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NCSC GSEG Policy Paper: Communicative Competence for Students with the Most Significant Disabilities: A Three-Tiered Model of Intervention

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Communicative Competence for Students with the Most Significant Disabilities: A Three-Tiered Model of Intervention

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Introduction

Communication is at the heart of all we do. At its most fundamental level, communication is an exchange between two people, an exchange which may involve "information about that person's needs, desires, perceptions, knowledge, or effective states" (http://www.asha.org/docs/html/GL1992-00201.html#sec1.3.1, NJC, 1992). We know that students with the most significant cognitive disabilities are at great risk for not having a clear communication mode (Kearns, Towles-Reeves, Kleinert, H., Kleinert, J., & Thomas, 2011; Mirenda & Beukelman, 2012; Romski & Sevcik, 2005; Towles Reeves et al., 2012). Perhaps most importantly, these students often fail to make progress in achieving higher levels of communicative competence across the grade spans (Kearns et al., 2011; Towles-Reeves et al., 2012) and are at risk for leaving school without a reliable mode of communication.

This NCSC White Paper will address the critical challenge of ensuring communicative competence for students with the most significant cognitive disabilities, as an essential element in providing access to the general curriculum. We will 1) examine the literature on what we know about communicative competence for students with the most significant cognitive disabilities, 2) propose a three-tier model of intervention that states, districts, and schools can use to improve communicative competence for students with the most significant disabilities, and 3) describe specific measures that states, districts and schools can use to measure the effectiveness of each of these tiered interventions. Moreover, we will illustrate how the application of evidence-based strategies have resulted in improved communicative competence for actual

students with whom we have worked; and we will provide specific planning steps that school teams can used at the most intensive Tier 3 level.

Student Examples

Communication competence enters into every aspect of our lives: our relationships, our work, our learning and our leisure. It is also essential for access to and progress in the general curriculum. Students who are identified as *pre-symbolic* communicators are not yet using words or symbols in identifiable formats –meaning that they do not use oral speech or augmentative devices to communicate even the most basic of intentions, let alone academic content. The general curriculum inherently relies on symbolic expression through spoken, written, and illustrated symbols and words. Indeed, the U.S. Department of Education released a Dear Colleague letter (2014) identifying access to communication as a basic right and therefore, a civil rights issue facing students with disabilities in school settings (U.S. Office of Special Education and Rehabilitation Services, 2014).

We will start this paper with three student examples from our own work of the barriers students face due to real (or perceived) barriers in communicative competence:

Leron is 11 years old. He uses a wheelchair and only has movement, with great effort, in his left arm. He has cortical blindness, a tracheostomy, a gastric tube for feeding and is non-verbal. Leron is difficult to arouse and prefers to sleep much of the day. He may sleep to avoid classroom work sometimes. If really frustrated, he will try to push a person or item away and vocalizes some as he does this. These communications are not regularly acknowledged and so he then goes to sleep.

Gina is 5 years old. She has autism and has many "behavior" problems such as crying, screaming and pulling away. Her family and school want her to attend the regular

kindergarten, but she is disruptive in the class. Her SLP uses raisins as a reinforcer to help her sit quietly in circle time, but Gina sits at the back of classroom and is turned away from the other students and the teacher, to minimize her disruptions. In order to increase Gina's communication skills, the SLP requires Gina to answer using a "yes/no" switch with voice output when asked "Do you want a raisin?" Gina looks carefully at the switches, uses an approximation of the sign for "eat" and tries to comply, but she does not understand "yes/no" yet and hits the wrong switch. The raisins are then withheld, since Gina did not correctly answer in the context of her new communication device, and she dissolves into tears.

Seth is 13 years old and has a dual diagnosis of Down syndrome and autism. He has some signs to communicate along with very clear gestures and movements. He loves feeling the wind from a fan in his face and can turn on the fan with a large switch. His teachers want him to use the specific sign "more" when he wants more of a favorite food, which Seth sometimes does, but he also spontaneously reaches, signs "eat," looks at the adult to request, or spontaneously takes the adult's hand to request. His spontaneous communications are ignored. This results in long, repetitious requests for Seth to sign "more" and loses the spontaneous nature of true communicative interactions.

Clearly all three of these students are *attempting* to communicate with others, despite their significant challenges. Each of these students, at present, is not meaningfully participating in the general curriculum, even during the times that they may actually be in the general education classroom. Each student communicates differently, but these communications are largely unsuccessful due to the *listeners'* lack of understanding. Leron is telling his teachers when he does not like an activity but since they do not recognize his communication, he spends his time avoiding interactions by sleeping. Gracie's communications are ignored because she is

not using (and is unable to use) the system that the adults have designed for her. This lack of response from adults in her school environment results in even more disruptive behavior on her part. And Seth is clearly able to communicate in a variety of ways. He needs new and exciting things to communicate about, but the school team is more focused on *how* he communicates than *what he really has to say*.

