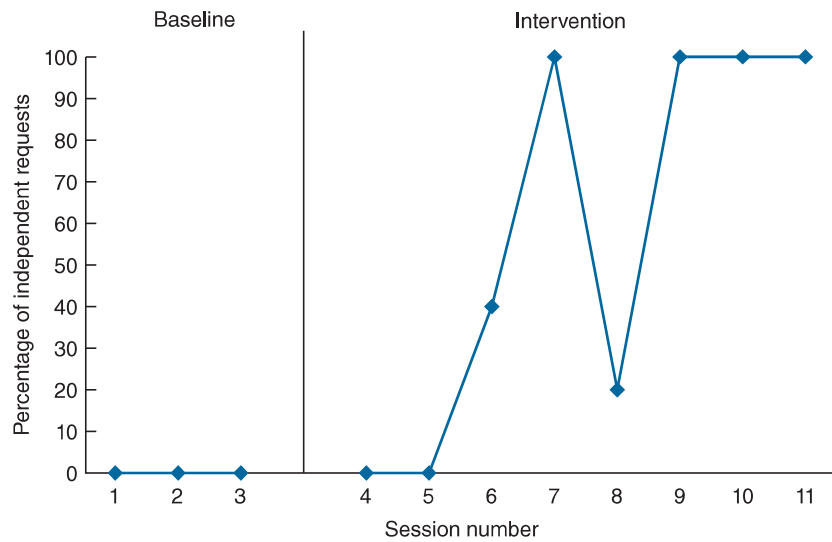
Laura's Performance Using a Graphic Symbol to Request a Desired Object

Date	Communication Partner	Opportunity	Notes
2/6	Peer	1 FP 2 FP 3 FP 4 FP 5 FP	
2/6	Brother	1 FP 2 FP 3 FP 4 FP 5 FP	
2/7	Peer	1 FP 2 I 3 I 4 FP 5 FP	Begin time delay with all communication partners.
2/8	Peer	1 I 2 I 3 I 4 I 5 I	
2/9	Sister	1 FP 2 FP 3 FP 4 FP 5 I	
2/10	Brother	1 I 2 I 3 I 4 I 5 I	
2/11	Peer	1 I 2 I 3 I 4 I 5 I	
2/12	Sister	1 I 2 I 3 I 4 I 5 I	

(Key: FP = full physical prompt; I = Independent)

**FIGURE 12-4**

Laura's Independent Requests of Desired Activity



As illustrated by the graph in Figure 12-4, Laura did not point to colored line drawings to request desired objects during baseline. However, as a result of intervention, Laura soon began to independently request desired objects. Since this intervention, Laura has increased her use of colored line drawings to request desired objects/activities (see Figure 12-5). Furthermore, Laura's team is now conducting assessments and developing intervention plans to teach Laura to use additional communicative functions.

**FIGURE 12-5**

Laura Using a Graphic Symbol to Request a Desired Object



(Photo by R. Thompson; used with permission.)

### Case Study: Manuel

As mentioned at the beginning of this chapter, Manuel is a second grader who has cerebral palsy with some control over the movement of his arms. Assessment results revealed that Manuel's communication skills include (a) using a voice output communication aid with picture symbols, (b) eye gazing at picture symbols presented on a non-electronic communication display, and (c) using a limited number of vocalizations, which are understood by familiar communication partners but are not usually understood by communication partners who don't know him well. Assessment results also revealed that Manuel rarely initiates interactions. Manuel's intervention team designed an intervention during an initial meeting based upon his communication skills/abilities and assessment results. Figure 12-6 provides a summary of Manuel's intervention plan.

Manuel's parents and teachers agreed to create opportunities for Manuel to initiate interactions, and agreed that, since Manuel was very social and motivated to interact with his peers, Manuel's peers would serve as his communication partners for this intervention. Manuel's teacher provided training and support to his communication partners (e.g., understanding Manuel's mode of communication, understanding how to address communication breakdowns, etc.). Manuel's teacher stayed near Manuel during the early stages of intervention to offer guidance/support, to

