Upfront

"Today's mighty oak is just yesterday's nut that held its ground."

When children don't have a way to communicate effectively, they are too often perceived as having a limited ability to learn and achieve. This is an appalling waste of human potential, as well as a personal tragedy for each child and his/her family. Children with unintelligible speech and those with difficulty hearing, listening and/or understanding spoken language can not participate in the educational process unless and until they can communicate.

We know this. We also know that existing law and public policy, coupled with the dedication, commitment and sheer determination of parents, teachers and other professionals worldwide, have produced a generation of children and adults who use augmentative and alternative (AAC) strategies and technologies as tools to assume a variety of societal roles and participate actively in their families and communities.

This newsletter identifies principles and strategies that can help children with complex communication needs (CCN) succeed in their classrooms. It is most definitely NOT about the "perfect" classroom or teacher. Rather, it explores basic principles for serving students with CCN in our schools. Content primarily reflects the opinions of 21 talented and skilled educators,

clinicians and researchers. Thanks to these AAC experts (listed as resources on page 15)for responding to these three questions:

1. What classroom principles help children who rely on AAC to be successful?

2. What strategies work for children with CCN in today's classrooms?

3. What strategies DON'T work for children with CCN in today's classrooms?

Clinical News discusses classroom principles that can lead to successful outcomes for children with CCN by guiding day-to-day practice. **For Consumers** high-

Clinical News

Principles for classrooms with students who use AAC

Today's classrooms are often characterized by limited resources, busy teachers, a diverse student population and professionals and paraprofessionals who feel overwhelmed and unprepared (not to mention underpaid). No one pretends that it is easy to teach children with limited speech and multiple disabilities. At the same time, no one can deny that it is possible and must be done.[1,2]

Some talented professionals know how to support and teach children with complex communication needs (CCN) to communicate effec-

tively, as well as to read, write, spell, calculate, learn algebra, science, social studies, art and music. Their work reflects certain values and principles that guide their professional experiences, ongoing quest for knowledge and skills and high expectations for each student.

What is a principle?

Principles are widely accepted, relatively stable axioms. Whether organizational or personal, explicitly stated or not, principles (1) guide the goal-setting process, (2) offer targets (with rules) to aim at and (3) provide a yardstick against which to evaluate outcomes. Based on ideals, principles may change over time in response to new evidence and shifts in perspective. Programs and

Clinical News, Cont. from page 1

organizations develop principles to define their mission and guide their work. For example, the Rehabilitation Engineering Research Center on Communication Enhancement (AAC-RERC)[3] recently published six principles.[4]

1. People who rely on AAC participate actively in AAC research and practice.

2. Widely accepted theoretical constructs are specially addressed in the design and development of AAC technologies and instructional strategies.

3. AAC technologies and instructional strategies are designed to support and foster the abilities, preferences and priorities of individuals with CCN, taking into account motor, sensory, cognitive, psychological, linguistic and behavioral skills, strengths and challenges.

4. AAC technologies and instructional strategies are designed so as to recognize the unique roles communication partners play during interactions.

5. AAC technologies and instructional strategies enable individuals with CCN to maintain, expand and strengthen existing social networks and relationships and to fulfill societal roles.

6. AAC outcomes are realized in practical forms, such as guidelines for clinical practice, design specifications and commercial products. The social validity of these outcomes is determined by individuals with CCN, their family members, AAC manufacturers and the broader AAC community.[4]

An example of principles specific to educational practices in AAC comes from the Bridge School, a private school for children who use AAC.[5] [See sidebar]. I recommend you visit their website at www. bridgeschool.edu to check out their many useful resources for teachers, speech-language pathologists and family members.

Survey results

The principles set forth in this article represent a potpourri of responses to the question:

What classroom principles help children who rely on AAC to be successful?

Respondents were 21 teachers, speech-language pathologists (SLPs), researchers, assistive technology (AT) specialists and educators with expertise in the area of AAC who have worked with children of all ages and types of

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lights practices that teachers and clinicians report work (the Dos) and strategies that don't work (the Don'ts) for students with CCN. **University/Research** reviews a new book pertinent to the topic— *Practically Speaking: Language, Literacy and Academic Development for Students with AAC Needs,* edited by Gloria Soto and Carole Zangari. Finally, the **AAC-RERC** section features a literacy program for students with CCN developed by Janice Light and David Mc-Naughton (Pennsylvania State University).

CEUs for 2008. If you signed up, the test is included with this issue. It is due before February 6, 2009. Any problems? Contact me at 831-649-3050 or sarahblack@ aol.com.

Final thoughts. Each school district, school, classroom, student and team is different, and there are certainly no magic bullets, especially for students with CCN. Much of what works depends on the knowledge, skills, passion, vision and pure grit of the people involved—people like you. I totally "get" how hard it is. My hope is that perhaps something in these pages can help make what you are trying to do a bit easier.

Sarah W. Blackstone, Ph.D., CCC-SP

ACN

Table I. Priniciples for Classrooms with Students Who Use AAC: Program Level		
PRINCIPLE	SUGGESTIONS FOR AAC PROFESSIONALS	COMMENTS
1. Services are coordinated, consistent and result in measureable benefits for students who use AAC.	• Show respect for all team members. • Build consensus about what is being worked on and how. • Divide the labor and identify responsibilities (back ups, programming, charging, keeping track of communication book, when there is a problem, who develops materials). • Use planning tools (participation plans, action plans).	Teams need good leaders to function effectively, build consensus and foster collaboration. Good teams require good communication strategies. Members need to be on the same page. Team members need to fulfill their roles and responsibilities and be held accountable.
2. Professional staff have the skills they need to support the learning process for all students, including those who use AAC.	• Do not lecture. • Give practical tips about how to include a student in a meaningful way. • Help teacher/SLP understand the trajectory of a student's progress and next steps to work toward. • Find things staff are doing well and give them positive feedback.	Teachers and clinicians have a desire to succeed and do a good job with children. The reluctance to take a student with CCN in a class or on a caseload may reflect a professional's fear of not doing a good job.
3. Paraprofessionals who work with students with CCN are prepared to carry out their day-to-day responsibilities and held accountable for doing so.	• Provide ongoing training activities so classroom and personal aides know how to carry out IEP goals, support communication throughout the day, foster friendships and increase independence. • Provide accountability by setting performance objectives and reviewing performance over time.	Classroom aides often spend more time with a student than anyone else. They can make an enormous difference. They need thoughtful training and support to do their job well.
4. Students with CCN develop academic and social skills. They also develop friendships and social networks in school.	• Demystify the student and stuff that goes with him/her (g-tubes, AAC devices, etc.) and help classmates learn how to interact successfully with a student who uses AAC techniques. • Set up situations that enable unmediated interactions to occur.	A critical component of a successful educational program is promoting meaningful peer relationships. Sometimes peers get to know students better than adults. During times of transition, they can play an important role.
5. Families are engaged in ways that are culturally and linguistically appropriate, so they can participate in their child's program.	• Ensure open lines of communication between school and home by using a variety of strategies (e.g., translators, phone, email, notes, log, diary etc.) Do whatever works. • Put aside judgmental attitudes. Be clear, encouraging and understanding. Communicate effectively. Express your professional opinion and discuss options in a respectful manner. • Avoid direct confrontation. Refer difficult matters to administrators.	Families are key team members and influence successful outcomes. Limited support/involvement rarely reflects a lack of interest. In some cultures, parents may do not expect to be included or may feel intimidated by professionals. Families deal with multiple stresses. At times, communication may not be on their priority list.

disabilities in various educational settings. [You'll recognize many of their names on page 15.]