What We Know About Communicative Competence

Unfortunately, these three students' experiences are not isolated examples. In a three-state study of students eligible for the alternate assessment on alternate achievement standards (students with the most significant cognitive disabilities), Towles-Reeves et al. (2009) used the Learning Characteristics Inventory (LCI: Kearns, Kleinert, H., Kleinert, J., & Towles-Reeves, 2006) to rate the communicative status of students participating in those states' alternate assessments. Approximately 70% of the students communicated expressively using symbolic language (generally oral speech). Yet, an additional 17-26% were identified as *emerging* symbolic language users (i.e., using pictures, objects, or regularized or idiosyncratic gestures to communicate). Finally, 8-11% of students were communicating at a *pre-symbolic* level, that is, they relied on non-regularized facial expressions and/or body movements to communicate their basic intentions.

In a three state study of teachers with students participating in the alternate assessment, Cameto et al. (2010) randomly surveyed a total of 484 eligible teachers, with a response rate of 87.2%. (N = 422). Cameto's et al. instrument focused on both teacher perceptions of their state's respective alternate assessment, as well as the specific learning characteristics of one "target" student in each teacher's classroom, with the target student selected through a randomization process in the survey instructions itself. The communication items from the teacher survey were

taken directly from the Learner Characteristics Inventory (Kearns et al., 2006). Cameto et al. found nearly identical percentages to that of the Towles-Reeves et al. (2009) study. Across the 422 responding teachers, 68% indicated that their target student had a symbolic mode of communication, 20% indicated that their target student had emerging symbolic communication, and 12% indicated that their target student was at a pre-symbolic level of communication.

In a seven state study involving over 12,000 students, Kearns et al. (2011) examined the learner characteristics of students in the alternate assessment on alternate achievement standards (AA-AAS) across those states. Kearns et al. found similar results to those of the Towles-Reeves et al. (2009)and the Cameto et al. (2010) studies for those students who were symbolic language users (an average of 72% across all seven states), emerging symbolic language users (approximately 17%), and those who communicated at a pre-symbolic level (approximately 10%). Most striking in the Kearns et al. study was the *lack of substantial change* in the percentage of students communicating at a pre-symbolic level across the grade spans from elementary to high school. Though this study was not a longitudinal study of the *same* students over time, we would intuitively expect to find significantly fewer high school students at a pre-symbolic level in high school than in the elementary years. What Kearns et al. *did* find was that the percentage of pre-symbolic communicators decreased from only 12.6% to 9.5% from the elementary to high school years.

In the largest study of students participating in alternate assessments on alternate achievement standards conducted thus far, Towles-Reeves et al. (2012) examined the communicative status of 49,669 students who participated in their respective state alternate assessments (AA-AAS) during the 2010-11 or 2011-12 academic year across 18 states. The states were participating in the National Center and State Collaborative (NCSC). Again, the

communication patterns that Towles-Reeves et al. (2012) found for the students in these 18 states strongly resembled the earlier results obtained by Towles-Reeves et al. (2009), Cameto et al. (2010), and Kearns et al. (2011). Across the participating states, teachers reported that the majority of students (69%) used symbolic language; 18% of students were emerging symbolic communicators; and 10% were pre-symbolic. Two findings were perhaps most troubling:

1) *Lack of movement in communicative competence across grades*: Similar to the results of Kearns et al. (2011), a full 10% of *high school* students in these 18 states' alternate assessments were identified as pre-symbolic, having no clearly understandable output (expressive communication). While these are cross-sectional (as opposed to longitudinal) data, the 10% of students still without communication at high school again suggests that there is minimal change in the percentage of students communicating at a pre-symbolic level across the grade spans.
2) *Access to AAC*: Towles-Reeves et al. (2012) examined the extent to which students identified by their teachers as *either* emerging symbolic or pre-symbolic had access to augmentative/alternative communication (AAC systems). These researchers found, that for the 10% of students identified as pre-symbolic, only 40% had access to AAC; and for the 18% of students identified as emerging symbolic, only 39% had access to AAC.

Finally, in examining educational placements for students with significant cognitive disabilities across 15 states (N = 39,837), Kleinert, H., Towles-Reeves et al. (2015) found that the vast majority of students (93%) in these state alternate assessments were served in separate classrooms, separate schools, or more restrictive settings. Yet student communicative status did make a difference: these authors reported that "for all states combined, findings indicated a

statistically significant, positive correlation between expressive communication and increasingly inclusive classroom settings" (p. 320).

In the end, it is also important to remember that communicative competence is *not* itself a static characteristic. Communication *can* and *does* improve with consistent intervention, appropriate communication support, and augmentative alternative communication systems. A review across twenty years of research revealed that 96% of the identified studies resulted in improved communication outcomes for students with severe disabilities (Snell et al., 2010). Moreover, Calculator and Black (2009) have identified a broad range of interventions available, including the use of AAC (see also Chung & Carter, 2013, for the application of AAC in general education with peers as explicit communication partners).

