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Enhancing Classroom-Based Communication Instruction for Students with Significant Disabilities and Limited Language

Lori Geist

University of North Carolina at Chapel Hill, lageist@unc.edu

Karen Erickson

University of North Carolina at Chapel Hill, karen_erickson@med.unc.edu

Claire Greer

University of North Carolina at Chapel Hill, claire_greer@med.unc.edu

Penelope Hatch

University of North Carolina at Chapel Hill, penelope_hatch@med.unc.edu

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Abstract

Many students with significant disabilities have complex communication needs and are not yet able to express themselves using speech, sign language, or other symbolic forms. These students rely on non-symbolic forms of communication like facial expressions, body movements, and vocalizations. They benefit from responsive partners who interpret and honour these forms and teach symbolic alternatives. The purpose of this article is to describe ways in which classroom teachers and other classroom staff can be responsive partners using three targeted teaching practices: (a) attributing meaning and honouring early communication behaviours, (b) giving students personal access to aided augmentative and alternative communication (AAC) systems with a core vocabulary, and (c) using aided language input strategies to show students what is possible and how to use graphic symbols on aided AAC systems. These teaching practices are discussed using scenarios to illustrate how each can be integrated into typical academic and non-academic classroom activities.

Keywords

Augmentative and alternative communication, aided language input, core vocabulary, symbolic communication

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Enhancing Classroom-Based Communication Instruction for Students with Significant Disabilities and Limited Language

Lori Geist, Karen Erickson, Claire Greer, and Penelope Hatch
University of North Carolina at Chapel Hill

Abstract

Many students with significant disabilities have complex communication needs and are not yet able to express themselves using speech, sign language, or other symbolic forms. These students rely on non-symbolic forms of communication like facial expressions, body movements, and vocalizations. They benefit from responsive partners who interpret and honour these forms and teach symbolic alternatives. The purpose of this article is to describe ways in which classroom teachers and other classroom staff can be responsive partners using three targeted teaching practices: (a) attributing meaning and honouring early communication behaviours, (b) giving students personal access to aided augmentative and alternative communication (AAC) systems with a core vocabulary, and (c) using aided language input strategies to show students what is possible and how to use graphic symbols on aided AAC systems. These teaching practices are discussed using scenarios to illustrate how each can be integrated into typical academic and non-academic classroom activities.

Mason is a third-grade student who communicates primarily through body language, facial expressions, a few vocalizations, and eye contact. Mason spends most of the school day in a special education classroom, and based on his learning profile he will participate in the Alternate Assessment based on Alternate Achievement Standards (AA-AAS) at the end of the school year. Most of his classmates use spoken language to express their thoughts and ideas. Ms. Lee, Mason's classroom teacher, like his family, is attuned to the unconventional ways Mason communicates. She is able to anticipate and respond to his basic wants and needs; yet Mason cannot make comments, ask questions, or share thoughts and feelings with his peers and others at school or at home. Mason has

received speech-language therapy for 30 minutes each week from the time he was an infant. The use of aided augmentative and alternative communication (AAC) has been explored with him over the years, but efforts to teach him to recognize and use graphic symbols to communicate have been unsuccessful. Ms. Lee and Mason's speech-language pathologist and parents recognize that he needs intervention that extends beyond therapy time and provides more frequent teaching and learning opportunities in order to acquire the ability to use graphic symbols to express himself. Ms. Lee is determined to offer intervention across the school day and plans to identify and create opportunities for interaction with Mason that will allow her to teach the use of graphic symbols for communication during academic routines and daily activities.