**FIGURE 12-6**  
Manuel's Intervention Plan

<p><b>Targeted Communication Skill (Mode, Vocabulary):</b> Initiating communicative interactions (e.g., saying "Hi, what's up?") using messages that are prestored on his speech-generating device (SGD)</p> <p><b>Setting(s):</b> School</p> <p><b>Intervention Plan</b></p> <p><i>Natural Opportunities for Instruction:</i> During lunch and while hanging out in the hallways before/after school</p> <p><i>Communication Partners:</i> Peers at school</p> <p><i>Skill Sequence/Steps</i></p> <ol style="list-style-type: none"> <li>When Manuel is in proximity of communication partners (e.g., during lunch, in the hallways), a teacher's aide positions herself at a distance from Manuel and his communication partners. The teacher's aide prompts Manuel to use his communication aid to initiate an interaction by focusing a flashlight beam onto the symbol where the message is stored.</li> <li>Manuel and his communication partners engage in the communicative interaction.</li> <li>The teacher's aide repeats steps a and b (above) approximately five times per day with different peers as communication partners.</li> </ol> <p><b>Consequences</b></p> <p><i>Correct Response:</i> Interaction with peers</p> <p><i>Incorrect Response</i></p> <ol style="list-style-type: none"> <li>No Response: Teacher's aide shines the light directly on the symbol where the message is stored.</li> <li>Error Response: Teacher's aide models the correct behavior by using Manuel's communication aid to initiate an interaction. Then, the teacher's aide helps Manuel position himself by a new set of peers in order to begin a new opportunity. During this opportunity, the teacher's aide immediately prompts Manuel using the flashlight in order to ensure a correct response.</li> </ol> <p><b>Prompt Fading:</b> Insert a five-second time delay before using the flashlight to prompt.</p> <p><b>Progress Monitoring:</b> Manuel's team will evaluate progress on a weekly basis. Graphs, data tables, prompting, and prompt fading will be discussed and revised as needed.</p>
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**FIGURE 12-7**

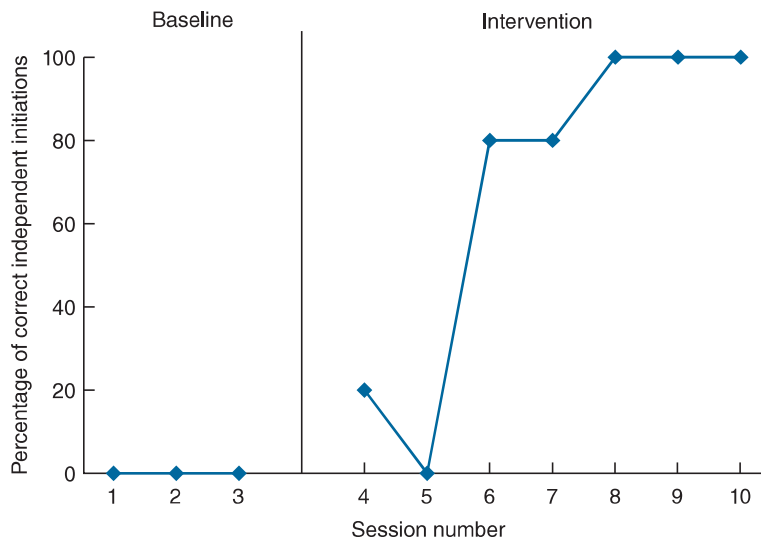
Manuel's Performance Using His Voice Output Communication Aid to Initiate Interactions

Date	Opportunity	Notes
3/9	1 FC 2 FC 3 I 4 FC 5 FC	
3/10	1 FC 2 FC 3 FC 4 FC 5 FC	
3/11	1 I 2 I 3 I 4 FC 5 I	Begin time delay in order to fade flashlight cue.
3/12	1 I 2 FC 3 I 4 I 5 I	
3/15	1 I 2 I 3 I 4 I 5 I	
3/16	1 I 2 I 3 I 4 I 5 I	
3/17	1 I 2 I 3 I 4 I 5 I	

(Key: FC = Flashlight Cue; I = Independent)

collect data, and to provide prompts. Figure 12-7 illustrates the data collection and prompt fading that were conducted in the context of this intervention. As illustrated by the graph in Figure 12-8, Manuel did not initiate interactions during baseline. However, as a result of intervention, Manuel soon began to independently initiate interactions. Since this intervention, Manuel has increased the range of people with whom he initiates interactions (e.g., waiters at a restaurant, unfamiliar peers at a park) (see Figure 12-9). Furthermore, Manuel's team is now conducting assessments and developing intervention plans to teach Manuel how to change topics once engaged in conversations and how to effectively and appropriately terminate conversational interactions.