Communicative Competence and Limited AAC Access

At present, we do not know the reasons for the low rate of AAC use among students with limited communicative competence. Possible reasons may include long standing myths regarding students with severe disabilities, including the belief that there are students who are simply "too severe" to benefit from communication intervention. This myth has been addressed in the literature, with one of the most succinct responses provided by the National Joint Commission for the Communication Needs of Persons with Severe Disabilities (NJC: www.asha.org/NJC). The NJC is a coalition of the associations representing professions involved in services to persons with severe disabilities such as the American Speech/Language Hearing Association, the Council for Exceptional Children, the American Occupational Therapy Association, the American Physical Therapy Association and others. The NJC has strongly stated that *all children (persons) communicate regardless of their cognitive abilities* and that cognitive levels "should not be used to deny providing communication services and support" (NJC, 2003).

Most recently, the NCJ has noted that “communication is both a basic need and a basic right of all human beings” (Brady et al., 2016, p.122) and has revised its Communication Bill of Rights (see Brady et al., 2016, p. 123). Moreover, as we noted previously, a major meta-analysis of 20 years of research involving communication programming for individuals with severe disabilities revealed that 96% of the reviewed studies reported positive changes in some aspects of communication for students (Snell et al., 2010). These findings support unequivocally the provision of communication intervention for persons with severe intellectual and developmental disabilities.

Another possible factor that may play a role in the insufficient use of AAC in the schools might be the need for additional training for related service personnel. In reviewing data collected every two years since 2000 by the American Speech, Language Hearing Association (ASHA) from school-based Speech/Language pathologists (SLPs), on average, one quarter of the respondents listed the following: lack of training in AAC assistive technology, little understanding of low incidence populations, and limited knowledge of curriculum based instruction, as some of the major barriers to services delivery in the schools. Additionally, a full 76% of SLPs reported that shortages in qualified SLPs increased their caseload and approximately 50% of respondents indicated this lack of qualified SLPs in the schools affected the quality of service deliver to students, as well as contributing to a lack of time for meeting with team members (2010-2012). Caseloads of SLPs in the schools currently range form 31-64 students each (ASHA, 2016a). In addition, in 2016, SLPs continued to note that large caseloads remain a major challenge in their work and still face limited time for collaboration (ASHA, 2016b).

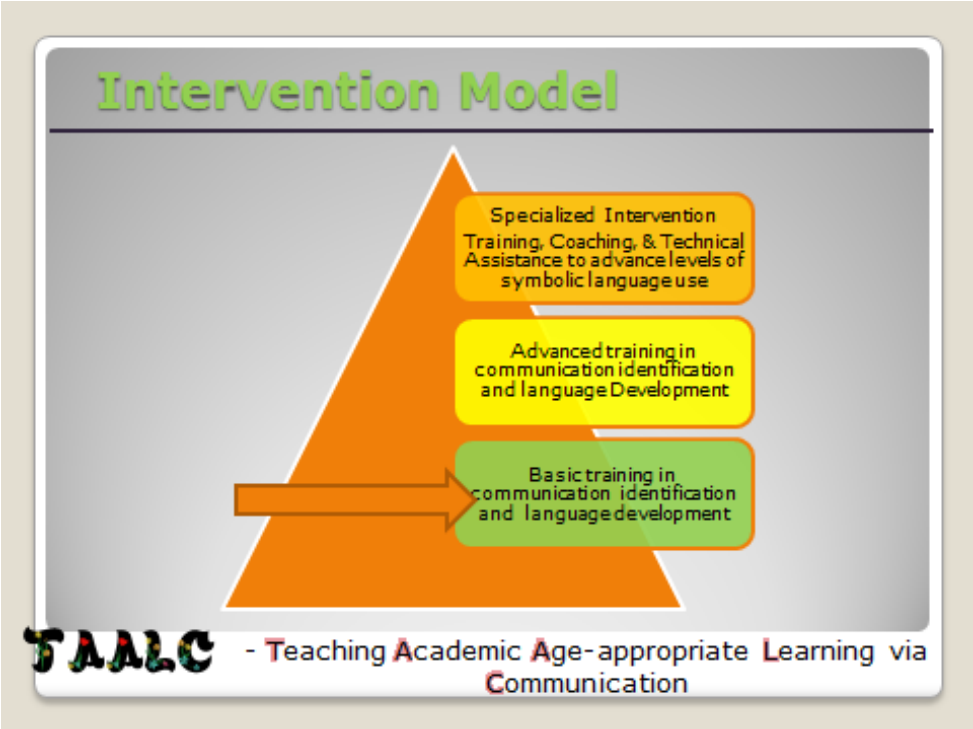
Clearly in order to meet the communication needs of students with the most significant disabilities, there must be mechanisms to give much needed training and on-going support to school personnel to develop functional, immediately usable communication systems for students *but* to do so in a non-intrusive, *cost and time efficient manner* so that schools and personnel are willing to take on this additional training and intervention model. In the next section of this paper, we will propose a three-tier intervention model that states, districts, and schools can use to improve the capacity of educators, SLPs, and other related service providers to ensure that all students with the most significant disabilities have a reliable mode of communication. We will describe each tier of this model in turn.