The ability to communicate is essential for development of the English language arts and mathematics skills targeted in grades K–12 (National Governors Association Center for Best Practices, Council of Chief State School Officers, 2010), yet there are more than 100,000 students like Mason in U.S. public schools who are not yet able to communicate across purposes, partners, and topics using speech, sign language, or graphic symbols (Erickson & Geist, 2016). These students are part of a group described as having significant cognitive disabilities. This description is used by the U.S. Department of Education (2005) to recognize students who have a disability or multiple disabilities that significantly impact intellectual functioning and adaptive behaviour. Students with significant cognitive disabilities require extensive, repeated, individualized instruction; substantially adapted and modified materials; and individualized methods of accessing information in alternate ways to acquire, maintain, generalize, demonstrate, and transfer skills across settings (Dynamic Learning Maps Consortium, 2016). Students who fall within this group are eligible for special education services under a variety of categories such as autism, multiple disabilities, intellectual disability, and deaf-blindness. Students with significant cognitive disabilities comprise approximately 1% of the K–12 population and almost 10% of students with disabilities in U.S. public schools (Thurlow & Wu, 2016). Approximately 35% of students with significant cognitive disabilities also have limited use of speech, sign language, or graphic symbols (Erickson & Geist, 2016). These students may benefit from a focus on building understanding and use of symbolic communication to support their meaningful engagement across the curriculum and the school day. Symbolic communication refers to the use of language in the form of speech, sign language, graphic symbols, tactile symbols, and/or written words (Beukelman & Mirenda, 2013; Rowland, 2011). Each of these forms of language can be used to communicate with others for a variety of purposes, such as obtaining things or actions that are desired, refusing things or actions that are not desired, interacting with one another socially, and exchanging information through comments and questions (Rowland, 2011). Instruction aimed at teaching these forms of language is considered a basic human right for all students, regardless of the severity of their disability (National Joint Committee, 2005). The purpose of this article is to describe how classroom teachers and classroom staff can provide this instruction to help Mason and other students like him achieve this basic human right.

Classroom-Based Communication Instruction

Teachers and classroom staff can play an important role in the delivery of symbolic communication instruction that is supported by research (Clendon & Anderson, 2016; Kent-Walsh, Murza, Malani, & Binger, 2015). Practices with research support for their potential impact on outcomes for students with significant cognitive disabilities and limited expressive and receptive language include: (a) attributing meaning to early communication behaviours (e.g., Yoder, McCathren, Warren, & Watson, 2001), (b) using AAC (e.g., Ganz et al., 2012) with a useful core vocabulary (e.g., Erickson, Geist, Hatch, & Quick, in press), and (c) providing aided language input (e.g., O'Neill, Light, & Pope, 2018). Principles of naturalistic instruction (see Pindiprolu, 2012; Prizant & Wetherby, 1998) suggest teaching practices such as these can be applied throughout the school day during daily routines like arrival, meals, and transitions, and across academic instruction.

Attributing Meaning to Early Forms of Communication

Before children use speech, signs, or other symbols to communicate, they rely on non-symbolic forms of communication like body movements (e.g., turning away), facial expressions (e.g., grimace), and vocalizations (e.g., laughter). As Rowland (2011) suggests, many of these early non-symbolic forms are considered unconventional because they require adults who are familiar with the child to interpret meaning. As communication abilities develop, non-symbolic behaviours become more conventional (i.e., easily recognizable and considered socially acceptable) and are used along with symbolic forms of communication throughout one's life.

Children benefit from adults who are responsive to their early non-symbolic forms of communication (Yoder et al., 2001). Adults can honour the intent of these early behaviours and also show students how they connect to related symbolic forms of communication. For example, Ms. Lee has learned that when she sees Mason reaching for his favourite book, she can honour his behaviour by giving him the book and then saying things like, "I see you reaching, you want it," and pointing to the graphic symbol representing *WANT* as she says, "You *want* it." Demonstrating the use of symbolic alternatives to non-symbolic behaviours helps students learn that symbols carry meaning and can be used to communicate (Beukelman & Mirenda, 2013; O'Neill et al., 2018). Teachers and classroom staff can watch for these early forms of non-symbolic communication, interpret and honour them, and demonstrate symbolic forms of communication that offer another way to express the same message (Erickson, Geist, Hatch, & Quick, in press).

The Communication Matrix (Rowland, 2011) is a useful tool for learning to recognize and build on these early forms of non-symbolic communication.¹ It is a psychometrically sound measure that is appropriate for students of all ages who are at early levels of communication ability (Rowland, 2012). Designed as a teacher- and parent-friendly direct observational tool and behavioural inventory, it is organized by behaviours at seven levels of communication ability across four basic reasons to communicate, including to (a) refuse items or actions, (b) obtain items or actions, (c)

¹ The Communication Matrix is available free of charge from <https://communicationmatrix.org/>

interact socially, and (d) provide or seek information. For each of these reasons to communicate, the behaviours a student uses are observed and reported to capture their full range of communication abilities. Behaviours at the earliest levels require interpretation by communication partners and the highest level involves use of language by combining two or more spoken words, signs, or graphic symbols (e.g., want more; get help; I like).