Respondents generated long lists of principles, which I subsequently grouped into two categories: (1) principles referring to program features (e.g., staffing, teaming, training, family involvement) and (2) principles relating to instruction and learning (e.g., goals, assessment and intervention). Tables I and II summarize some of their comments and suggestions.

A caveat! The survey was one of 'opinion' and 'convenience.' Thus, it is not scientific. Rather, it offers a perspective from AAC specialists who have been around the block [Some more than once]. Perhaps these principles can help you in your effort to advocate for children who use AAC to make their educational experiences more meaningful, productive and successful.

Principles related to programs

Ideally, programs that serve the needs of students with CCN employ a team approach and support the use of AAC technologies and strategies.[6] Ideally, teachers, practitioners and paraprofessionals are all highly skilled, and family members are productively involved in their child's program. Ideally, the team works well together, meets regularly and is good at adapting curricula so students can learn across all domains. Ideally, progress is monitored and reported, and staff are held accountable.

In reality, of course, teachers, paraprofessionals and practitioners serving the needs of children with CCN have varied skill levels (some more/some less), and the involvement of many families is limited. Because of the constraints of our educational system, team collaboration is often spotty, and as a result, there is little continuity of instruction from year to year. Staff often feel they do not have administrative support, access to resources or sufficient planning time. Also, staff are not necessarily held accountable for student progress.

Even so, teachers and AAC professionals have managed to educate students with CCN under imperfect conditions. The five principles cited

in Table I identify program attributes to strive for.

[Note: They are considered principles because they are widely accepted and relatively stable constructs.]

1. Services are coordinated, consistent and result in measurable benefits for students who use AAC. According to survey respondents, classroom teams require good leadership and effective communication strategies so they can build consensus and each team member can fulfill his/her unique role. Respondents cited basic strategies such as being respectful, clearly identifying roles and responsibilities and using planning tools.

Children with CCN benefit when teams function well and can focus on the student's educational program.

2. Professional staff have the skills they need to support the learning process for all students, including those who use AAC. Respondents noted that most teachers and clinicians want to do a good job; however, not all know how to teach, coach, mentor and support children with CCN while meeting the needs of their other students.

AAC specialists suggested beginning slowly and giving staff practical tips and lots of positive reinforcement, as well as information about realistic expectations and next steps so they can plan ahead.

Children with CCN benefit when teachers and professional support staff know how to engage students in meaningful activities that systematically support their learning of established curriculum over time.

3. Paraprofessionals who work with students with CCN are prepared to carry out their day-to-day responsibilities and held accountable for doing so. Many children with CCN have multiple disabilities and/or are medically fragile. Some have behaviors that

are difficult to manage. As a result, these children may require adult assistance throughout the school day.

School districts employ "aides," "assistants," or "paraprofessionals" for this purpose. Some work one-on-one; others are assigned to a classroom. Students with CCN often spend more time with their aides than with anyone else. In addition to physical care, aides often provide instruction, adapt materials, carry out specific IEP goals, set up and manage equipment, *etc*. They also mediate social interactions between the student with CCN and his/her teachers and classmates.

Why then are so many people hired who do not know how to support students who use AAC technologies and strategies? Why do so few receive ongoing training? Why are so many left on their own with so little supervision? Untrained personnel can and do impede progress by

always speaking for a child; failing to encourage or support the child's use of AAC strategies; not fostering the child's independent participation in class activities; not addressing IEP goals...All these "nots" result in time lost for learning—time that no student can ever retrieve.

Resources need to be allocated to train and supervise paraprofessionals.

Children with CCN benefit when those who are paid to support them do their job. Schools districts should recognize and reward those who do well and hold accountable those who do not.

4. Students with CCN develop academic and social skills. They also develop friendships and social networks in school. Academic and social growth are key elements of each student's school experience. Adults help students who rely on AAC to use the tools, strategies and techniques they need to participate in their classes, progress academically and interact with peers.

In addition, successful, unmediated interactions with peers can result in friendships and create networks of people who know and care about a student. When meaningful peer relationships exist, transitions from class-to-class and school-to-school go more smoothly.

Children with CCN benefit when they can make progress in academic, communication, personal and social areas.

5. Families are engaged in ways that are culturally and linguistically appropriate so they can participate in their child's program. Family goals and expectations clearly differ across cultural and language groups. AAC professionals can foster authentic communication with families by adopting strategies that are both accessible to and preferred by them. Team members need to listen carefully to what families say about their goals and how their child communicates at home and in the community. When language barriers exist, a trained professional interpreter is mandated. It is also important to see how family members interact with their child.

This principle requires putting aside personal judgements. For example, if a family does not use AAC technologies/strategies at home, it may be because other communication methods work more efficiently or because other issues (*e.g.*, economic, social, medical, psychological) require their attention. Professionals can help family members to grasp the importance of AAC by discussing the student's future, as well as his/her current goals.

Children with CCN benefit enormously when their families actively participate in their education.