A Three Tiered Model of Communication Intervention

In considering effective approaches to persistent challenges for students with disabilities (children with emotional and behavioral disabilities, students with learning disabilities), our field has often conceptualized a tiered model of intervention (e.g., school-wide positive behavioral supports, response-to-intervention) as a coherent strategy to addressing those enduring problems. This approach has been explicitly developed within the field of implementation science (Fixsen, Blasé, Metz, & Van Dyke, 2012). Indeed, McIntosh, Mercer, Hume, Frank, Turri, and Matthews (2013) found that the two factors most salient in sustaining school-wide positive behavioral supports were the extent to which *school-level* teams functioned cohesively and used data-based decision making and *district-level* efforts focused on capacity building (e.g., professional development, teacher communities of practice). In this section, we provide a tiered model for addressing the communicative competence of students with significant disabilities, because we believe, that like these other critical challenges in our field, we need *both* a comprehensive *and* focused approach to addressing this need. We present each of our three intervention tiers below.

Our model is based upon the work of TAALC (Teaching Academic Age-appropriate Learning via Communication), an initiative of the KY Department of Education and the Human Development Institute, University of Kentucky, as part of the Kentucky Professional Developmental Grant, funded through the US Office of Special Education Programs. For a Figure 1 presents that model.

Figure 1: Three-Tiered Model of Communication Intervention Developed through TAALC



Tier I: Ensuring a Collaborative Framework for Intervention: Basic Training

Tier I interventions are typically aimed at the "universe", that is, the entire population of students with the most significant disabilities; as such, Tier I interventions are designed to create a common framework for enhancing the communicative competence of all students in that population. The *NCSC Communication Tool Kit* (https://wiki.ncscpartners.org), developed through by NCSC staff and university faculty with extensive expertise and experience in

communication programming for students with the most significant disabilities and in collaboration with our partner states, is an excellent professional development tool focused on this first tier of intervention. Designed for practitioners to address the communicative competence and the provision of AAC for students with significant cognitive disabilities who most need that access, the Communication Tool Kit is a set of online modules designed to provide educators, SLPs and other related service personnel with a collaborative set of tools for understanding student communication in its most basic forms and for problem-solving next steps. The Tool Kit includes modules that systematically cover 1) identifying a student's communication level (e.g., pre-symbolic, emerging symbolic), 2) identifying factors that have impeded communication for that student, 3) selecting communication targets (key communication goals for the individual student), 4) embedding communication targets into the academic curriculum and throughout the school day, 5) types of AAC, 6) evidence-based strategies to improve expressive communication and communicative status, and 7) continuous monitoring progress on key student communication goals. Moreover, the Communication Tool Kit Modules have been approved for Continuing Education Units (CEUs) by the *American Speech/Language/Hearing Association (ASHA*), and are offered online and without cost to any practitioner interested in completing these modules.

Other Tier I interventions can include state or regional trainings, offered through State Education Departments or professional organizations (State Council for Exceptional Children, State Speech/Hearing/Language Association). Tier I interventions are perhaps most effective when they incorporate opportunities for planning and collaboration across disciplines (general and special education, speech/language pathology), so that team members can begin to apply together the principles they are learning. TAALC has also developed a broad range of products

and professional development modules focused the needs of students with the most complex communication challenges; go to: https://msd1stop.hdiuk.org/index.php/Teaching_Age-Appropriate_Academic_Learning_via_Communication_(TAALC)#TAALC_CoP_Modules in order to access the TAALC communication modules, with extensive student examples).

Tier Two: Targeted Interventions

Tier Two (targeted) interventions are focused on improving communicative competence for *groups* of students, with strategies often implemented at the regional or district level. For example, in Tier II, a district or collaborative of districts could design a problem solving intervention, such as a Communicative Competence Community of Practice, for teachers, SLPs and other related service providers, paraprofessionals and administrators, with a focus on capacity building (teaching teams to problem-solve communication interventions for children and youth with the most complex needs).

Communities of practice, often created for teachers and therapists who have completed Tier I activities (such as the NCSC Communication Tool Kit modules), provide members the opportunity to not only work through the communication challenges facing their students, but to brainstorm together potential strategies, and to meet regularly to discuss successful interventions and alternative solutions when needed. Moreover, there are now team communication and file (such as *Slack*) that offer opportunities for members to post important updates, challenges/ concerns, and resources at any anytime. Communities of Practice also model, at the district and/or regional level, the kinds of coordination and collaboration essential to improving communicative competence for students with the most significant disabilities.