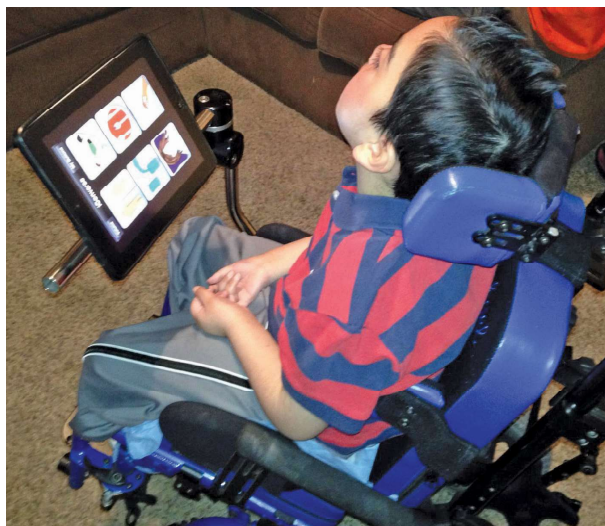
**FIGURE 12–8**  
Manuel's Independent Initiations



#### Case Study: Nick

As mentioned at the beginning of this chapter, Nick's current communication skills consist of verbal language as well picture symbols to communicate. Results of assessment revealed that (a) Nick's existing verbal language is intelligible, (b) he uses several simple phrases in a functional manner and in appropriate contexts, and (c) he will not usually imitate spoken words/phrases when asked. Results of assessment also revealed that Nick engages in schoolwork and homework for about 15 minutes before hitting others to escape. But, after a five-minute break

**FIGURE 12–9**  
Manuel with his Speech-Generating Device (SGD)



(Photo by M. Ruesch; used with permission.)

**FIGURE 12–10**  
Nick's Intervention Plan

**Targeted Communication Skill (Mode, Vocabulary):** Pointing to a graphic symbol representing “BREAK” to request a break during schoolwork and homework activities

**Considering Variables Related to Response Efficiency:** The team completed a form to consider variables related to response efficiency (see Figure 12–11). As noted in the completed form, the team considered

*Response Effort:* Providing a full physical prompt to point to the “BREAK” symbol ensures that the physical and cognitive effort required to engage in the target behavior is lower than the physical and cognitive effort required to engage in the current behavior.

*Rate of Reinforcement:* Teachers currently respond to Nick every time that he hits others. Providing reinforcement every time that Nick engages in the target behavior (pointing to the “BREAK” symbol) ensures that the rate of reinforcement for engaging in the target behavior is equal to the rate of reinforcement for engaging in the current behavior.

*Quality of Reinforcement:* When Nick hits others, teachers currently respond by redirecting him back to the work activity. Providing Nick with a break from work and an opportunity to listen to music during the break when he engages in the target behavior (pointing to “BREAK” symbol) ensures that the quality of reinforcement for engaging in the target behavior is greater than the quality of reinforcement for engaging in the current behavior.

*Immediacy of Reinforcement:* Teachers currently respond to Nick immediately after he hits others. Providing reinforcement immediately after Nick engages in the target behavior (pointing to the “BREAK” symbol) ensures that the immediacy of reinforcement for engaging in the target behavior is equal to the immediacy of reinforcement for engaging in the current behavior.

In summary, the team developed a plan to ensure that, overall, the target behavior was more efficient. Specifically, the target behavior was more efficient than the current behavior with regard to response effort and quality of reinforcement. Further, the target behavior was equally efficient in relation to the current behavior in terms of rate and immediacy of reinforcement.

**Natural Opportunities for Instruction:** During work activities at school and home

**Communication Partners:** Teacher, parents

#### **Skill Sequence/Steps**

- (a) 13–14 minutes into schoolwork or homework, Nick's communication partner uses Mand-Model to prompt Nick to request a break. (Note: Assessment revealed that Nick usually engages in schoolwork or homework for 15 minutes before engaging in challenging behavior. Thus, prompting Nick 13-14 minutes into a work activity ensures that the request for a break will occur prior to Nick engaging in challenging behavior.)
- (b) Nick and his communication partner engage in the desired activity (listening to music) for five minutes immediately following a correct response.
- (c) Communication partner redirects Nick to his work activity.
- (d) Communication partner repeats steps b and c (above) throughout the schoolwork or homework activity.