Principles related to instruction

Children with CCN present classroom teachers and SLPs with

Table II. Principles for Students with CCN: Instructional Level		
PRINCIPLE	SUGGESTIONS FOR AAC PROFESSIONALS	COMMENTS
1. Instruction takes place in natural settings during natural activities.	Recommend and use AAC/AT methods that are easy to implement and effective in the classroom. Teach using highly motivating activities, materials and contexts.	Integrated therapy is more effective than "pull out" therapy. There are times when exceptions need to be made.
2. Goals reflect student needs and classroom realities. The goal setting process is based on accurate assessments of a student's skills and abilities and the learning environment.	Use dynamic assessments (an interactive approach to assessment that embeds intervention within the assessment procedure). Use authentic/performance assessments (students are asked to perform real-world tasks that demonstrate meaningful application of essential knowledge and skills). Work with school personnel to address state/district requirements.	Teachers need to know what a student understands in order to set appropriate goals. Therapists need to understand variables operating in the classroom that can affect targeted goals. Check out CAST's Universal Design for Learning.
3. Multiple communication opportunities exist or are created throughout the day and across activities.	Set up opportunities for students who use AAC to participate actively. Ask a question and come back for the response; ask student to tell a peer; encourage the use of "wh" questions; make sure everyone "gets a turn."	Expectant pauses, counting to 10 and other strategies can remind the student that an opportunity exists. Adults and peers need to be taught how to provide opportunties and they should be acknowledged for their efforts.
4. School staff and classmates encourage students with CCN to use multiple modes of communication and value all modes.	Identify and value communicative intent as expressed through gestures, facial expressions and word approximations, as well as symbols and SGDs. Encourage the use of multiple modes. Teach operational, strategic, linguistic and social competencies.	All communication involves multiple modalities. Multiple modes are needed to enable the student to comment, request, respond, *etc*. There is too much focus on technology and not enough on communication.
5. Students with CCN see their AAC systems modeled during everyday interactions.	Model target behaviors over and over again in different contexts. Use aided language stimulation/augmented input.	Children hear words, phrases, *etc*. thousands of times before they start using them. Modeling only 'on occasion' makes no sense.
6. A prompting hierarchy encourages the use of AAC strategies and technologies.	Use a "most to least" prompt hierarchy when teaching a new skill. Use a "least to most" hierarchy when encouraging practice.	Do not overprompt. Staff should agree on how and when to prompt. Avoid creating an overdependence on prompts that can lead to learned helplessness.
7. Communication partners engage in authentic interactions with children who use AAC.	Model interaction strategies and coach others to use them. Ensure adults do not obstruct unmediated contact with peers.	Communication partners who serve as AAC facilitators, teachers and coaches need to learn what to do, when and how to do it. Then, they need to show others.
8. Classroom staff and consultants monitor progress over time and make adjustments, as needed.	Monitor progress toward goals and modify instruction accordingly. Use measurement tools that enable staff to identify small gains,	Consider using Goal Attainment Scaling. Show and teach. Don't test. Give evaluative feedback,
10. A classroom mantra is, "You can do this!"	Have high expectations. Focus on student success. Provide what each student needs to succeed.	Student's with teachers and families who have high expectations do better.

unique instructional challenges. These students require AAC technologies, materials and strategies to participate, respond, converse, ask questions, read, write, do math, *etc*., and, as a result, classroom staff are often unprepared to teach and support them. Also, many students who use AAC may learn academic, communication and social skills more slowly than their peers. As a result, they fall behind and "out of the curriculum." This occurs because of difficulties they have accessing materials and instruction, as well as because they may have cognitive, motor, sensory, medical, language and behavioral challenges that interfere with learning. As a result, even students with normal cognition struggle to keep up.

> Students with CCN need more, not less, time for instruction and adults with skills to teach them.

I was able to group principles relating to instruction in nine categories, as shown in Table II.
[Note: These principles are consistent with C.A.S.T.'s Universal Design for Learning

* The UDL approach creates flexible learning environments that can accommodate diverse learning differences regardless of ability, learning style, language, or culture. It utilizes multiple means of a) representation to give learners various ways of acquiring information and knowledge, b) action and expression to provide learners alternatives for demonstrating what they know and c) engagement to tap into learners' interests, challenge them appropriately, and motivate them to learn.[7]

(UDL) approach, which was mentioned by several respondents.[7]]

1. Instruction takes place in natural settings during natural activities. This principle reflects well-established research that students are more likely to generalize behaviors they learn in everyday environments than skills they are taught in "pull out" therapies. [This is also known as "integrated therapy."[8]]

When mentioning this principle, several respondents also noted a need for flexibility. For example, when an important skill is not being taught in their classroom (*e.g.*, basic

literacy to a high school student; how to operate a new speech generating device). Students may need to learn these skills outside of class.

Finally, respondents noted that AAC approaches need to be easy to integrate into classroom activities and made accessible throughout the day. When they are not, students with CCN are not able to participate in their education.

> Students benefit when instruction occurs in natural settings during routine activities.

2. **Goals reflect student needs and classroom realities. The goal setting process is based on accurate assessments of a student's skills and abilities and the learning environment.** Setting appropriate, realistic and meaningful instructional goals for students who use AAC is not easy because, to do so, teachers need accurate data about a student's general knowledge and language, reading, writing and numeracy levels. Several respondents suggested that AAC professionals

> 1. Take a dynamic approach to assessment. This means the intervention is embedded within the assessment procedure.[9]
>
> 2. Use performance assessment and authentic assessment approaches. This means students learn specific tasks and then are evaluated based on their ability to do the task.[10]
>
> 3. Do environmental inventories to identify the potential impact of external variables on instruction.

Of course, school districts and state agencies have their own assessment principles and practices, which further complicate measurement issues.

> Students benefit when teachers and professionals implement assessment practices that lead to the establishment of meaningful and realistic goals.

3. **Multiple communication opportunities exist, or are created, throughout the day and across activities.** Students with CCN have far fewer opportunities to communicate than their classmates. In addition, they confront difficulties accessing desired vocabulary rapidly enough to participate; and too often, their efforts to communicate go unrecognized.

Classroom staff need to make sure students with CCN have plenty of opportunities to communicate each day and that they get the support they need to be successful.

> Students with CCN benefit when school staff provide them with opportunities to communicate and support their efforts across environments.

4. **School staff and classmates encourage students with CCN to use multiple modalities and value all modes.** The multi-modality principle permeates the AAC literature. All respondents said they value and encourage the use of no-tech, low-tech and high-tech AAC devices and strategies. However, some said that AAC specialists too often focus on speech generating devices, which inadvertently undervalues the use of other communication modes. They also noted a singular focus can have negative effects on language growth, as well as on participation and learning.

> Students benefit when adults and peers value and support their efforts to use all modes of communication. What to use, when, and where will depend upon the student, communication partners, situation and types of AAC strategies and technologies that are available.

5. **Students with CCN see their AAC systems modeled during everyday interactions.** Modeling the use of AAC systems is important for all students with CCN and is a widely accepted learning principle with research support. Typical children hear words spoken thousands of times before they produce them. Respondents noted that despite the widespread awareness of this principle and its supporting evidence, they rarely observe teachers and support staff modeling the use of AAC systems during school activities. Respondents listed modeling as both a principle and a strategy.

[Note: *Augmentative Communication News* (volume 18 #3) focused on modeling. It describes various approaches to modeling in AAC, including aided language stimulation (ALgS) and augmented input. For a copy, email me at sarahblack@aol.com]

> Students with CCN benefit when they see others communicate with the same systems they are learning to use.

6. A **prompting hierarchy encourages the use of AAC strategies and technologies.** Respondents talked about the pros and cons of prompting and the need to avoid "prompt-dependence" in students with CCN. Several mentioned the use of prompting hierarchies as both a principle of good instruction and a strategy. [See next article.]

> Students benefit when adults know how to prompt them in ways that are effective and know how to fade their prompts as soon as possible.

7. **Communication partners engage in authentic interactions with children who use AAC.** The importance of communication partner training is widely supported in the AAC literature. Partners who are unfamiliar with AAC need to learn about the nature of AAC interactions and how to support interactants so they can feel successful—for example, asking 'open-ended' questions, not interrupting, providing lots of time for a student to construct a message, talking about things that matter, being honest when you do not understand, and so on. Most speaking partners require training and support to become effective communication partners.

> Students benefit when adults know how to support their use of a range of communication modes and strategies.