Tier Three: Intensive, Individualized Interventions

For students with the most complex communication needs, intensive, *individualized* interventions (Tier 3) may be necessary if the student is to achieve communicative competence. We will now describe how TAALC, funded by Kentucky's Personnel Development Grant (SPDG) to assist school-based teams (teachers, SLP, para-educators and other related service providers) in ensuring communication programming for all students with significant disabilities, has implemented its most intensive, Tier III interventions. TAALC has developed several strategies that school teams (in collaboration with families) can use to enable students to develop communicative competence. These strategies are especially useful as they can stand alone for use by classroom teams or be utilized within the TAALC process, should a state, district, or school wish to replicate that model.

TAALC is designed to address the communication need of students with significant cognitive disabilities who were identified by their teachers as having emerging symbolic or pre-symbolic expressive or receptive communication skills as indicated on the Learning Characteristic Inventory (Kearns, Kleinert, H., Kleinert, J., & Towles-Reeves, 2006) (see Figure 2 for a completed example of the communication section of the LCI for Leron, the first student that we introduced earlier in this paper). The intent of TAALC is then teaching this communication development *within the student's academic curriculum.* This process facilitates the immediate and functional use of the communication system developed for *each* student. Too often, only generic communication systems are targeted for students, with no attention given to that particular student's communication needs. These generic systems include only such overworked options as "eat", "drink", or "bathroom", whether or not a student most needs that vocabulary. Such systems also fail to provide for a variety of communicative functions such as refusal, greeting, commenting, or varied choice making options, as recommended by the NJC as

basic "rights" for all communicators (www.asha.org/njc). In addition, the TAALC model emphasizes that all students communicate and teaches school personnel to identify and acknowledge the communication output the student is using *right now*, even if that output is non-standard, such as facial expression, various vocalizations, or gestures that are specific to that student. Only when we acknowledge a student's output as meaningful can we help him begin to use a more recognizable/understandable communicative system.

Figure 2. LCI completed by classroom personnel for Leron before TAALC training

Receptive Communication	**Expressive Communication**	**Engagement**	**AAC needs**
Understands real words and sentences, follows directions (language level)	Uses real words or language (spoken, print, sign, computer, etc.) (symbolic)	Readily engages with others	Does not need AAC
Understands words or follows directions with cues	Uses gestures, points, real objects, a few pictures, clear facial expressions, head nods, etc. to communicate and is easily understood by others (Emerging symbolic)	Needs more stimulation to engage with others	Already has AAC Changes needed?
Alerts to sensory input from others but needs actual physical assistance to follow directions	Expresses self by facial expressions, cries, position changes, muscle tone changes, etc., and listener may not be sure what the individual is communicating (Pre-symbolic)	Does not readily respond to others	Needs AAC
Uncertain response to sensory stimuli			

The TAALC Model

The TAALC model was designed to provide inexpensive, distance coaching by specialists in communication disorders to school-based teams who are working to develop communication systems for especially challenging students with complex communication needs (CCN) and multiple or significant disabilities. There are two major phases in the TAALC process. These are outlined below.

Phase 1:

- Districts identify targets students with especially challenging CCN.
- School personnel complete the communication sections of the LCI and collect short video clips of the student in various settings.
- TAALC staff view videos and score the LCI communication section. TAALC LCI results are compared to school results.
- One full-day training for all district teams, including families, is held emphasizing the following points:
    a. All students communicate—a shared and vital philosophy for the team.
    b. Teams must agree on a common definition for communication:
        i. ***Intent (function) + Form (mode) + Desired Outcome (i.e., listener understanding) = Successful Communication***
        ii. Points to remember: Intent is a *reason* to communicate; *forms* vary by each student—a listener's failure to recognize student behavior as communicative *blocks the students success.*
    c. Students may use any number of non-standard ways of communicating.

d. Teams must be able to *identify each student's unique communication mode* and what he/she is trying to say.

e. Teams view their on student's videos and rescore the LCI. (Teams frequently note that they had underestimated their student on the initial LCI they completed prior to training.)

f. Specific teaching strategies for communication development are taught.

g. Using the "new view" of their students, teams now develop an action plan to either increase the frequency of existing communication output or increase the sophistication of that output by providing an appropriate AAC system. Initial communication target(s) are developed.

Phase II

- Teams begin implementation of the communication targets and maintain data on student progress (see Figure 3 for an example of a student Communication Matrix that can also serve as a progress monitoring sheet).
- Every 2-3 weeks, teams participate in a "coaching call" led by the TAALC staff. The calls are conducted via inexpensive conference calls which allows for team members, district personnel and family to participate, even if they are at multiple locations. The call follows a prescribed script as follows:
    - What are the data saying
    - What problems are occurring
    - What are the next steps in the student's program
    - Who will do what (assigning responsibilities)
    - When will the next call occur.