Personal Access to Aided AAC with Core Vocabulary

The term *AAC* encompasses a broad range of methods of communication that can be used to supplement or replace speech. AAC supports both expressive communication and receptive understanding of language and has been found to be beneficial across age groups and disabilities (Douglas, Light, & McNaughton, 2012; Ganz et al., 2012; Holyfield, Drager, Kremkow, & Light, 2017; Ronski, Sevcik, Barton-Hulsey, & Whitmore, 2015; Schlosser & Lee, 2000). AAC can be unaided (e.g., manual signs, gestures) or aided (e.g., graphic symbols, tactile symbols, photographs). Communication instruction should seek to bolster all forms of communication (Beukelman & Mirenda, 2013); however, aided AAC may be the only avenue to autonomous communication for some students with significant disabilities (Erickson & Geist, 2016). Research including meta-analyses (Ganz et al., 2012; Schlosser & Lee, 2000) and a systematic review (Holyfield et al., 2017) supports the benefits of aided AAC regardless of the severity of an individual's intellectual or cognitive disability (Snell et al., 2010).

Selecting vocabulary. Selecting the vocabulary to represent with graphic symbols on an aided AAC system requires consideration of relevance and usefulness across different contexts, topics, and communication partners. Students who use speech to communicate choose their own words from those in their expressive vocabulary; while students who are learning to use aided AAC choose from the repertoire of words others have selected for them. For beginning communicators like Mason, cognitive, sensory, and physical challenges often place constraints on (a) the number of symbols that can be included on an aided AAC system, (b) the pace at which additional symbols can be added, and (c) the ways they can be represented and accessed (Beukelman & Mirenda, 2013; Erickson & Geist, 2016). Accepted approaches to vocabulary selection include a variety of environmental and preference inventories (Beukelman & Mirenda, 2013) and the use of standard word lists that feature frequently used vocabulary (Cross, Erickson, Geist, & Hatch, in press).

Emphasizing core vocabulary. *Core vocabulary* is a term used to describe a relatively small set of the most frequently used vocabulary on standard word lists. These highly useful words (e.g., *more*, *go*, *like*) are among the first words typically developing children learn to say (e.g., Banajee, DiCarlo, & Stricklin, 2003), are explicitly taught to read (e.g., Dolch, 1955), and use in their early writing (Clendon & Erickson, 2008). These words are also highly useful regardless of the age of the communicator (Cross et al., in press) and are a phenomenon across languages (e.g., Boenisch & Sachse, 2007). One of the primary advantages of core vocabulary for beginning communicators who are learning to use aided AAC is that the same words can be taught across a variety of contexts and purposes throughout the day (Erickson et al., in press).

There are a growing number of resources to support the selection of core vocabulary to include on beginning aided AAC systems. Many high-end speech generating devices (SGDs) and communication applications (apps) for mobile platforms like iPads and Androids include core vocabulary. Furthermore, there are a number of printable displays for low-tech devices and individual communication boards and books being used by school systems across the United States. For example, the Region 4 Education Service Center (2018) has published a collection called the Classroom Communication Boards, and an open-source option called the Universal Core vocabulary is available through Project Core (n.d.). The latter AAC system features 36 core vocabulary words (see Table 1) that are represented by different graphic and tactile symbols in several different formats to address the needs of students with a range of cognitive, sensory, and physical impairments.

Table 1.

36 Words in the Universal Core Vocabulary in Alphabetical Order

all	can	different	do	finished	get
go	good	he	help	here	I
in	it	like	look	make	more
not	on	open	put	same	she
some	stop	that	turn	up	want
what	when	where	who	why	you

Source: "36 Location Universal Core Communication Board" (Project Core, n.d.)