8. **Classroom staff and consultants monitor progress over time and make adjustments, as needed.**

Teachers and therapists are accountable for student progress. They need to assess whether a particular instructional strategy enables a student to make progress. When no progress is shown and goals are appropriate, the type of instruction employed needs to be changed until the student is making progress. "Try another way."

Today, there are many tools that enable teachers and clinicians to measure various aspects of academic growth (*e.g.*, literacy). Measurement tools are also available to help determine progress for students who make slower, more subtle gains in skill areas across multiple life domains (*e.g.*, goal attainment scaling).[11]

> Students with CCN benefit when classroom staff and consultants regularly and routinely measure progress and then quickly alter instruction if progress is not being made.

9. **A classroom mantra is, "You can do this!"** Research shows that students rise to the expectations adults place on them (given they have a means to reach these expectations).

This principle encompasses all others. We know that students with CCN require more and different types of instruction. Whether or not they make progress and what they learn, however, will depend upon what people in their lives expect of them to do and whether we (as trained professionals) enable them to realize their potential throughout their school years.

For Consumers

Classroom strategies: Dos and Don'ts

I asked survey respondents two questions related to classroom strategies.

> 1. What strategies work for children with CCN in today's classrooms?
>
> 2. What strategies DON'T work for children with CCN in today's classrooms?

There were well over a hundred responses from the 21 AAC experts. Some described strategies they implement in a very specific context, while others talked about strategies in a more general way. Some strategies targeted students at a prelinguistic/preintentional level and others addressed instruction of students at higher levels of language and/or literacy. The ages of targeted students varied. Interestingly, principles cited by some were listed as strategies by others and *vice versa*.

While this article does not begin to do justice to all the strategies mentioned, it does provide a brief glance at some of the more thoroughly described ideas and opinions of 21 of our key thinkers and practitioners currently committed to educating students with CCN.

The Dos

1. **Plan, Do, Review**. Caroline Musselwhite described a "Plan, Do and Review*"* approach to instruction, which can be implemented by anyone, anywhere and anytime with good outcomes for students.

> Plan: Know what you are going to do before you start an activity (*i.e*., goals, materials, what vocabulary you will target, *etc*.). Communicate this information to all adults and children involved. Tell the child with CCN what her/his

job is ("I want you to shout out, *She's making a mistake*."). Rehearse quickly, if possible.

> Do: Provide lots of modeling during the activity.

Prompt as necessary. Engage the student in evaluative feedback. Saying "good job" is meaningless. Teach, don't test!

> Review: Extend learning by having the student write a story or get involved in a discussion at the end of the activity. This gives additional opportunities to use targeted vocabulary and/or relate concepts to academic subject matter, real life and so on.

2. *Interactive White Boards* and *Briefcases*. The Henry Viscardi School (HVS) in Albertson, New York uses an immersion approach to AAC and supports principles as defined in C.A.S.T.'s universal design for learning.[7] Carole Goossens' described how they use *Smart White Boards*[12] and a *Briefcase*[13] concept with *Classroom Suite*.[14] Although bundling these strategies and technologies required technical resources and staff time, teachers now find it easier to deliver instruction and students find learning more interesting and motivating.

> *Interactive Smart White Boards* enable teachers to display engaging information from a computer so an entire class can see what is happening on a large screen. At HVS, *Smart White Boards* are in all classrooms (preK through 12th grade). In the preschool through second grade classrooms they use *Early Childhood Engineering Dynamic Displays (ECEDD)* page sets.[15] This gives classroom staff immediate access to hundreds of internally consistent, inter-connected communication displays (viewable using DynaVox editing software) and enables a facilitator to point to content symbols during an activity, providing visual supports and modeling the use of symbols (*i.e.*, aided language stimulation).

> Team members can easily add vocabulary to existing *ECEDD* pages as well as create new pages (*e.g.*, popups for vocabulary needed for a recipe or

materials for an arts and crafts project). Staff are currently developing a 'sister version' using *Speaking Dynamically Pro*[16] so children with other AAC systems can access the same vocabulary set being modeled on the *Smart White Board*.

The *Briefcase* concept is a flexible interface created with *Classroom Suite* that allows content to be bundled from files created in *Classroom Suite, PowerPoint, Smart Notebook, DynaVox Editing Software* and *Kidspiration,* as well as with web links. As illustrated in Figure 1, teachers can access their *All About Me* curriculum, the *Math Workshop, E-books, E-art, Food Prep, etc.* at the touch of a button and display it to students on their *Smart White Board*.

3. **Modeling**. This is a familiar strategy about which much has been written. [See previous section.] In modeling, a facilitator uses the same communication strategies and system as a student. The facilitator points to symbols, uses an SGD or gestures and signs in the same way the student is learning to do. Students are able to observe how to communicate using their AAC system. When modeling, a facilitator does not obligate the student to communicate, deliver commands to generate language or ask questions. The intention is for students to begin to imitate the communication behaviors they observe.
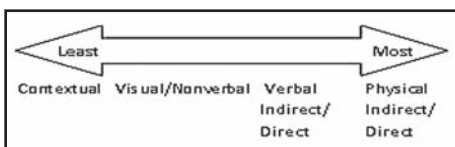

Figure 2. Prompting hierarchy: Levels of support

4. **Prompting strategies**. Many respondents stressed the importance of using a prompting hierarchy and warned against overprompting and indiscriminate or inappropriate prompting (*i.e.*, using a physical prompt when only an indirect verbal prompt is needed). The goal of prompting is to increase a student's awareness of a communication op-

Figure 1. Briefcase & Classroom Suite on a Smart White Board

portunity. It means providing cues that are as unobtrusive as possible.

An example of a prompting hierarchy suggested by Pamela Elder from the United Cerebral Palsy Center in Birmingham, Alabama follows:

Contextual Cue. Naturally occurring events are powerful prompts for message generation. For example, going to the kitchen area may remind a student to use his cooking/eating vocabulary. Note: Natural cues are powerful, but often not enough when a new task or skill is being introduced.

Visual/Nonverbal Cue. Visual cues include facial expressions, gestures, body postures or pantomime. Facilitators often provide visual/nonverbal cues by overdramatizing facial expressions or body movements, pointing to something, acting dumb, sabotaging, providing an expectant pause, *etc*.

Verbal Cue. When contextual and visual/nonverbal cues do not work, verbal cues can increase a student's awareness of a communication opportunity and may facilitate a student's message retrieval and symbol recognition. According to Elder, verbal cues should not be directives or questions and should not place students with CCN in a passive or respondent role.

There are two kinds of verbal cues—indirect and direct. Either can be combined with contextual, visual/nonverbal and light cues.

Indirect Verbal Cues. Critical elements of the message are not used. Cues are no more than three to five word messages. If the student does not begin to communicate, a direct verbal cue is provided.

Direct Verbal Cues. Critical elements of the target message are used to comment or make a statement about unfolding events.