- Teams implement revised programming.
- After 6 or even fewer calls, teams collect new video and complete an updated communication section of the LCI.

TAALC data have been collected on both student progress and school personnel capacity levels. TAALC student progress data have indicated that, after participation in this training/coaching model, 84.6% of the participating students had progressed at least one level in expressive communication as judged by the Learning Characteristics Inventory (Kearns, Kleinert, H., Kleinert, J., & Towles-Reeves, 2006) and over 90% of students had some form of AAC in place. Moreover, of those students who needed AAC to communicate, 34.3% acquired AAC for the first time, and an additional 54.3% improved in the complexity of their pre-intervention AAC use. This is in stark contrast to the national data cited in the first section of this paper.

School personnel data also indicated high satisfaction with TAALC, with 90-100 percent of district and regional special education cooperative personnel indicating increased intervention knowledge for students with significant disabilities, as well as increased ability to train/coach in this area. In addition, all participants rated their level of satisfaction as good or very good. There was no cost for the participating districts, except for substitute teachers for the one day of training. Conference calls were paid for by the project (though conference call costs were themselves minimal). Coaching calls were typically 30 minutes in length.

Figure 3: Student's Matrix and Data Form

Daily Schedule:	**Intent: Choices/Requesting**	**Intent: Commenting/Greeting**	**Intent: Responding to Questions/ Directions**	**Intent: Refusing- or NO for rejection**
	NOTE the multi-modal nature of Leron's communications			
Arrival		L. Uses single switch to respond to greetings		
Exercise Time	When asked, "What do you want now?" L. uses a single *switch* to say "I want to do more exercises."	*Smiles and laughs* when asked "Is this fun?"	Uses switch to answer "Exercise" when asked, "What will we do next?"	L. will "push away" an undesired item.
Math			Reaches to touch items in **response** to "Let's ***count***"	
Reading		Use switch with tactile smile shape to say "I like this."		If he does not like the story, allow "push away", **acknowledge,** and stop **OR** tell him how much longer he has to go with the activity.
Lunch	(L. is tube fed) Smiles to favorite peers' names when asked, "Do you want to sit with XX? at lunch?"	Greets with single switch when peers say "Hello" and vocalizes.		
Social Studies	Smiles to favorite peers' names when asked, "Do you want to sit with XX?"		Touches texture of item discussed	

			when asked, for example, "What are we talking about: rivers (water) or land (sand)?"	

Adapted from Kleinert, J., Kearns, & Hooey, 2012, TAALC, KY Dept. Of Education

How Can the TAALC Model Be Modified for Immediate Use in District, School, or Classroom?

The TAALC model is very school-friendly and can easily be adapted for use in individual classrooms or by individual school-based teams. The ultimate goal of this model is to reduce to zero the number of students with the most significant cognitive disabilities who do not have a reliable mode of communication in place. The key principles in this approach have included teaching team members to:

1) Identify previously unrecognized instances of student communications;
2) Acknowledge and honor student communications (even if the request cannot be immediately granted);
3) Teach new forms of communication to the student via aided language modeling and core vocabulary (with aided language modeling, the teacher or therapist uses the student's system to model communication for the student, and builds into that system a core vocabulary - a limited number of highly flexible words usable across a broad range of settings and situations); and
4) Systematically embed naturally occurring opportunities for the student to use his communication mode throughout the school day.

The principles of the TAALC model very much reflect the National Joint Commission's Revised Bill of Rights (Brady et al., 2016), especially in the model's insistence on having all "communicative acts acknowledged, and responded to even when the desired outcome cannot be achieved", "having access to functioning AAC", and "having access to environmental contexts, interactions, and opportunities that promote participation as full communication partners with other people, including peers" (Brady et al., p. 123).

Now let's revisit the three students with significant disabilities that we introduced at the beginning of this paper. The team observed *Leron* closely and noticed that he did have some clear communications. He pushed away items he did not want, he shook his head and vocalized when trying to say "no" and he went to sleep to avoid many tasks. Since most of Leron's communicate intents at school were to *reject*, clearly Leron was not being provided input that he enjoyed! The team worked to identify what Leron enjoyed and then helped him to request those activities with a large, easily accessible switch. The team was very careful, however to note that Leron used "multimodal" communication. That is, he used a single message switch, but also used many natural gestures and facial expressions. The team was careful to acknowledge and honor these communications and so he had much great interactions and more spontaneous interactions that using only a single message switch would afford. Since true communication is much more that requesting, the team introduced commenting into Leron's AAC system. When Leron enjoyed listening to a story during literacy tasks, he spontaneously began to activate the voice output switch with said, "I like the story." By the end of the school year, Leron was able to use a 4 choice voice-output device with brightly colored round switches to greet others, comment and answer several simple yes/no questions. He no longer spent that day sleeping! Communication is now embedded into Leron's social and academic day.