Core vocabulary is conceptual and abstract, which means the graphic symbols representing core vocabulary words are abstract. This may make symbols representing core vocabulary more difficult to learn than concrete symbols, but it is certainly possible (e.g., Snodgrass, Stoner, & Angell, 2013). Furthermore, in comparison to concrete, often context-specific vocabulary, there are dramatically more opportunities to teach and learn core vocabulary across a typical school day because core words can be used across contexts, purposes, and partners (Adamson, Ronski, Deffebach, & Sevcik, 1992; Deckers, Van Zaalén, Van Balkom, & Verhoeven, 2017). As students learn to use larger vocabularies, core words can be used in combination with more specific vocabulary to communicate with increased complexity and precision about topics of interest and academic study. However, core vocabulary is a useful place to start given its potential for use across the school day and as a means of initiating, responding, and interacting in the ways that are required to successfully access grade-level standards. This usefulness can be realized when adults take advantage of the flexibility of core vocabulary and teach its use across the school day and beyond (Cross et al., in press).

Aided Language Input

Aided language input is a teaching strategy that can be used across environments. There is a strong and growing evidence base supporting the benefits of providing aided language input during natural communication interactions (e.g., Brady, Thiemann-Bourque, Fleming, & Mathews, 2013; O'Neill et al., 2018; Ronski & Sevcik, 1996;

Sennott, Light, & McNaughton, 2016). Similar to the benefits of spoken models for students who use speech to communicate, students learning to use graphic symbols benefit from others demonstrating their use (Shire & Jones, 2014). In its simplest form, aided language input involves pointing to symbols on an aided AAC system while speaking to students, using succinct language and holding the point long enough for students to see it and have a chance to make a meaningful connection between the symbol and the context in which the spoken word is used (O'Neill et al., 2018). When students see adults using graphic symbols to communicate, they see the power of the words they have available to them.

Getting Started in the Classroom

Ms. Lee got started with Mason using the 36 symbols on the Universal Core vocabulary display. She printed and laminated a copy with two-inch symbols that she taped down on the tray of Mason's wheelchair. She printed and laminated a second copy that hangs from a lanyard on the back of Mason's wheelchair for use when he does not have the tray. Throughout the day, Ms. Lee points to symbols on one of the two displays while she talks with him. For example, when Mason arrives in the morning, she greets him by saying, "Good morning, Mason" while pointing to the graphic symbol representing GOOD on the copy on the lanyard. She continues by telling him, "Let's put your things away" while she points to PUT. During morning meeting, she points to the graphic symbols representing GO, DO, DIFFERENT, and MORE on the display on Mason's tray as she talks with the students about the plan for the school day. During shared reading, she reads the text and makes comments about the book page-by-page using the display on Mason's tray. While she practises aided language input to demonstrate the use of the graphic symbols, Ms. Lee continues to watch Mason carefully so she can attribute meaning to his non-symbolic communication efforts, respond meaningfully, and then demonstrate a symbolic alternative using one of the two displays.

Getting started with aided AAC and core vocabulary involves ensuring all students who cannot meet their communication needs with speech or sign language have personal access to an aided AAC system. To support student expression, these aided AAC systems must be in a format that students can physically access. Many students will be able to point to specific graphic symbols using a finger or whole hand, while others may be most successful using their eyes to look at specific symbols on layouts designed for eye gaze, and some may benefit from making symbol selections using computer- or partner-assisted scanning (i.e., systematic movement from one graphic symbol to the next for a student to make a selection when the desired symbol is presented). For some students, an initial system might serve as a starting place for teaching and learning as ongoing and comprehensive evaluations for longer-term solutions are pursued. It is expected that aided AAC systems change over time as student communication abilities develop and their needs are better understood (Beukelman & Mirenda, 2013). In all cases, teachers and related service professionals (e.g., speech-language pathologists) should get started as soon as possible, acknowledging that students do not need to demonstrate that they can use a system or identify individual graphic symbols before they are taught how to use aided AAC (National Joint Committee, 2005).