Verbal Cue with Light. If a student does not respond to verbal cues, Elder and Goossens' suggest adding a light cueing strategy, as follows:

A facilitator first scans the light across all, or a portion, of the symbol overlay (*Search Light Prompt*). If that doesn't elicit communication, the facilitator shines the light for a few seconds (i.e., *Momentary Light Prompt)* on the target symbol(s). The facilitator may also shine a small flashlight constantly or flash the light beam on and off at the target symbol(s) for five seconds (*Constant Light Prompt*).

Physical Assistance Cue. Minimal physical cues include lightly touching the student or nudging a student toward a communication tool or strategy. Maximal physical prompts often require hand-over-hand manipulation. They are the most intrusive form of prompting.

Prompting works best if all team members agree on how and when to prompt and understand that the ultimate goal is to fade all prompts as quickly as possible.

5. **Establishing intention and comprehension**. Respondents suggested many strategies for beginning communicators. Two examples addressed establishing communication with clear intent and teaching students to understand the meaning of the symbols they use.

Don't assume intention. Charity Rowland from the Oregon Health and Science University stated that ascribing intentionality to behaviors that are not produced with an intent to communicate (or that a student is unable to produce at will) is not wise. She and others (*e.g.*, Cynthia Cress, Dolly Bhargava, Ylana Bloom, Pat Dowden, Susan Blockberger) also noted the converse:

Sometimes communication partners fail to recognize certain behaviors as meaningful. Nonsymbolic and idiosyncratic behaviors can be signals that carry communicative intent.

Respondents suggested many strategies to help establish intent:

1. Observe how children express themselves using gestures, eye gaze, body postures, vocalizations and facial expressions, as well as how they use AAC symbols, voice output and signs.

2. Determine whether vocalizations, facial expressions, gestures and other movements are made with the intent to communicate.

3. Develop and maintain a gesture/signal dictionary so signals with communicative intent are recognized and valued.

4. Keep information on the types of messages children can convey.

5. Make sure adults and classmates know what various communication signals mean and how to respond to them.

6. Remember that inappropriate/undesirable behaviors often reflect an effort to communicate something. Once the meaning becomes clear, classroom staff can teach the student other, more appropriate behaviors.

Verify comprehension of symbols. Rowland cautioned against assuming students comprehend the meaning of a symbol when they do not use it functionally across contexts. For example, a student who uses 2- and 3-dimensional symbols, a few manual signs or a simple speech output device may have learned that doing something (*i.e.*, touching a button or producing one of the symbols—any symbol), eventually makes something they want happen. They may not really be using the symbol/sign symbolically.

Rowland recommends that staff teach symbols that have a clear referent to a preferred item, person or activity, rather than nonspecific symbols such as *more, eat* or *help*. Then, it is easy to determine if the student understands the symbol.

The Don'ts

[Note: Kelly Fonner contributed many of these ideas (and catchy titles). I've added thoughts from other respondents. Special thanks to Kelly.]

1. **Pass around the "voice"**.

A single message device or button is programmed and passed around so each student can "say" the message. For example, a repeated story line or saying "Good morning." "Today is Tuesday."

The advantage of a single message device is that staff do not need to program each student's SGD, or develop multiple displays for an activity. Several respondents pointed out that while single message devices may be a valid expressive communication strategy, they can NEVER be the only tool available. Also, when all students in a group say the same thing (*e.g.*, "Today is Monday" or "It's 2009"), it really is boring.

Respondents agreed that students should have access to AAC tools and strategies throughout the day.

2. **"Hit your switch."** This is a verbal prompting strategy used to encourage a student to activate a switch. However, the command "hit your switch" takes the focus away from having the student "say" something meaningful by activating a switch. Students need to learn they are having an impact on adults, their environment and the other kids. No need to say "hit your switch." Instead try: "Tell us." "What did you like in the story?" "Who is going to push you to the library today?"

3. **"Show me," "Point to," Find the" therapy.**

"Show me sunny," "Point to rainy," "Find ___ on your board." "Point to ___ on you device."

Teachers and speech-language pathologists, by nature, like to check for cognition and language comprehension. Unfortunately, some adults become "testers" rather than teachers or coaches. Most children don't find pointing to symbols on command very interesting. They would rather ask questions, tell jokes or make comments. This means that students need access to all kinds of vocabulary, even symbols they don't yet "know." Several strategies were suggested to check whether a student knows certain symbols:

Observe use in natural environments.

Set up role playing activities to require the use of targeted symbols.

Ask a student to teach another student to do something that requires the use of targeted symbols.

4. **Overprompting**.

Staff create prompt-dependent children when they keep telling students what to do or say; when they take their hand or move their head to the switch; when they physically and/or verbally prompt them to stand up/sit down and so on. This can lead to learned helplessness.

The goal is for students to be prompt-free. Independence in communicating is more important than successfully activating a 'correct' message. Staff need to agree on, and use, systematic prompting strategies so they know when and how to prompt and when to fade a prompt. [See last article.] For example,

When teaching a new skill, use a "most to least" prompting strategy.

When helping a student master an acquired skills, use a "least to most" prompting strategy.

Some teams script out their prompts to ensure that everyone uses the same prompting hierarchy. Gradually teams can learn what kind of prompts work best for each student.

5. **Asking questions about something you already know.**

"Michael, tell her your name." [Arghh!]

By asking a question that everyone knows the answer to, we

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devalue the interaction and take the student's power away.

6. **Holding off on "wh" questions.**

"He's not ready for 'wh' questions yet." "We can't put ALL those 'wh' symbols on her display.

What could be more powerful than asking "wh" questions? Every day there are opportunities for students to pick "whom" they want to read with, or "where" they are going to sit.

Children learn about "wh" questions by using them. Typical children begin asking (verbally or nonverbally) "What's that? "Who's there?" before they are even two-years-old. By three, they want to know "Why" and "How." We hear "wh" questions multiple times each day. No child learns these questions all at once.

7. **Mindless transitions.**

"He can't do it." "We'll have to go back to the old system."

When a child is transitioning to a more complex communication system, difficulties may occur that are not anticipated. For example, the physical and sensory processes involved in *PECS (Picture Exchange Communication System)*[17] are very different from those needed to use a speech generating device.

In Phases 4, 5 or 6 of PECS, the student pulls symbols from a static display and places them on a sentence strip, which she then hands to a communication partner.

To use an SGD or communication board, the student pushes or points to the symbol on a flat surface. With a paper display, the student is pushing and pointing/showing rather than pulling and giving to a partner. Also, access to symbols is more transient.

These difficulties are avoidable if staff carry out a task analysis in advance.

NIDRR funds the AAC-RERC through 2013

The Rehabilitation Engineering Research Center on Communication Enhancement (AAC-RERC), a virtual center hosted by Duke University, was recently awarded a five-year, $4.75 million grant by the National Institute on Disability and Rehabilitation Research (NIDRR). This new grant will allow the AAC-RERC to continue its comprehensive program of research, development, training and knowledge translation activities with the goal of improving AAC technologies for individuals with complex communication needs. This is the AAC-RERC's third five-year award. It is comprised of six institutions and nine partners with their staff and consultants:

Institutions: Duke University Medical Center, Children's Hospital Boston, Oregon Health and Sciences University, Pennsylvania State University, State University of New York-Buffalo and the University of Nebraska.