#### **Consequences**

**Correct Response:** Immediately provide the requested break and access to music.

#### **Incorrect Response**

- (a) **No Response:** Give a direct verbal prompt: “Tell me, ‘I need a break.’ ”
- (b) **Error Response:** Redirect Nick back to the schoolwork or homework. After Nick resumes work, begin a new opportunity and provide a direct verbal prompt in order to ensure a correct response: “Say, ‘I need a break.’ ”

**Prompt Fading:** Insert a five-second time delay before providing the direct verbal prompt.

**Progress Monitoring:** Nick's team will evaluate progress on a weekly basis. Graphs, data tables, prompting, and prompt fading will be discussed and revised as needed.

where he is allowed to engage in a preferred activity (e.g., listening to music), he will return to the schoolwork/homework upon request. Nick's intervention team designed an intervention during an initial meeting based upon his communication skills/abilities and assessment results. Figure 12–10 provides a summary of Nick's intervention plan. During the process of developing the intervention, the team completed a form related to response efficiency (see Figure 12–11) in order to

**FIGURE 12–11**  
 Designing Interventions with Consideration to Variables Related to Response Efficiency

Variable	Current Behavior: <i>HIT OTHERS</i>	Desired Behavior: <i>POINT TO SYMBOL REPRESENTING “BREAK”</i>	Circle the Behavior That Is More Efficient
<b>Response Effort</b>	The physical effort required to engage in the current behavior is (circle one) <i>High Medium Low</i> The cognitive effort required to engage in the current behavior is (circle one) <i>High Medium Low</i>	The physical effort required to engage in the desired behavior is (circle one) <i>High Medium Low</i> The cognitive effort required to engage in the desired behavior is (circle one) <i>High Medium Low</i>	<i>Current</i> <i>Desired</i> <i>No Difference</i>
<b>Rate of Reinforcement</b>	Observation reveals that the current behavior is reinforced 100% (insert percentage) of the time.	Intervention is designed to ensure that the desired behavior is reinforced 100% (insert percentage) of the time.	<i>Current</i> <i>Desired</i> <i>No Difference</i>
<b>Quality of Reinforcement</b>	The quality of reinforcement for engaging in the current behavior is (circle one) <ul style="list-style-type: none"> <li>• <i>highly non-preferred</i></li> <li>• <i>non-preferred</i></li> <li>• <i>neutral</i></li> <li>• <i>preferred</i></li> <li>• <i>highly preferred</i></li> </ul>	Intervention designed to ensure that the quality of reinforcement for engaging in the current behavior is (circle one) <ul style="list-style-type: none"> <li>• <i>highly non-preferred</i></li> <li>• <i>non-preferred</i></li> <li>• <i>neutral</i></li> <li>• <i>preferred</i></li> <li>• <i>highly preferred</i></li> </ul>	<i>Current</i> <i>Desired</i> <i>No Difference</i>
<b>Immediacy of Reinforcement</b>	The current behavior results in immediate reinforcement. <i>YES NO</i>	Intervention is designed to ensure that the desired behavior results in immediate reinforcement. <i>YES NO</i>	<i>Current</i> <i>Desired</i> <i>No Difference</i>

(Source: Johnston, S. (2006). Considering response efficiency in the selection and use of AAC systems. *Speech Language Pathology – Applied Behavior Analysis*, 1(3), p 201. Copyright 2006 by the American Psychological Association.)

increase the likelihood that Nick would choose to engage in the target behavior (point to the symbol representing “BREAK”) rather than his existing behavior (hitting others).