Teaching All Day, Every Day

Communication must be taught across contexts, purposes, and partners (Beukelman & Mirenda, 2013). This can be accomplished by identifying and creating meaningful opportunities for interaction with students and embedding communication instruction across the entire school day, during both academic and non-academic activities (Erickson et al., in press). With aided AAC systems featuring core vocabulary in place for each student, the school day is filled with naturalistic teaching opportunities. As teachers and other adults watch and listen closely to identify the ways students are using non-symbolic forms of communication, they can attribute meaning, honour all forms of expression, and use aided language input strategies to show students how to use graphic symbols to express their communication intent symbolically. As students begin to use the graphic symbols on their aided AAC systems, teachers can expand on these attempts by repeating the message while pointing to the same symbol and adding a little more by combining the symbol with one other. For example, expanding the one-word message *LIKE* to a two-word message *LIKE IT* or *I LIKE*.

Students lead, teachers follow. Allowing students to lead the direction of naturally occurring interactions can create meaningful opportunities for teaching symbolic communication. Following the lead of students requires relinquishing control over their communication initiations and responses. It calls for adults to eliminate their use of prompts that direct a student to “point to” or “show me” a specific target, and instead, invite, encourage, and support students to initiate and respond in unexpected ways. Adults use aided language input strategies to demonstrate what students could say with the graphic symbols on their aided AAC system and to invite them to communicate whatever they want using these symbols. In other words, adults are not providing models of language to elicit a specific response. Instead they are providing models of language use that are intended to build student understanding of how to use graphic symbols to communicate. Requiring students to respond in a certain way turns a natural communication interaction and learning opportunity into a structured task with a right and wrong response. Adults can continue to ask students to respond to questions with correct and incorrect responses, but this should not be confused with efforts to support spontaneous, independent use of graphic symbols to communicate for a variety of purposes with a variety of communication partners. The aim is to demonstrate the power of aided AAC as a tool for expression and to encourage students to use it to communicate about the things they know and that interest them. Guiding and supporting students to use all of the ways they can communicate to lead the direction of interactions will both promote communication development and inform instruction based on observable areas of relative strength and need (Ronski & Sevcik, 1996).

Teaching communication during academic instruction. Academic activities vary across classrooms based on the age and needs of students and on the content areas addressed. Some instructional activities happen on a daily basis and others may occur less frequently. Some involve group discussions and interactions, while others require more individual effort and one-on-one interaction with students. Consider Ms. Lee’s classroom again, and a common lesson targeting phonological awareness and alphabet knowledge that involves Mason and his peers making comparisons among the spellings of their names. Ms. Lee can involve Mason meaningfully throughout the lesson using a few of

the graphic symbols representing core words that are on the aided AAC system she is teaching him to use (e.g., *SAME*, *DIFFERENT*, *HE*, *SHE*, and *MORE*). She can point to graphic symbols representing *HE* and *SHE* as she references specific students and invites discussion about whether the initial or final letters in various names are the *SAME* or *DIFFERENT*. Additional discussion might centre on whether there are *MORE* names that are the *SAME* or *DIFFERENT*, whether a student's last name starts with the *SAME* or *DIFFERENT* letter, whether there are the *SAME* or *DIFFERENT* sounds, syllables, number of letters, etc. Ms. Lee could also consider involving Mason's peers in using the graphic symbols on the aided AAC system. This has potential to increase the personal value Mason places on using aided AAC as he experiences his same-age peers honouring it as a valid form of expression and demonstrating its power.

Another common academic activity in special education classrooms involves adults and students reading together. This activity often involves applying shared reading strategies (Justice & Kaderavek, 2002) that support a focus on communication and maximize interactions with students on a page-by-page basis (Erickson & Koppenhaver, 2020). The book is used as a context to support students in interacting around all parts that they find interesting. Adults can demonstrate the use of aided AAC as they make comments about characters or actions in a story or the details presented in informational text. As described by Erickson and Koppenhaver (2020), the adult reads the text in the book and then demonstrates a comment using one or more core words. The goal is to try to use one or more core words in comments that will be meaningful to students. One practical strategy teachers can apply is planning the core-based comments for each page in advance and jotting these comments on sticky notes to place on each page of the book as reminders (see Figure 1). As the adult and student read together, the sticky notes are pulled off as they are used. A favourite book can be reread many times with different planned comments to stimulate new interactions.