Partners: David Beukelman, Frank DeRuyter, Melanie Fried Oken, Jeff Higginbotham, Tom Jakobs, Janice Light, David McNaughton, Howard Shane and Michael B. Williams.

The mission of the AAC-RERC is to assist those who use AAC technologies in achieving their goals across environments. Over the past ten years, work undertaken by AAC-RERC partners has affected the design of AAC technologies and contributed to both AAC research and best practices. Augmentative Communication Inc. has partnered with the AAC-RERC since 1998, publishing articles about its activities in research, development, training and dissemination areas. With support from the AAC-RERC, ACI staff are now preparing to post ALL the back issues of *Augmentative Communication News* and *Alternatively Speaking* on the Internet, making them readily available to all. And...heads up! We will be discontinuing these publications sometime in 2010.

To read more about the AAC-RERC and its activities, go to www.aac-rerc.com

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8. **Over reliance upon high-tech approaches**.

Team members sometimes get wrapped up in "She's got 54 pages of 16 symbols a page." "He can produce three-word sentences from his activity-based display."

Developing language use is the goal, so think long term. Students with CCN need to use a variety of strategies and AAC technologies to communicate effectively across all environments. While SGDs are important tools, they can never be the only tool a student can use. The end goal is communication, not "Malcolm will use his device 4 out of 5 days to answer a question in class."

Final Thoughts

It is probably true that some of the "Don'ts" listed above are easeir to undo than the "Dos" are to do. Our hope is that somewhere among these thirteen "Dos and Don'ts" our readers will find useful clues for making some immediate and practical changes and improvements in classroom strategies.

Remember: "The journey of a thousand miles begins with a single step."

University & Research

Practically Speaking

A new book, *Practically Speaking: Language, Literacy and Academic Development for Students with AAC Needs,*[18] provides information about current research and practices for students with AAC needs in today's schools and classrooms. Slated for release in early 2009, the book is edited by Gloria Soto from San Francisco State University and Carole Zangari from Nova Southeastern University. It is the latest in the Paul H. Brookes series on augmentative and alternative communication (AAC).

Practically Speaking has 14 chapters authored by 24 well-known clinicians, researchers and educators. The chapters are grouped under three sections. [See Table IV for a brief overview of its contents.] The book emphasizes language and literacy issues and targets a broad readership of teachers and practitioners (preservice students as well as practicing speech-language pathologists, assistive technology specialists and educators). A brief summary of each section follows.

Assessment

The initial chapter covers U.S. laws and policies affecting today's educational system. Other chapters in this section focus primarily on early communication skills, language, reading and writing. The authors provide guidelines and suggestions for assessment, as well as describe tools with which to conduct assessments with students who have complex communication needs (CCN). For example, the chapter on writing assessment defines stages of writing and suggests writing rubrics. It also relates assessment tools to intervention approaches and outcome measures.

The assessment chapters can help SLPs plan and prioritize their assessments, as it provides "how to" ideas. However, the authors suggest that teachers and practitioners still need more evidence-based information about which assessment tools and protocols to use across curricular areas and grade levels.

Instruction and Intervention

The authors in this section acknowledge that practitioners and teachers face multiple challenges when they try to adapt curricular materials across multiple domains for students with CCN, and start by identifying some of these issues.

Four chapters focus on language and communication. For example, the chapter on beginning communicators points out that many students with CCN have limited language skills. Thus, they continue to require ongoing attention to language and literacy through high school. Other chapters focus on developing more advanced linguistic communication, as well as teaching emerging and conventional literacy skills.

The final two chapters address the development of social relationships and friendships and the integrated use of assistive technologies. Authors acknowledge the isolation that many children who rely on AAC face throughout their lives and stress the importance of doing something about this pervasive problem. The last chapter in the section discusses the challenge of integrating AAC and other assistive technologies in today's classrooms.

Readers will find "how to" ideas and examples for teaching reading, writing, language forms and syntax, as well as ways to encourage peer-to-peer interaction and community involvement. Many teachers and practitioners, however, will still want to know "What can I do today that will lead to meaningful progress tomorrow and next month? How can I teach a particular child to read, write, use language, interact with peers, *etc*.?" Many authors called for more research so that teachers and SLPs can proceed more confidently and systematically in their support of children with CCN.

Supports

This section has two chapters. The collaborative teams chapter reports research that identifies challenges faced by teams (*e.g.*, personnel shortages, training needs and resource limitations). It also offers guidelines that can help teams currently serving students with CCN to function more collaboratively.

The final chapter in the book discusses issues that affect the use of AAC systems—specifically, cognition, attention and motivation. Authors document the importance of attention and memory and of understanding the nuances of how children with CCN may perceive visual communication displays. They also note that today's AAC systems place "too many" demands on the cognitive resources of children with CCN.

Final thoughts

We needed a book like this and now we have it. Each chapter contains valuable information for SLPs, teachers, graduate students and others who care about the education of students with CCN. It makes existing research more accessible to all and captures a multitude of ideas that practitioners, educators and researchers can use to serve the needs