Gina's team decided to observe her natural communicative output and look for her communicative intents and modes. They found that Gina had many natural gestures that were clearly understandable and that she understood the use of a single switch to request, but that she simply was not ready for the complexity of the "yes/no" response. Beginning with "yes/no" when students do not understand those types of questions is a very common error we see in schools. Since the school wanted Gina to be included in the regular class and since she already understood single switch use, the team incorporated this into her academic and literacy activities. During group reading time when stories included repeated lines, Gina used her single switch, which was held by a peer, to take her turn in reading the repeated phrase. In addition, Gina used her single switch to activate computer music programs. The team consistently coupled pictures with all activities. By the end of the first semester, Gina was using pictures to tell her teachers if she was "done" or wanted "more" of an activity and then made a choice from among three pictures to select the next activity. She no longer screamed in class because the team "met her where she was" in her communication and gradually built on her existing skills.

Our third student was *Seth*. As you recall much time was spent and lost on demanding that he request in a very specific way and not accepting his many clear forms of requesting. Seth could also use a single switch successfully to activate his fan toy, but the switch was not then used to further his communication output or to access academic materials. Adults often underestimate students and do not realize they are ready for *MORE* than simply asking for "more." Bearing all this in mind, the team decided to incorporate the use of technology into Seth's academic day. Seth soon surprised everyone by being able to listen to a story in his literacy work and then find the definition of words from a four choice voice output device that had multiple levels. For example, after reading the story, the teacher selected the vocabulary

word “stay” and asked Seth which of three options definition options was correct. He selected the option “do not move” as the correct answer. The teacher simply programmed his 7 level communication device so that each level held the answer to one of Seth’s definition questions. By assuming competence, using simple technology for communication that Seth already understood, and providing more age-appropriate academic content, Seth was allowed to show his true ability levels.

In summary, we have described an evidence-based, focused approach to improving communication programming for students with significant disabilities and complex communication needs (CCN). The approach is both time and cost effective and has been shown to increase communication skills for students, while educating team members in supporting communication for these students. In collaboration with Tier I and Tier II strategies described above, these interventions have the potential to make a tremendous difference in the communicative competence of students with the most significant cognitive disabilities.

Measuring the Impact of Change: How Do You Know You Are Making a Difference?

Our research, conducted across a broad cross-section of states, has consistently revealed the compelling need to aggressively intervene to promote the communicative competence of students with the most significant disabilities. Yet, simply doing a set of activities, no matter how well intended and/or how strongly research-based, without evidence of real change, is not enough. In this final section, we propose a set of measures that can be collected, reviewed, and evaluated at the state, district and school levels to see if our efforts truly are resulting in improved communication outcomes for students with the most significant disabilities.

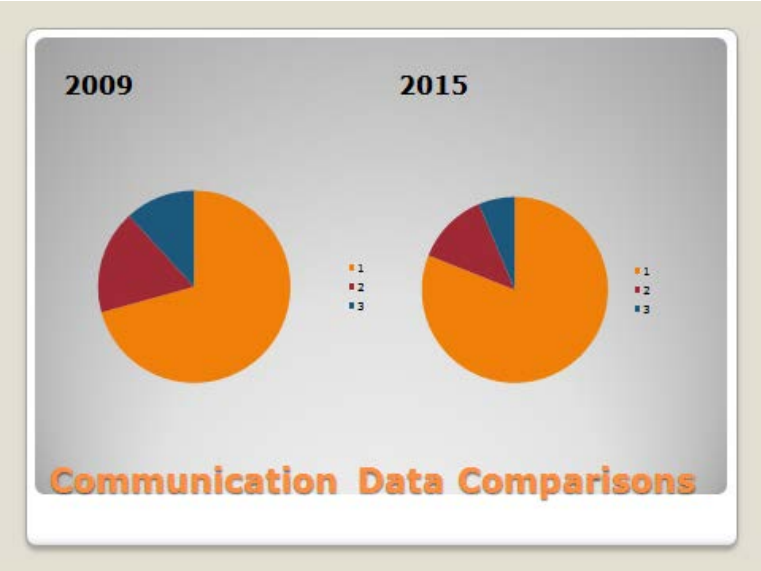
Measuring State Level Impact

A number of states are currently collecting LCI expressive and receptive communication data on all of their students participating in the state alternate assessment on alternate achievement standards. While not intended as an individual student diagnostic measure, nevertheless the LCI does provide a very good global picture of communicative competence growth (expressive and receptive communicative status, and presence of AAC) from year to year across students in states annually collecting these data as part of their alternate assessment process. A second, indirect measure of communicative competence that can be obtained at the state level is the percentage of students in the alternate assessment who can be validly assessed on the state's alternate test. This second measure is not *how well* the student scored, but whether the student was able to make clearly interpretable responses to the test items at all – was the student able to effectively and reliably communicate his or her response? Tracking these two measures (annual LCI data and the percentage of students able to complete the alternate assessment), along with making tiered interventions available for all teachers and SLPs in the state, including intensive Tier 3 interventions for those students who are unable to participate in the alternate assessment due to lack of a reliable mode of communication, ensures that evidence-based strategies are paired with a policy of coherent monitoring and accountability for results.