Figure 1. Examples of Preplanned Core-Based Comments for Modeling During Shared Reading

Finally, mathematics lessons regularly provide opportunities to demonstrate core words. Take, for instance, describing numbers using a ten-frame (see Figure 2). Placing seven counters on the ten-frame, the teacher can explain that 7 is less than 10 by pointing to graphic symbols representing the core words *NOT ALL*, *WANT MORE*, or *SOME*. The teacher can also demonstrate comments such as “7 is one *MORE* than 6,” “7 is 2 *MORE* than 5,” and “to *MAKE* 10 we have to *PUT MORE ON*.”

Figure 2. Examples of Core-Based Comments for Describing the Number 7 During a Mathematics Lesson

Opportunities to teach during non-academic activities. Though non-academic activities vary greatly across classrooms, there are some that typically occur despite these differences. For example, all students must come and go from a classroom at some point each school day. They often transition from one setting or activity to another throughout the day, and there is often time for meals, recess or breaks, and using the bathroom. The classroom schedule can be a helpful place to start when identifying the various non-academic activities during which communication could be encouraged and honoured, and aided language input strategies could be applied.

Ms. Lee looked at her daily schedule and thought about the things she and her students did each day and the ways Mason typically communicates during those activities. She thought about the way Mason lights up when he sees his friends at recess each day and made note of that opportunity to demonstrate the graphic symbols for LIKE and WANT. She thought about the way he turned to look at the door when he heard her tell students to line-up and made note of the opportunity to demonstrate the graphic symbols for TURN and GO. To remind herself to attribute meaning to Mason’s non-symbolic communication, Ms. Lee made a few posters to hang around the room. One said, “I see you ...” Another reminded her to hold her point long enough for Mason to see it and said, “A point is only a point if he sees it.”

Some opportunities to attribute meaning to non-symbolic behaviours and to provide aided language input can be planned in the way Ms. Lee was able to plan for Mason. However, others will be more spontaneous. Adults can reflect on their own practice and observe one another in order to maximize each and every opportunity for teaching and learning (IRIS Center, n.d.). The guide for self-reflection and observation in Figure 3 was designed to support this process.

Figure 3. Early Symbolic Communication Instruction: Adult Self-Reflection and Observation Form

Teacher: _____ **Other Adults:** _____ **# of Students:** _____

Activity: ☐ Academic ☐ Non-academic **Brief Description of Activity:** _____

Date: _____ **Time:** _____ **Observer:** _____

Evidence	Consistently	Occasionally	Never	Comments & Examples
ALL students have access to their own AAC system with core vocabulary.				
Adults recognize and respond to student's efforts to communicate. <i>Ex: Adult sees a student reaching for something and provides access to it.</i>				
Adults tell students very clearly what they did to communicate. <i>Ex: Adult says, "I see you reaching. You want that."</i>				
Adults show students how to communicate using symbols. <i>Ex: Adult points to the symbol for WANT while saying, "You could tell me, want."</i>				
Adults show students how to use AAC using each student's personal AAC system (or a system that is very similar).				
Adults encourage students to communicate in any way they can.				
Adults invite students to use their AAC systems, without requiring use. <i>Ex: Adult says, "tell me" and gestures to the student's AAC system.</i>				
Adults provide adequate time for students to initiate and respond.				
Adults use strategies other than physical support (e.g., hand-over-hand) to encourage student communication.				

Summary and Additional Comments (continue on back as needed):

Final Thoughts

Teaching practices targeting symbolic communication development can be implemented by teachers and classroom staff during naturally occurring interactions with students throughout the day. Opportunities to teach and learn communication can be identified, created, and embedded throughout academic and non-academic activities, with minimal disruption to existing approaches to instructional planning or classroom structure and routines. An awareness of the importance of being attuned to all of the symbolic and non-symbolic ways in which students communicate, along with an understanding of the power of aided AAC with core vocabulary to support communication across topics, environments, purposes, and communication partners, can guide valuable improvements to lesson planning and teaching throughout the school day.

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Authors' Note

Correspondence concerning this article should be addressed to Lori Geist, The Center for Literacy and Disability Studies, Department of Allied Health Sciences, School of Medicine at the University of North Carolina at Chapel Hill, 321 S. Columbia Street, Suite 1100, Chapel Hill, NC, 27599-7335, U.S.A. Email: lageist@unc.edu