Table III. Practically Speaking: Language, Literacy and Academic Development for Students with AAC Needs[17] Edited by Gloria Soto and Carole Zangari		
CHAPTERS	**AUTHORS**	**DESCRIPTIONS**
ASSESSMENT		
1. Educational assessment issues	Lynn Ahlgrim-Delzell	Reviews federal laws, state mandates, assessment, accountability. U.S. focused.
2. Assessment of early communication skills	June E. Downing	Advocates for strength-based approaches done in a contextual and meaningful manner to identify current strengths and aspects of environment that will support a student's active engagement within natural activities/environments.
3. Language assessment for students who use AAC	Lisa Proctor and Carole Zangari	Stresses need for a language assessment plan and notes issues and difficulties faced in assessing various aspects of language. Supports prioritizing assessment areas and using approaches that lead to meaningful linguistic/communication goals and outcomes.
4. Diagnostic reading assessment for students with AAC needs	David Koppenhaver, Beth Foley and Amy Williams	Advocates for assessing all students who read below grade-level. Describes how to develop reading profiles, establish instructional objectives and document reading growth across skill levels. Ties instruction to assessment results in ways that can inform instructional decisions throughout school years.
5. Writing assessment for students with AAC needs	Beth Foley, David Koppenhaver and Amy Williams	Provides examples of writing assessment tools for emerging to conventional writing. Ties results to instructional strategies, supports and learning contexts. Documents research that shows that when assessment data and instruction are appropriate, writing skills improve across the age span.
INSTRUCTION AND INTERVENTION		
6. Academic adaptations for students with AAC needs	Gloria Soto	Addresses IDEA mandates for inclusion at the district, school and classroom levels. Supports a variety of adaptations in classrooms across activities and content areas and discusses role of the speech-language pathologist.
7. Addressing the communication demands of the classroom for beginning communicators and early language users	Jennifer Kent-Walsh and Cathy Binger	Points out that many preschoolers, as well as high school students with CCN, are beginning communicators. Documents strategies and approaches for teaching linguistic, social/strategic and operational competencies and tracking progress.
8. Supporting more advanced linguistic communicators in the classroom	Carole Zangari and Gail Van Tatenhove	Covers a range of needs related to the use of generative language across settings (*e.g.*, vocabulary, grammar/morphosyntax, narrative). Emphasizes key role of speech-language pathologist and need for proficient use of AAC systems by students.
9. Addressing literacy demands of the curriculum for beginning readers and writers	Karen Erickson and Sally Clendon	Discusses need to focus on emergent literacy and how it relates to the general education curriculum and real life. Gives strategies for teaching reading and writing and advocates for literacy programming across the school years for students.
10. Addressing the literacy demands of the curriculum for conventional and more advanced readers and writers who require AAC	Janice Light and David McNaughton	Reviews importance of systematic and conventional approaches to literacy. Reflects findings of National Reading Panel's (2000) report. Lays out a five-step research agenda aimed at fostering literacy learning in students with AAC needs.
11. Strategies to support the development of positive social relationships and friendships for students who use AAC	Pam Hunt, Kathy Doering, Julie Maier and Emily Mintz	Advocates for policy and administrative action to end isolation of students who use AAC. Discusses how teachers and practitioners can support the development of peer networks and positive social relationships and friendships across the school years.
12. Integrating assistive technology	Yvonne Gillete	Suggests some barriers to integrating AT/AAC technologies in schools and classrooms and potential solutions.
SUPPORTS		
13. Supporting collaborative teams and families in AAC	Nancy Robinson and Patti Solomon-Rice	Recognizes the key role that collaborative teams play in the successful outcomes of students with CCN at the systems, practitioner and family levels. Introduces processes and guidelines for practice based on research.
14. Consideration of cognitive, attentional and motivational demands in the construction and use of aided AAC systems	Krista Wilkinson and Shannon Hennig	Takes on a discussion of the complexity of issues relating to memory and attention in learning aided AAC systems. Suggests ways to structure aids/devices so that messages have relevance to user, reduces their cognitive load and enhances their attention to symbols of greatest relevance.

of children with CCN. After reading it, I realized we really have come a long way.

In a recent email Gloria Soto, one of the editors wrote,

What I am the most proud of is the rigorous emphasis on curriculum, language and literacy across chapters. The books sets new standards for the participation of students with AAC needs in their academic and social communities and helps provide the field with tools and resources so they can meet these standards.

We are not done, of course. Most children with CCN are still not getting an adequate education. Classrooms are complicated environments and children with CCN have many and varied needs. We still need to do a lot more research to define what works in which classrooms for which students.

AAC-RERC

SPREAD THE WORD

The *Accessible Literacy Learning* (*ALL*) curriculum

Over the past five years, a team of researchers led by Janice Light and David McNaughton from Pennsylvania State University designed and field-tested a curriculum entitled *Accessible Literacy Learning (ALL): Evidence based reading instruction for individuals with autism, cerebral palsy, Down syndrome, and other disabilities*.[19] The goal of the curriculum is to increase dramatically the numbers of children with disabilities who receive consistent, research-based reading instruction and, therefore, learn to read. Although the *ALL* curriculum focuses on reading, it also includes many writing activities. Researchers are continuing to work on a writing component of the curriculum, which will be available in the future.

This AAC-RERC project, funded by the National Institute on Disability and Rehabilitation Research (NIDRR), is considered a successful "tech transfer" of research to practice. Research partners Light and McNaughton worked with commercial partners Mayer-Johnson and Dynavox Technologies to develop a print-based and software-based version of the reading curriculum so it would be readily available to teachers, practitioners and families throughout the AAC community.[20]

The evidence base

The scope and sequence of the *ALL* curriculum is based on the National Reading Panel recommendations.[21] It was tested to determine its effectiveness with children and adolescents with complex communication needs (CCN). Researchers employed a series of single-subject, multiple baseline designs.

Participants. To date, nine children have participated in the study. The children have a variety of diagnoses: four have cerebral palsy (ages 3-14 years), two have autism spectrum disorders (ages 3-4), one has multiple disabilities (age 8), one has developmental apraxia (age 4), and one has Down syndrome (age 4).

Figure 3. The *ALL* Curriculum: Print Edition

All have CCN and use a variety of unaided and aided AAC systems to communicate (*e.g.*, speech approximations, signs, low-tech communication boards and speech generating devices). Eight children were enrolled in a preschool program or a segregated special education class and were not receiving conventional literacy skills training outside of the research study. One six-year-old girl with cerebral palsy was included in a regular first grade classroom and was exposed to the standard literacy curriculum alongside her class-

mates.

Instruction. All children received literacy instruction in their schools or homes as part of the research. The researchers or a trained undergraduate/graduate student conducted the one-on-one sessions, which were typically held one-to-two times per week. Each session lasted for approximately 30-60 minutes. In addition to the instructional sessions, researchers encouraged the families and school staff to read regularly to the participants and discuss the books they read.

Researchers noted that due to scheduling constraints, participant illness, school holidays, *etc.*, the level of literacy instruction provided to these children was definitely far from ideal. Children should participate in a wide range of literacy instruction activities on a daily basis for a minimum of 90-150 minutes each day.[19,21]

Outcomes. To date, most children in the study have received instruction for a year or more. Specific information about study results are available in an AAC-RERC webcast,[22] published peer-reviewed articles,[23,24] conference presentations[25,26] and in the *ALL* curriculum.[19] Each child progressed at his or her own rate; however, all participants learned to read and made substantial gains as a result of the instruction. In addition, parents, families, schools and participants reported high levels of satisfaction with the program.

Researchers also noted that outcomes affected how others perceived the children in the study.

For example, one boy with Down syndrome entered the project at age four. After 16 months of instruction, he was reading simple books independently. During his initial IEP, school staff refused to believe that a five-year-old child with Down syndrome and impaired speech could read. Only after observing him read a book, sounding out words, *etc*., did they accept as true that he read beyond the level of many of his typical peers.

Curriculum description

Researchers designed the *ALL* curriculum to support teachers, parents and speech-language pathologists in their efforts to teach conventional reading skills to children with CCN using evidence-based tools and strategies. The curriculum eliminates the need for spoken responses while providing scaffolding supports to build a child's internal reauditorization skills. It also structures tasks so an instructor can easily identify areas in which a child experiences difficulty.

The *ALL* curriculum relies on direct skill-based instruction using modeling, guided practice and independent practice; and it builds in numerous opportunities to apply basic skills in the context of meaningful reading activities.

The *ALL* curriculum for widespread use

Over the past year, the research team at Penn State worked closely with the development teams at Mayer-Johnson and Dynavox Technologies to make the curriculum available to everyone. Two versions of the *ALL* curriculum will be released soon: the *ALL* print edition and the *ALL* software edition. According to the promotional literature,

Both versions will take the guesswork out of teaching reading to your students with disabilities.