Figure 4 presents the LCI data for one state at two points in time (2009 and 2015). The communication data from the Learner Characteristics Inventory are collected and analyzed at the state level annually to detect any significant increases or decreases in teacher rating of communicative competence and AAC use. In 2015, the state's communication data for alternate assessment participants indicated an increase in symbolic language users (from approximately 70% in 2009 to 79% in 2015), as well as a reported decrease in pre-symbolic learners. While this is certainly a positive trend for the state, it is important to also consider communicative

status for students at each of the *grade spans*, to especially ensure that students are not leaving school without a reliable mode of communication, as well as to ensure that all students with significant cognitive disabilities are reported and represented in state-wide communication data summaries.

Figure 4: Example of State- Level Communication Data Across Years



Key: Orange = Symbolic Learner
Purple = Emerging Symbolic
Blue = Pre-Symbolic

Measuring District Level Impact

Clearly individual districts can collect both of the above measures – annual LCI data on all of its students participating in the alternate assessment and its percentage of the students in the alternate assessment who are able to reliably take the assessment. Monitoring these data, and reviewing them with a district *Communicative Competence Improvement* team, can make everyone in the district sensitive to the importance of all students having a reliable mode of communication. Districts, moreover, are often in a better position than the state to establish *Tier II* interventions through *Communities of Practice* of teachers of students with moderate and severe disabilities, speech/language pathologists, administrators and other related service

personnel. As we have noted above, communities of practice, often created for teachers and therapists who have completed Tier I activities (such as the NCSC Communication Tool Kit modules offered for ASHA CEUs), provide members the opportunity to not only work through the communication challenges facing their students, but to brainstorm together potential strategies, and to meet regularly to discuss successful interventions and alternative solutions when needed. Communities of practice also model, at the district level, the kinds of coordination and collaboration essential to improving communicative competence for students with the most significant disabilities. An important effectiveness measure for communities of practice is determining (through staff interviews or surveys) the extent to which team members perceive that their own skills and knowledge of communicative competence have been enhanced, the extent to which they can apply those skills to students on their caseloads, and giving staff the opportunity to provide s*pecific examples* of how they have used their skills to improve communicative competence for their students. Of course, it is also very important for the community of practice leaders and initiators to acknowledge that increased capacity, and the successes achieved by the members of that community on behalf of the students.

Tier Three: Individual Student Performance Data on Enhanced Communicative Competence, Access To The General Curriculum, and Improved Quality Of Life.

Schools can also collect both of the above measures – annual LCI data on all of their students participating in the alternate assessment and their percentage of the students in the alternate assessment who are able to reliably take the assessment. Most importantly, schools are best situated to implement individualized Tier 3 interventions (perhaps in collaboration with university faculty), and to collect data on the extent to which students are able to use their communication systems across the day to access the general curriculum, to participate in other

in-school and school related activities, and to establish relationships and friendships with peers. For example, the communication matrix in Figure 3 can also be used as a simple data recording sheet to indicate how successfully the student is communicating across school activities. Moreover, the school can also survey parents as to the extent that students are able to use their communication system at home and in other community activities, as well as parents' suggestions for additional communication targets. Finally, schools can identify how their staff rate their own capacity to address communicative competence of students with the most significant disabilities, and their staff confidence in generalizing what they have learned to other students on their caseloads (and whether that capacity and confidence have increased with the communication interventions). The ultimate goal for schools is two-fold: 1) to increase the competence of teachers, SLPs, para-professionals, other related service professionals, and families to collaboratively problem-solve evidence-based strategies that enhance communicative competence; and 2) to collect ongoing progress data on their students to determine the extent to which students are truly able to use their communication systems across school environments and activities, and especially in the context of interacting with their peers.

Conclusion

In this paper, we have attempted to 1) examine the literature on what we know about communicative competence for students with the most significant cognitive disabilities, 2) propose a three-tier model of intervention that states, districts, and schools can use to improve communicative competence for students with the most significant disabilities, and 3) describe specific measures that states, districts and schools can use to measure the effectiveness of each of these tiered interventions. Moreover, we have illustrated how the application of evidence-based strategies have resulted in improved communicative competence for actual students with whom

we have worked; and we have provided specific planning, implementation, and data collection forms that school teams can used at the most intensive Tier 3 level.

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