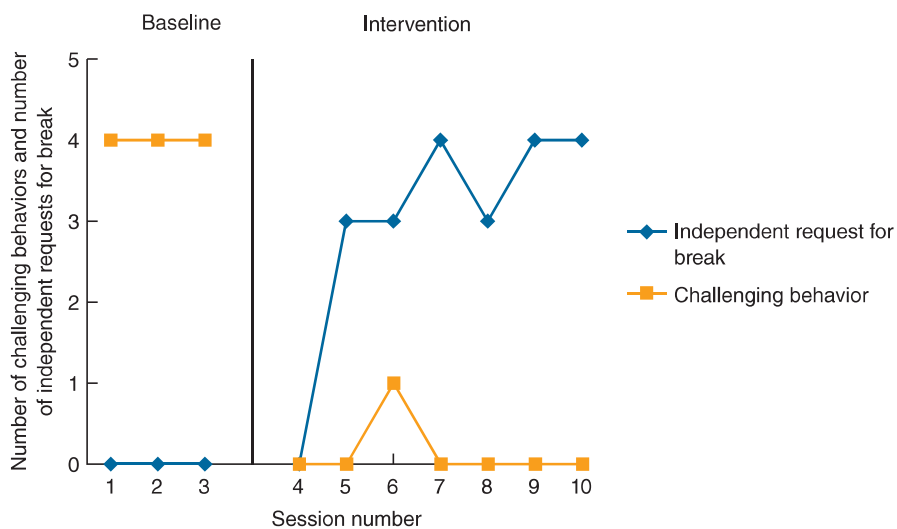
Nick’s parents and teachers agreed to create opportunities for Nick to request a break from activities, and agreed that, since Nick frequently engaged in challenging behavior (hitting others) during class activities and when completing work at home, his teacher and parents would serve as the communication partners for this intervention. Figure 12–12 illustrates the data collection and prompt fading that were implemented in the context of this intervention. As illustrated by the graph in Figure 12–13, the team documented (a) an increased number of independent verbal requests to take a break (see Figure 12–14), and (b) a decreased number of challenging behaviors (hitting others). Nick’s team is now developing an intervention plan to gradually increase the amount of time working prior to requesting a break.

**FIGURE 12–12**  
Nick's Performance in Requesting a Break

Date	Communication Partner	Opportunity	Notes
5/6	Parent	1 DV 2 DV 3 DV 4 DV	
5/6	Teacher	1 I 2 I 3 DV 4 I	
5/7	Teacher	1 DV 2 I 3 I 4 I	Nick engaged in challenging behavior once prior to prompt.
5/8	Parent	1 I 2 I 3 I 4 I	Begin time delay with all communication partners.
5/10	Teacher	1 DV 2 I 3 I 4 I	
5/11	Teacher	1 I 2 I 3 I 4 I	
5/11	Parent	1 I 2 I 3 I 4 I	

(Key: DV = Direct Verbal Prompt; I = Independent)

**FIGURE 12–13**  
Nick's Independent Requests for a Break



**FIGURE 12-14**

Nick Using a Graphic Symbol to Request a Break



(Photo by K. Feeley; used with permission.)

## LEARNING OUTCOME SUMMARIES

### 12.01 The Importance of Communication

#### Learning Outcome

*Discuss the importance of communication for students with severe disabilities and identify the primary purposes of communicative interactions.*

Communication provides a way to express needs/wants, to share information, to develop friendships and relationships, and to be socially appropriate (Light, 1988). When communicating, people use a variety of strategies including eye gaze, nodding/shaking the head, laughing, pointing, and speaking. All individuals, regardless of age or disability, communicate. Further, there are no prerequisites to communication. In order to support the communication needs of individuals with severe disabilities, professionals must possess knowledge and skills regarding communication.

### 12.02 Features of Communication

#### Learning Outcome

*Identify the features of communication and explain the characteristics of each.*

Communication is multifaceted and is comprised of many features. In order to meet the communication needs of individuals with severe disabilities, teachers must understand the extent to which communicative behaviors are intentional and symbolic. Teachers must also have an understanding of communication modes, communicative functions, conversational functions, communicative complexity, and comprehension. Understanding the different features of communication provides teachers with a framework for describing the strengths and areas of need that might be experienced by individuals with severe disabilities.

### 12.03 Identifying and Assessing Communication Skills and Abilities—Deciding What to Teach

#### Learning Outcome

*Identify strategies for assessing communication needs as they relate to students with severe disabilities and provide examples of how assessment data lead to the identification of target behaviors for instruction.*

An important step in helping an individual with severe disabilities develop functional communication skills is to identify or assess his or her current communication skills and abilities. Communication assessments for individuals with severe disabilities can be formal or informal. Furthermore, the process used for gathering assessment data can rely on either indirect or direct observation strategies. Once collected, assessment data can be used to identify targets for intervention and to develop intervention plans.

### 12.04 Developing an Instructional Plan—Deciding How to Teach

#### Learning Outcome

*Discuss strategies for developing a plan to teach communicative behaviors.*

Once an appropriate target has been identified, the next step is to develop an instructional plan to teach the skill. Teaching the skill involves identifying opportunities for instruction (i.e., the environment where instruction will occur, the communicative partners, who will initiate the instructional opportunities, and the number of opportunities per session/frequency of intervention sessions). Developing an instructional plan also includes making decisions regarding prompting the behavior (i.e., response prompts, stimulus prompts), delivering consequences, and fading prompts. A final aspect of developing an instructional plan is to monitor progress. Monitoring progress helps the teacher determine whether an intervention is producing the desired effects and/or if changes need to be made to an intervention.