Print edition. As shown in Figure 3 on page 13, the *ALL* curriculum includes a curriculum guide and detailed instructional materials for teaching basic reading skills. It also contains data collection forms, research results and case studies that illustrate the longitudinal use of the curriculum with a girl with multiple disabilities (motor, visual and hearing impairments) and three boys—one with cerebral palsy, one with Down syndrome and one with autism. Instructional areas targeted are:
• Reading to individuals with CCN.
• Assessment of the literacy skills of individuals with CCN.
• Teaching sound blending (phonological awareness skill).
• Teaching phoneme segmentation (phonological awareness skill).
• Teaching letter-sound correspondences.
• Teaching single word decoding skills.
• Applying decoding skills during shared book reading activities.
• Teaching sight word recognition skills.
• Teaching individuals to read sentences and simple stories.
• Teaching reading comprehension skills.
• Considering next steps in teaching more advanced reading and writing skills.

Software-based, automated tutoring system. The software version also includes the curriculum guide and chapters as described above. Instructional materials, however, are data-base driven so the software automatically collects data on the
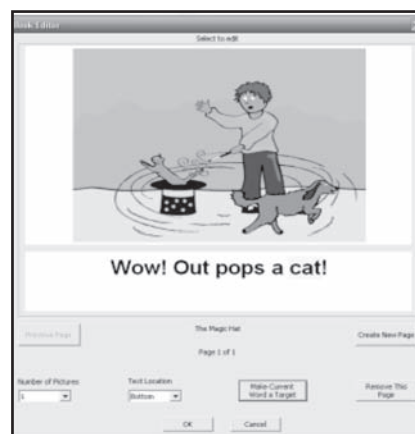

Figure 4. The book editing module.

learner's performance and offers instructional decisions with respect to the skill areas and instructional materials. The software also can generate reports, *e.g*., daily, weekly or a reporting period at school.

In addition to the instructional modules, there is a book editing module so instructors can develop their own books using familiar photos or illustrations. [See Figure 4.] They simply type in the text and the system will scan for words the learner should be able to read. The program highlights these words for the learner, and automatically develops a communication board to use when reading.

The *ALL* software will be available in four different versions. The *School Edition* can be used with multiple students and can track each student's progress independently. The *Home Edition* is less expensive, but only allows for single student use. There will also be versions that work with the DynaVox V/Vmax or with *Speaking Dynamically Pro* to deliver instruction directly through the AAC software.

The print edition ($695) is scheduled for release in January. The software version will follow in the spring. Price will vary by version.

Resources

Sincere and hearty thanks to the talented professionals who participated in our survey.

Mary Hunt Berg, Ph.D., The Bridge School 1209 Howard Ave., Ste 200, Burlingame, CA 94010. 650-343-4102, mary@bridgeresearch.org

Dolly Bhargava, Innovative Communication Programming, 9 Oaklands Avenue, Beecroft, AU 2119. (02) 9876 3568. www.innovativeprogramming.net.au; dolly_bhargava@hotmail.com

Cathy Binger, Ph.D., University of New Mexico Speech and Hearing, 1712 Lomas N.E. (MSC01 1195). Albuquerque, NM 87131. 505-263-0036. cbinger@unm.edu

Susan Blockberger, Ph.D., Augmentative Communication Consultant, Richmond School District, 4771 Garry St., #10, Richmond, B.C., Canada, V7E 2T9, 604-277-6507. sblockberger@richmond.sd38.bc.ca

Ylana Bloom, Innovative Communication Programming, 9 Oakland Avenue, Beecroft, AU 2119. (02) 9876 3568, www.innovativeprogramming.net.au. bloom@iinet.net.au

Marilyn Buzolich, Ph.D., Augmentative Communication and Technology Services, 350 Santa Ana Avenue, San Francisco, CA 94127. 415-333-7739. mjbuz@aol.com

Kathie Cassidy, MA, Augmentative Communication Consultant, FLAAC Educational Collaborative, 44 Wanoosnoc Road, Fitchburg, MA 01420, 978-345-525. KaAnCas@aol.com

Cynthia Cress, Ph.D., Special Education and Communication Disorders, University of Nebraska-Lincoln, 202G Barkley Memorial Center, Lincoln, NE 68583. 402-472-4431. ccress1@unl.edu

Pat Dowden, Ph.D., University of Washington, Dept. of Speech and Hearing Sciences, 1417 NE 42nd St., Box 354874, Seattle, WA 98105. 206-616-6217. dowden@u.washington.edu

Pamela S. Elder, M.A., United Cerebral Palsy of Greater Birmingham, 101 Oslo Circle, Birmingham, AL 35211. pelder@upcbham.com

Kelly Fonner, Educational & Assistive Technology Consultant, 1508 Dodge St., Lower Level, Lake Geneva, WI 53147. 262-893-8053, kfonner@earthlink.net

Carole Goossens, Ph.D., Augmentative Communication Specialist, Henry Viscardi School, 201 I U Willets Rd, Albertson, NY 11507. 516-465-1675. Also, 20 West 22nd St., Room 410, New York, NY 10010. 212-255-0133. cgoossens@verizon.net

Tracy Kovach, Ph.D., The Children's Hospital, 10720 Zuni Dr., Box 030 Westminster, CO 80234. kovach.tracy@TCHden.org

Susan Malloy, MS, Augmentative Communication Consultant, Easter Seals Massachusetts, 484 Main Street - 6th Floor, Worcester, MA 01608. 1-800-244-2756. sgmalloy@eastersealsma.org

Caroline Musselwhite, Ph.D., S.W. Human Dev. 916 West Castillo Dr. Litchfield Park, AZ 85340. 623-935-4656. carmussel@cox.net

Kristi Peak-Oliveira, MS, Augmentative Communication Consultant, Easter Seals Massachusetts, 484 Main Street - 6th Floor, Worcester,

MA 01608. 1-800-244-2756. keak-oliveira@eastersealsma.org

Julie North, MS, Augmentative Communication Consultant, Easter Seals Massachusetts, 484 Main Street - 6th Floor, Worcester, MA 01608. 1-800-244-2756. Julie@jne.com

Charity Rowland, Ph.D., Oregon Health & Science University, 3181 S.W. Sam Jackson Park Rd., Portland, Oregon 97239. 503-494-2263. rowlandc@ohsu.edu

Katherine Shea, MS, Region 1 AT Facilitator at Plaquemines Parish Schools, 1416 Metairie Road, Metairie, LA 70005. 504-835-0994. kshea@ppsb.org

Jill Tullman, MS, Speech Language Pathologist, 8030 East Cedar Ave. Denver, CO 80230. 303-641-1285. jtullman@sprynet.com; jtullman@aac-therapy.com

Joy Zabala, Ed.D., CAST 40 Harvard Mills Square, Ste. 3, Wakefield, MA 01880, (781) 245-2212. jzabala@cast.org

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