## SUGGESTED ACTIVITIES

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1. Design and construct a simple, low-tech AAC system appropriate for general communication use. Then, using this system, assume the role of a non-speaking individual for 24 hours. The purpose of this activity is to better understand the importance of communication, features of communication, and issues inherent to the graphic mode of communication.
2. Identify an environment that is conducive to social interactions (e.g., recess time at school, a park, a restaurant). Position yourself so that you are close enough to an interaction to hear the conversation but not so close that you might become a part of the interaction. Write down the utterances that you hear and then specify the function(s) served by each utterance (e.g., drawing attention to self, rejecting/protesting, requesting objects/actions, requesting information, or commenting). The purpose of this activity is to better understand the features of communication as well as strategies for assessing communication.
3. Choose one of the “If . . . then . . .” scenarios described in Table 12–5, “Examples of How to Use Assessment Data to Identify Targets for Intervention.” Based upon that scenario, develop an intervention plan to teach the target behavior that includes (a) identifying opportunities for instruction, (b) prompting the behavior, (c) delivering consequences, (d) fading prompts, and (e) monitoring progress. The purpose of this activity is to better understand how assessment data lead to the identification of target behaviors for instruction, and how to develop a plan to teach communicative behaviors.

## ADDITIONAL RESOURCES

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### Books

- Buekelman, D. R., & Mirenda, P. (2005). *Augmentative and alternative communication* (3rd ed.). Baltimore, MD: Paul H. Brookes.
- Downing, J. E. (2005). *Teaching communication skills to students with severe disabilities* (2nd ed.). Baltimore, MD: Paul H. Brookes.
- Hodgdon, L. A. (1995). *Visual strategies for improving communication. Vol. 1: Practical supports for school and home*. Troy, MI: Quirk Roberts.

- Johnston, S., Reichle, J., Feeley, K., & Jones, E. (2012). *AAC strategies for individuals with moderate to severe disabilities*. Baltimore, MD: Paul H. Brookes.
- Keogel, R. L., & Keogel, L. K. (2006). *Pivotal response treatments for autism: Communication, social and academic development*. Baltimore, MD: Paul H. Brookes.
- Light, J. C., Buekelman, D. R., & Reichle, J. (2003). *Communicative competence for individuals who use AAC: From research to effective practice*. Baltimore, MD: Paul H. Brookes.
- Mirenda, P., & Iacono, T. (2009). *Autism spectrum disorders and AAC*. Baltimore, MD: Paul H. Brookes.
- Reichle, J., Buekelman, D., & Light, J. (2002). *Exemplary practices for beginning communicators: Implications for AAC*. Baltimore, MD: Paul H. Brookes.
- Sigafoos, J., Arthur-Kelly, M., & Butterfield, N. (2006). *Enhancing everyday communication for children with disabilities*. Baltimore, MD: Paul H. Brookes.

#### General Websites

International Society for Augmentative and Alternative Communication: [www.isaac-online.org](http://www.isaac-online.org)  
 American Speech-Language-Hearing Association: [www.asha.org](http://www.asha.org)  
 Creative Communicating: [www.creativecommunicating.com](http://www.creativecommunicating.com)  
 AAC TechConnect: [www.aactechconnect.com](http://www.aactechconnect.com)  
 Simplified Technology: [www.lburkhart.com](http://www.lburkhart.com)

#### Select AAC Device Manufacturer Websites

Ablenet [www.ablenetinc.com](http://www.ablenetinc.com)  
 Attainment Company [www.attainmentcompany.com](http://www.attainmentcompany.com)  
 Augmentative Resources [www.augresources.com](http://www.augresources.com)  
 Don Johnston [www.donjohnston.com](http://www.donjohnston.com)  
 Dynavox and Mayer-Johnson [www.dynavoxtech.com](http://www.dynavoxtech.com)  
 Enabling Devices [www.enablingdevices.com](http://www.enablingdevices.com)  
 Prentke Romich Company (PRC) [www.prentrom.com](http://www.prentrom.com)  
 Saltillo [www.saltillo.com](http://www.saltillo.com)  
 Tobii [www.tobii.com](http://www.tobii.com)  
 Zygo Industries, Inc. [www.zygo-usa.com](http://www.zygo-usa.com)